

Annex to Resolution no. 159/L/2021 of the WUT
Senate of 22 December 2021

DEVELOPMENT STRATEGY OF THE WARSAW UNIVERSITY OF TECHNOLOGY UNTIL 2030

From the Rector

The development strategy is a key document outlining fields of operation for the Warsaw University of Technology for the next decade. It presents the vision of a university of the future, defines its mission and lays down the basic values the members of its community follow. It also lists strategic aims in all areas of operation, complemented with operational goals and planned actions leading towards their achievement.

The strategy we adopted for the period 2021-2030 includes the continuation of a number of actions laid down in the document “Development strategy of the Warsaw University of Technology until 2020”, adopted by the Warsaw University of Technology Senate on 23 February 2011. In addition, it covers a number of new elements adapting the operation of the University to a dynamically changing environment.

Development of the strategy was preceded by a series of in-depth analyses, the results of which were laid down in the form of a SWOT analysis, pointing to the University’s strengths and weaknesses, as well as opportunities and threats, which are or may be brought about by internal and external factors.

The document was greatly influenced by two factors of global impact – the SARS-CoV-2 pandemic and more and more visible hazards and civilisation, such as adverse climate change, environmental pollution harming the world or problems connected with aging societies. They have made us aware of the key role of research, but also of social responsibility of the world of science. With this in mind, the list of strategic research areas includes, among others, “Healthy and sustainable living environment” and “Sustainable industry, materials and manufacturing processes”. The pandemic also showed the key role of education in shaping a responsible society that would believe in scientific achievements.

Education is an element of the mission of the Warsaw University of Technology, which is as important as research; great attention is paid to this area. We strive towards the status of a European education centre – a University open to students from all over the world, teaching in a modern and efficient way, with a large number of project-based courses and a strong connection between education and research. We are planning to set up new study programmes, connected with priority research areas and with the needs of the social and economic environment, but also interdisciplinary and interfaculty programmes. We are going to develop collaboration with leading European technical universities, within the initiative European Universities, and with the best universities from other places, as well as extending our educational offer in English, with the aim of opening up the University to foreign students, as well as of giving our students an opportunity to pursue part of their study programme at renowned foreign universities.

We are hoping to achieve the position of a leading Polish and European centre, which provides innovative knowledge and shapes trends of development of the technology of the future. This requires constant contact with cutting-edge technologies and following the needs arising in a dynamically evolving environment. This is not possible without constant cooperation with the surroundings, as well as with renowned world research centres. Such collaboration, as well as developing mechanisms to support innovative undertakings is a vital element of our development strategy.

The Warsaw University of Technology, striving to achieve the status of an important European and global research and education centre, clearly perceives its role also as a significant element of the local ecosystem of innovation and education. Therefore, we work on tightening relations with Warsaw and with Mazovia by developing cooperation with local authorities and institutions of the public sector and companies, as well as on integration and cooperation of Warsaw universities.

We want the University to be a friendly workplace so a lot of attention is paid in the Development Strategy to facilitating the management of the University and its resources. The aim is to create a modern and efficient organization caring for its staff and infrastructure.

The Warsaw University of Technology is strong thanks to various competences of the research and teaching staff. Using this potential requires integration of the efforts of teams from various units and academic disciplines; therefore, development of mechanisms that motivate such collaboration will be a priority for the coming years. It is of special importance to create an efficient system of research and teaching cooperation with the University Branch in Płock.

2020 was the year of great changes at the Warsaw University of Technology, which were the result of the implementation of the Constitution for Science and related regulations, as well as the award of Research University status and becoming a member of the ENHANCE alliance of European universities. Growth was also stimulated by social changes caused by dynamic popularisation of new technologies. An unexpected but strong transformation impulse were global social and economic changes caused by the pandemic. All this means that on the day of adoption of the Development Strategy we have an exceptional opportunity to make another significant development leap by reinforcing our position among the most prestigious Universities, not only in Poland, but also in Europe and in the world.

Following the words of Cyprian Kamil Norwid: "To measure the future road, one needs to know where one started from". Looking boldly ahead, we must not forget the beautiful but sometimes very difficult history of the University and almost 200 years of traditions that shape our academic and University identity. Therefore, in this decade of completion of the Development Strategy we are also preparing to celebrate the 200th anniversary of technical university education in Warsaw which started on 4 January 1826 with the opening of the Preparatory School for the Polytechnic Institute.

The same respect for history and tradition prompts us to complement the Development Strategy of the Warsaw University of Technology until 2030 with a document of fundamental historical importance, i.e., the "Mission of the Warsaw University of Technology", adopted on 13 December 2000 and repeated in the document Development Strategy of the Warsaw University of Technology until 2020, adopted by the Warsaw University of Technology Senate on 23 February 2011. Although we have decided to change the contents of the University Mission, due to radical changes in the world, we wish to emphasise that the Mission adopted in 2000 is a message which is still vital and up to date.

When preparing the Development Strategy of the Warsaw University of Technology until 2030, we assumed that the document will:

1. **provide significant contents** – it should not repeat widely known and accepted proposals, it should aim at highlighting the specificity of the University in its present situation;
2. **be based on values that bind the University** – the values should be widely accepted and present in each aspect – from interpersonal contacts, through teamwork, to external relations;
3. **be future-oriented** – the long tradition of the University does not mean we should not look ahead; in fact, we should actively shape the future of the University;
4. **be reliable, goal-based** – plans will be made with the assumption that the declarations will be introduced in the foreseeable future. To make this process more specific, we outline ambitious but realistic goals and measurable results and specific mechanisms of operation;
5. **be understandable** – for all members of the academic community;
6. **be regularly improved** – correcting a development plan is a natural process in University life.

We wish for the adopted Development Strategy of the Warsaw University of Technology until 2030 to be not only a document but above all an inspiration for all of us to strive for the constant improvement and development of our University. The challenges ahead of us require a systematic and well-thought-out transformation which will be summed up at the beginning of the fourth decade of the 21st century and will serve as the basis for the next Development Strategy of the Warsaw University of Technology.

CHARTER

MISSION

The Warsaw University of Technology follows the line of thought of Stanisław Staszic, by attempting to both shape the mind and the attitudes of the members of its whole community equally. The research and teaching done at the University are always taken up with the intention of creating new socially useful values. This pertains both to tangible effects of the operation, cooperation standards, as well as personal qualities of all persons connected with it. The results of research and teaching of the Warsaw University of Technology are promoted within its environment. The thinking created at the University should be used internally and externally, respecting the rights of its authors, but remaining open to the needs of the society.

Not forgetting about its great past and traditions, the Warsaw University of Technology perceives its mission as a creative contribution to shaping the future – through research, development of new knowledge and technologies of the future and through shaping future generations.

Acting with social responsibility in mind, we are planning to concentrate our research on areas related to the greatest challenges of civilisation such as climate change, environmental pollution, diminishing non-renewable resources, civilization diseases, epidemic hazards or the problem of ageing societies. These priorities are in line with the list of Sustainable Development Goals 2030, adopted by the UN countries in 2015.

By shaping new generations, we wish not only to provide knowledge and skills at the highest level, but first of all shape bright people who think creatively and critically, who are intellectually independent and openly present their opinions. We wish to equip them with creative curiosity of the world and professional passions, to teach them the practice of ongoing learning and to shape the feeling of social responsibility and awareness of the impact on the future of the world.

VISION

The Warsaw University of Technology of the future is a renowned and recognisable technical research university, which is an attractive research and teaching centre in the European research space, conducting research and providing education at world level. It participates in shaping trends of technological development and provides knowledge and solutions for Polish and global industry. With social responsibility in mind, it participates in searching for solutions related to global civilization threats. It educates competent, creative and socially responsible staff members for science and industry of the future.

The Warsaw University of Technology in 2030 is a well-managed European centre of research and education, which recognizes and invests in people who are part of the academic community.

The Warsaw University of Technology in 2030 is:

1. **a trend-setting University** in all fields of activity: scientific discoveries, innovation in cooperation with industry, outstanding creativity, education, close links with the local community and promotion of science.

2. **a participation University**, founded upon respect for University democracy, where everyone is listened to, seeks compromise, respects other opinions and takes inspiration from them.
3. **a friendly and efficient University**, open, where with the help of administration, in an environment of consistent and secure IT systems, we complete our tasks and passions in a congenial atmosphere.
4. **a beautiful University**, boasting the beauty of its historical buildings, but also architecturally modern, with a clear structure of connected campuses, filled with cutting-edge technology, ecological, energy-saving, and user friendly.
5. **a research University**, which provides new points of reference and becomes an inspiration for the economic and social environment, with a widely recognized research profile, investing in talents and activity of researchers, providing conditions for making discoveries and open to international collaboration.
6. **a useful University** for companies and for business, with a profile of education and research relevant to the needs arising from economic and industrial growth of our country and European partners.
7. **a European University**, international and making a significant contribution to the development of the European Research Area and the European Higher Education Area.

VALUES

The Warsaw University of Technology in its operation follows the code of cultural and ethical values that shape the authority of science and scientists. Its basis are the classical academic values: **Truth, Wisdom, Good and Beauty**, as well as the collection of ethical values such as: **Freedom, Righteousness, Dignity, Justice, Tolerance, Equality, Loyalty, Solidarity, Kindness**. In addition to them, we follow instrumental values such as:

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| Excellence: | Striving to excellence in all areas of operation of the University – research, teaching, cooperation with partners, operation of teams and student research groups, close links with the local community and promotion of science. |
| Openness: | Being ready to interact with other academic institutions, business and social partners, as well as to accept constructive criticism, to analyse problems which may arise and to take up challenges. |
| Responsibility: | Responsibility of the unit, group and institution for short-term and long-term effects of their actions in the area of research and education, as well as respect |

of nature, social responsibility of science, relations with the local community and key stakeholders (both internal and external).

Variety: Taking into consideration and accepting all aspects in which community members may differ, i.e., differences in age, gender, race, nationality, ability, education, knowledge, experience and competence, personality, beliefs, system of values and identity.

Courage: Courage in taking up research, regardless of the eventuality of failure. Boldness to take up challenges resulting from even the most difficult problems, which are significant in social and civilisation terms.

Spirit of cooperation: Ability to create wide, varied, interdisciplinary and complementary teams – it is not possible without creating and fostering a culture of cooperation beyond the University walls, mutual understanding and respect, as well as acquiring knowledge from partners.

STRATEGIC IMPACT AREAS

Warsaw University of Technology has almost 200 years of tradition in education and research serving society. This is only possible thanks to the highest level of competence of scientific teams, able to pass on their knowledge and skills to the next generation of students and doctoral students. Thanks to this, graduates of our university are excellently qualified specialists, appreciated at home and abroad, working for leading companies, institutions, and universities. From the Warsaw University of Technology one acquires respect for science and craftsmanship, boldness in designing new solutions and determination in pursuing goals. We educate experts who, irrespective of their field of activity and position, possess the ability to think critically and solve complex problems, independence of action, but also the ability to work in a team and in an international setting.

The areas of scientific activity of Warsaw University of Technology research teams must constantly evolve, following the challenges created by the changing world, and the content of teaching must follow these changes. The range of competences and scientific interests of our researchers is extremely wide, covering almost entirely the area of scientific disciplines in the field of technical sciences, but also some areas of sciences and fields of humanities and social sciences. Analysing the research challenges created by the contemporary world and confronting them with the potential of the university, we need to define a catalogue of strategic areas of our research and teaching activities. A prelude to such a decision was the identification of priority research areas submitted in the ministerial competition, the beneficiaries of which were awarded the status of a Research University. We defined seven such areas in which we already have significant achievements. In strategic planning, however, we should also boldly and consistently enter new areas and build competence in them. With a sense of social responsibility, we should also join the efforts of the scientific community in combating global threats and civilisation problems. Following this concept, we have defined four Strategic Impact Areas that should be intensively supported in the coming years. These include:

1. Scientific foundations: nature and the apparatus of its description;
2. Information and the digital environment;
3. A healthy, sustainable living environment;
4. Sustainable industry, materials and manufacturing processes.

The definition of strategic impact areas is aimed at strengthening the university's internal scientific and research and development potential, but also the competitive advantage and economic potential of Mazovia. The strategic impact areas are not separate - they are closely interrelated and form a coherent whole. For example, Area 2 – *Information and the digital environment* is linked to the digitalisation of industry, automation of processes (physical and virtual), the area of big data, artificial intelligence, including machine learning, and sustainable industry, and thus including Area 4. Both of these strategic impact areas are linked to each other through Economy 4.0, often presented as a cyber-physical systems integrator. The foundation of the whole is the apparatus of nature description.

Scientific foundations: nature and the apparatus of its description

We create a solid scientific foundation. Since the Warsaw University of Technology was founded, we have operated under the belief that adaptation and resilience are key skills in a rapidly changing world, full of challenges and new technologies, in the face of unforeseen difficulties. It is also important

for engineers and professionals to be able to develop, self-educate and improve professionally. Such attitudes can only be built on a solid foundation of knowledge in the area of fundamental sciences. Therefore, it is essential to conduct both theoretical and experimental research into fundamental laws and phenomena, including the development of computational and measurement methods. Cooperation with other centres, including participation in international research projects and the employment of outstanding foreign scientists, is not negligible in this area. The knowledge and skills developed during the study of scientific foundations will be useful in the future for solving specific problems, also in areas far removed from classical engineering and science. This allows us to train professionals who can find their way in any profession thanks to a solid foundation of analytical thinking, awakened creativity and developed digital competences.

We also regard social competence as an important foundation. We are convinced that in order to achieve harmonisation of socio-civilisational processes, we must equally harmoniously combine the research inquiries of technical and social sciences. There are no 'two truths' about the world and man: technical truth and social truth. There is one truth that describes the latest technologies, designed ethically and for man, through the prism of their social utility. Similarly, it is impossible to imagine two cultures: technical and social. Moreover, in order not only to educate the mind but also to shape attitudes, it is essential to implement harmonious interaction and interpenetration of technical and social sciences in the research and teaching conducted at the Warsaw University of Technology.

Innovation in education supported by digital resources and repositories. The Warsaw University of Technology is a melting pot of knowledge and work: from state-of-the-art laboratories, workshops and research centres at the University's headquarters, to extensive digital resources and processes and repositories for open science. The engineering education programme is based on interdisciplinary, cross-sectoral projects. The modern educational methods implemented at the Research University are based on experienced teaching staff using innovative educational methods and on partnerships with the University's external stakeholders (socio-economic environment). In response to the challenges of the world in pandemic, developed *blended learning* formulas are implemented, effectively integrating remote technologies into teaching. Innovative learning prepares for the contemporary work model: problem solving taking into account the needs and expectations of the target audience, in project work mode: cascading or agile, regardless of the scope and time horizon of the project.

Information and digital environment

Data-driven development. Nowadays, civilisation is producing an ever-increasing amount of data that can be digitised, integrated, analysed and processed. The innovative economy is based on the production and sharing of data, in an ever-growing network of interconnections and dependencies. The increasing use of cloud solutions, the Internet of Things and big data analytics, allowing real-time management of processes, demonstrates the usefulness of solutions for all sectors of the economy: 4.0 industry companies, smart city solutions, government, the financial sector and telecommunications. In the combination of digital interconnected vessels, security and data protection are of particular importance, e.g., the search for a balance between open resources and data privacy, intellectual property and know-how protection. A separate challenge is the integration of new data management solutions into existing systems, which should flexibly expand and adapt according to changing conditions and needs in building sustainable competitive advantage through innovation.

It is the element of the Warsaw University of Technology's mission to be part of the current of these activities.

The digital revolution is inevitable, and the Warsaw University of Technology is prepared for it.

The university participates in the digital transformation as an active partner of change: it designs, tests and implements new solutions and educates the next generation of digital innovators. Warsaw University of Technology experts provide new solutions in the areas of data analytics, data management and data flows, data systems architecture, data sources and data storage methods. Leading topics include the digital economy, cyber security, artificial intelligence, including machine learning, and the Internet of Things. Effective use of digitisation enables the development of open science with respect for copyright, a culture of cooperation and sharing of knowledge, a culture of participatory innovation and value co-creation. Legal and ethical responsibility for the digital environment in which we live and co-create are important challenges. At the same time, the pandemic has made us aware of the need not only to nurture a sense of community, including the academic community, but also to create new patterns and tools for working and learning remotely, ensuring both security and efficiency.

A healthy, sustainable living environment

Sustainable living environment. Innovative solutions are only valuable if they ensure the sustainable development of society, with respect for the environment. The Warsaw University of Technology supports the development of environmentally friendly technologies, taking into account the urgent needs related to climate change, pollution and energy sources. Concern for the state of the environment and the health of present and future generations drives the development of knowledge and innovation, bringing us closer to a closed loop economy. Innovative solutions to support the development of sustainable cities, resource efficiency, ensuring safety and health are leading research trends with a real impact on humanity's living environment. In parallel to supporting technology, we are developing research dedicated to the society of the future and the sustainability of organisations.

People are the most important. Today's challenges are largely complex social problems. Even the best interdisciplinary research will not help solve the growing difficulties in the areas of urbanisation, mobility, ageing society, social polarisation (spatial, economic, educational). Only inclusive processes: value co-creation and participatory decision-making, based on dialogue between all groups involved, will enable effective solutions to be found. We are also searching for them by focusing on the areas of public management, social logistics and labour market 4.0.

Sustainability supported by an innovation ecosystem. A research university is not only a space conducive to the creation of new ideas, but a place where valuable initiatives receive support on the threshold of business development. At the Warsaw University of Technology, the results of research work are the basis for the processes of creating technological and social innovations that serve the development of the Polish economy and a sustainable living environment. It is a place for the incubation of innovative ideas, start-ups, university technology spin-off companies, modern forms of entrepreneurship and cluster initiatives.

Sustainable industry, materials and manufacturing processes

Leading R&D. Sustainable industrial development is the promotion of high-tech products and services, taking into account the challenges of a circular economy. New materials and manufacturing processes play a special role here, which is why it is so important to seek innovative solutions in terms of material characteristics, properties, processing methods, recyclability and environmental impact. The Warsaw University of Technology supports the development of modern manufacturing processes at every stage: from design, through testing, to implementation. One of the forms of implementing new technologies is technological entrepreneurship, developed in research and teaching, which is an important component of our graduates' competences.

Needs and expectations drive innovation. New patterns of use of objects and services, where using is more important than owning, motivate new insights into design. End-users of new solutions expect to be included as partners in shaping the target form of a product or service so that it has specific functionalities, is safe and is accessible. They require manufacturers to be environmentally responsible, forcing them to rethink the entire life cycle of a product: quality, sustainability, minimal environmental impact, the use of innovative materials, local resources, responsible production process and the necessity to recycle. As a result, they are also forcing an evolution in the methods, models and management philosophies of companies, steering them towards humanocentrism, sharing and co-responsibility. This way of thinking must accompany all actions taken at our university.

Sustainable human-machine collaboration. New technologies are changing not only companies, improving organisational processes, permanently striving for digital maturity, but also people's lives. Progressive automation is changing the situation on the labour market - taking away repetitive and monotonous activities from employees, it provides opportunities for development in creative work: designing processes, managing them and monitoring process and product quality, as well as ensuring occupational safety. An employee of an innovative company is able to find his or her feet both in the independent execution of the assigned task and in cooperation with a diverse, international and inter-sectoral group of partners. These are precisely the requirements that graduates of the Warsaw University of Technology must meet.

SCIENCE

OUR TARGETS:

- ⇒ Scientific excellence
- ⇒ High visibility of ongoing research
- ⇒ Effective mechanisms to support research work
- ⇒ Internationalisation and intensive international cooperation
- ⇒ Active and effective cooperation with industry and the economy

THE ACHIEVEMENT OF TARGETS WILL BE MEASURED BY:

- The number of publications in the top decile of the citation count
- *Field-Weighted Citation Impact* parameter for the Warsaw University of Technology in the Scopus database
- The position in leading international rankings
- The number of international grants

The Warsaw University of Technology is home to several hundred research teams, actively collaborating in national and international research projects, development and industrial work with leading partners from various sectors of the economy. At the same time, there are many people who, for various reasons, have lost touch with current scientific issues. All this adds up to a landscape that is diverse in terms of scientific level and research team activity. In the perspective of the next few years, it is particularly important to introduce comfortable and motivating working conditions for researchers, an attractive promotion model for young scientists and programmes to develop the research potential of staff.

Research University

The Warsaw University of Technology has defined seven Priority Research Areas as part of its application to the 'Initiative of Excellence – Research University' (IDUB) competition:

1. Photonic Technologies,
2. Artificial Intelligence and Robotics,
3. Cybersecurity and Data Science,
4. Biotechnology and Biomedical Engineering,
5. Materials Technologies,
6. High Energy Physics and Experimental Techniques,
7. Energy Conversion and Storage.

They were identified on the basis of an analysis of the directions of research practised at the university and the potential of the staff (measured by publication achievements, successes in patenting and implementation, and activity in the implementation of international research projects). The intention of the Warsaw University of Technology is to expand the group by those in which the university's research teams have less experience and achievements, but deal with socially important topics that touch on the most important challenges of contemporary and future world. Defining such areas makes it possible to focus work on the most pressing needs for the development of society.

The knowledge and expertise of the Warsaw University of Technology staff results in a high quality of research. Today's designed solutions require more and more precise knowledge in increasingly narrow specialisations, but also the ability to cooperate, communicate one's own research results, translate them into the language of other disciplines and integrate the work of large research teams representing diverse disciplines. It is therefore necessary to introduce mechanisms that motivate researchers, especially young ones, to seek challenges in new areas, especially in those that best correspond to the social needs of the contemporary and future world.

Strong position of scientific disciplines

Despite the growing importance of interdisciplinary research, the formal evaluation of a university is related to the quality of the scientific disciplines practised in it, and their position is linked, among other things, to the publication activity of its researchers. Despite the fact that the number of publications of Warsaw University of Technology employees and doctoral students in prestigious international journals is significant, and some of them are among the 10% of the best cited publications in the world, the average citation rate for most disciplines is not satisfactory for a university aspiring

to a significant position on a global scale. It is therefore necessary to develop a University-wide science policy that includes support mechanisms for researchers and research teams.

International cooperation

International cooperation is an indispensable element of world-class research activity, having a positive impact not only on the quality of the research work carried out, but also on the number of citations – usually higher than in the case of publications produced in projects of national scope. Analysis shows that the level of internationalisation of research at the university is too low – in the years preceding the creation of this Strategy, less than 30% of Warsaw University of Technology publications were published with authors from foreign centres. The reason for this is the low mobility of research and teaching staff and doctoral students. It is therefore necessary to take measures to intensify cooperation with foreign teams, especially from internationally renowned scientific institutions, and to increase the level of internationalisation of the staff.

Efficiency in the use of research infrastructure

The last decade has provided the university with a unique opportunity to make infrastructure and apparatus investments, financed by national and EU funds under research programmes. The Warsaw University of Technology has used this opportunity very effectively, enriching its research base with many modern laboratories, in many cases equipped with apparatus that is unique in the country. However, the rich laboratory base is often used inefficiently – the same apparatus resources are duplicated in different units and little used. This gives rise to the need for a central system for recording and managing research infrastructure.

SCIENCE – strategic and operational objectives, actions

N1. Scientific excellence

1. Implementation of a consistent science policy

- a. Developing and implementation of a university-wide research development programme, identifying current research priorities
- b. Continuous monitoring of the implementation of the scientific development programme, its periodic modification adapting the defined priorities to external changes and to the changing scientific potential of the university
- c. Launching programmes to develop the research potential of staff and doctoral students

2. Building a strong position of scientific disciplines

- a. Implementation of incentive programmes for publication activity
- b. Increasing the efficiency of applying for research projects, including in competitions of the European Research Council (ERC)
- c. Building a support system for research teams to acquire and implement ambitious interdisciplinary research

3. Providing comfortable and motivating conditions for scientific work

- a. Introduction of a fair, transparent and motivating employee appraisal system
- b. Introduction and widespread use of an attractive and motivational remuneration and promotion system
- c. Improving the competencies of researchers through a programme of training, workshops and research internships
- d. Creating conditions for the recruitment of outstanding researchers from abroad, in particular experienced research team leaders
- e. Creating conditions for research work for people with disabilities
- f. Involving talented students with a passion for science in research teams
- g. Supporting bold and risky exploratory ventures

4. Introduction of an attractive model for the development of young researchers

- a. Integration of the five existing doctoral schools into a single Doctoral School at the Warsaw University of Technology, with a wide range of training paths on offer, ensuring an improvement in the quality of doctoral training
- b. Dissemination of collaborative doctoral programmes (international with auxiliary thesis advisors)
- c. Increasing the impact of internationalisation in staff recruitment, periodic appraisal and promotion criteria
- d. Supporting and promoting the formation of Master-Student relationships between doctoral students and their supervisors, as well as cooperation between doctoral students and research teams

- e. Introduction of purpose-driven and informed research career training

N2. High visibility of ongoing research

1. Conducting an effective policy for the promotion of research results

- a. Promoting research successes and their impact on the development of technology and the functioning of the society and the economy
- b. Carrying out popular science activities, such as, for example, participation of members of the academic community in debates on technology, innovation, spreading scientific knowledge, debunking fake news related to it
- c. Engaging in science communication activities aimed at the public in areas consistent with the University's Strategic Impact Areas concept
- d. Motivating Warsaw University of Technology staff to become active in international organisations and think-tanks

2. Building high international visibility for PhDs, postdoctoral theses and other monographs

- a. Implementation of the "Open Science" programme, promoting methods of producing and communicating scientific knowledge in line with this slogan – disseminating research results, exchanging information, enhancing scientific cooperation
- b. Support and development of Warsaw University of Technology journals
- c. Improving the visibility, editorial quality, accessibility and English-language transfer of information and scientific papers
- d. Establishing cooperation with Level II publishers and international library networks
- e. Development and implementation of an electronic publication system for the University's employees and doctoral students (open monographs and scientific papers)

N3. Effective mechanisms to support research work

1. Creating an effective support system for researchers

- a. Increasing the functionality of the knowledge base of the Warsaw University of Technology as a tool for information exchange and scientific team building
- b. Improving the quality of project handling by building a decentralised support network and increasing the efficiency of their administrative handling
- c. Organisation of intergenerational and transdisciplinary discussion forums for the exchange of ideas and experiences
- d. Increasing the effectiveness of research fundraising by raising the profile of research project acquisition in staff appraisal

2. Development of research infrastructure

- a. Development of a multiannual investment plan related to research projects (new laboratories, equipment)
- b. Expansion of research infrastructure and increased efficiency in the use of apparatus

- c. Continued development of the Main Library's function as a monitoring centre for the research achievements of university staff and teams

EDUCATION

OUR TARGETS:

- ⇒ Education taking into account the needs of the socio-economic environment
- ⇒ Modern teaching methods
- ⇒ Effective pro-quality mechanisms in teaching
- ⇒ Integration into the European academic training system

THE ACHIEVEMENT OF OUR TARGETS WILL BE MEASURED BY:

- the academic level of candidates
- the average number of students per academic staff
- the ratio of the total number of second-cycle and doctoral students to the number of first-cycle students
- the percentage of students participating in international education (studying in English, participating in exchange programmes, working under the supervision of staff from other universities)
- graduates' careers
- opinions of graduates, employers, university staff and students

The Warsaw University of Technology attracts thousands of new, talented students every year. They are motivated by its reputation as a leading technical university, confirmed by its consistently high position in rankings. The high position of the University's graduates on the labour market is also a motivation to study at the Warsaw University of Technology. The demographic low has not resulted in a decrease in the total number of candidates, but we are observing a decline in interest in second-cycle studies and participation in doctoral programmes. It is a result of the competitiveness of alternative career paths offered by the economy. A factor contributing to candidates' interest in studies is the appreciation of education as the most essential condition for development and success in life. Candidates aim to improve their professional competences, particularly by taking part in technical studies. This also applies to selected programme modules that allow them to expand their knowledge and skills within and beyond our programmes (lifelong learning).

The needs of society, the policies of the State and the trends observed in the development of the global economy all favour an increase in the importance of technical education.

Bringing the education model closer to that of a typical research university

In order to achieve a profile typical of world-leading research universities, the Warsaw University of Technology must strive to increase the importance of second-cycle studies and doctoral schools. This means changing the numerical proportions, as well as increasing the role of research-oriented, interdisciplinary and individual education programmes. Encouraging good candidates to study at the Warsaw University of Technology should be facilitated by consistent linking of the didactic offer (fields of study, specialisations) with the profile of Priority Research Areas, which are part of the concept of Strategic Impact Areas of the university.

Fields of study and education methods

The didactic offer of the Warsaw University of Technology includes a wide range of technical and non-technical curricula. Students can pursue a comprehensive education at Bachelor's and Master's level as well as at doctoral schools, in full-time or part-time form, also in English. Efforts must be made to make the offer map clearer so that candidates can take decisions in line with their expectations, and to concentrate the university's teaching potential around clearly defined subject areas. In many faculties of the University, modern forms of education are being implemented to develop students' design and research skills, but a large proportion of classes are still conducted using traditional forms of education. Dissemination of good practices in the use of innovative forms and methods of education, including project-based methods and linking project themes to ongoing research work and social needs, is one of the objectives set out in the Strategy.

Within the framework of existing curricula and in the newly created offer, efforts should be made to make use of formulas for individualising the learning path which are being developed in the European Union. One of these is *microcredentials*, which make it possible to summarise separate learning modules with certificates documenting the acquisition of knowledge and skills within them.

Internationalisation of studies

The number of foreign students enrolled in the education system at the Warsaw University of Technology is steadily increasing. The number of Polish students taking advantage of international academic exchange programmes is also increasing. What is unsatisfactory is the low number of foreign lecturers involved in the educational process. Measures aimed at increasing the scale of internationalisation of studies and, at the same time, improving their quality (confirmed by international accreditations) include: the development of the offer of education in English, the introduction of the obligation to complete a specific amount of second-cycle studies in English,

as well as the creation of incentives for writing diploma theses in English, which are intended to facilitate international academic exchange and encourage foreign lecturers to participate in the educational process at the Warsaw University of Technology.

The most important challenge of the coming period in terms of internationalisation is the integration of the Warsaw University of Technology with the universities of the ENHANCE consortium. Successful implementation of the European universities project may result in the presence of the Warsaw University of Technology among the universities shaping the vision of Europe's future academic system. It will also mean a significant increase in opportunities for students, staff and administrative staff to participate in international programmes.

EDUCATION – strategic and operational objectives, actions

K1. Education taking into account the needs of the socio-economic environment and the status of a research university

1. Organisation of education in line with the vision of a research university

- a. Gradual increase in the potential of the doctoral school and second degree offer, which will further stimulate the interest of candidates and the change in the proportion of students declared in the IDUB project (shift of the centre of gravity towards higher levels of education)
- b. Creating a comfortable environment for research-oriented education (e.g. reducing groups, increasing access to research infrastructure)
- c. Facilitating the completion of selected parts of the curriculum by students doing properly planned research work (in research teams and research clubs)
- d. Development of second-cycle curricula related to Priority Research Areas of the university
- e. Creating conditions conducive to the realisation of students' individual development paths, starting at the beginning of their studies and leading towards research work
- f. Creating flexible and interdisciplinary training paths for doctoral students, facilitating the compromise of training with the rhythm of research work and mobility, in cooperation with other universities, research institutions and institutes of the Polish Academy of Sciences
- g. Promoting the creation of joint, interdisciplinary curricula conducted as part of interdepartmental cooperation – preventing internal competition by creating similar curricula at different faculties

2. Building leadership in technical education in the European region

- a. Building strong identification of priority fields of study and their promotion
- b. Using the university's research successes as a development impetus for related curricula
- c. Dynamic development of studies offered in English
- d. Strengthening the position of an active member of the ENHANCE consortium and highlighting the participation of the Warsaw University of Technology in the European Universities Project as an important prerequisite for teaching excellence
- e. Building a culture of open access to teaching publications
- f. Encouraging citizens of the European Union, the Swiss Confederation and EFTA Member States to study at the Warsaw University of Technology through promotion on the European market and through an economically rational and, at the same time, preferential policy with regard to tuition fees.

3. Linking the content of teaching activities to the needs of civilisation and society

- a. Continuous monitoring of the needs of the University environment, of the desired competences of graduates, creation of a think-tank for anticipating needs that the environment is unable to verbalise

- b. Creation of new initiatives linking education to the needs of the environment, through training, courses, post-graduate studies
 - c. Using contacts with the socio-economic environment to identify education priorities accurately
 - d. Promoting student involvement in community-based activities that raise awareness and build connections with the community
- 4. Realisation of the University's social responsibility in educating a knowledge-based society**
- e. University engagement in postgraduate education, particularly in new fields of engineering to support the market economy
 - f. Attracting and assisting economically active individuals to undertake research work together with the University and to realise PhDs focused on industrial implementation (implementation doctorates)
 - g. Developing the university's micro-competence offer in national and international environment as a support for the dynamics of economic change in line with the country's development strategy

K2. Modern methods of education

- 1. Supporting high quality primary education (in the area of science and basic engineering)**
- a. Creating new and supporting existing mechanisms to attract winners of science Olympiads
 - b. Creation of intra-university programmes to support the development of students with special talents in science and basic engineering
 - c. Supporting the university system to ensure a high, equalised level of basic knowledge (e.g. a system to supplement basic knowledge for students in the initial semesters)
- 2. Implementing modern methods of communication and learning**
- a. Using tools for group work, solving project problems and using research methodology
 - b. Development of a unit dealing with education methodology, particularly with modern education methods
 - c. Expanding the range of activities carried out according to the project methodology
 - d. Identification of existing or development of new intra-university mechanisms to compensate for the cost-intensity of classes using modern communication methods
 - e. Transforming the teaching environment towards the realities of engineering work
 - f. Expanding the tool base in terms of communication, group work (also remote) and increasing the competence of academic staff in this area
- 3. The evolution of education towards the needs of a post-pandemic society**
- a. Establishing a system to monitor the effectiveness of distance learning and its impact on the development of social competences and the feeling of integration into the academic community

- b. Evolutionary redesign of curricula towards the best possible combination of traditional and remote techniques, leading to better communication and more efficient use of resources
 - c. Increasing flexibility in the use of the university facilities and infrastructure to ensure that different types of learning activities can be delivered in a safe and socially interactive environment
 - d. Supporting lifelong learning in terms of post-graduate studies, offers for working people, and teaching modules open to people from outside the programmes, also using micro-competences
- 4. Implementing the concept of learning as a joint activity between students and academic staff**
- a. Extension of existing mechanisms for examining teaching activities as perceived by students (questionnaires surveys, discussions in college bodies, holding open meetings on didactic topics, spot-checks with participation of students and surveys on ongoing curricula)
 - b. Expanding student participation in curriculum development and updating
 - c. Promotion of workshop-based forms of education in which students participate as creators of learning processes (e.g. in the form of "vertical" projects involving students from different years of study)

K3. Effective pro-quality mechanisms in didactics

- 1. Provision of an efficient technical and communication infrastructure in teaching**
- a. Striving for full integration of the teaching management system while ensuring the necessary flexibility (dependent on departmental needs)
 - b. Increasing access to the university's digital knowledge base and the resources available to students and teaching staff
 - c. Integration of learning management system and distance learning tools within the ENHANCE consortium and implementation of European standards for data exchange
- 2. Effective use of the University's cubature and laboratory facilities in teaching**
- a. Increasing the number of rooms and shared infrastructure for research and teaching, on an interdepartmental basis
 - b. Using digital systems to optimise learning activities (in time and space)
 - c. Development of a concept for transforming infrastructure and cubature resources in a way that is appropriate to the needs of the new hybrid and mixed mode of education
- 3. Building financial mechanisms to increase motivation for innovative activities in teaching and to support the most talented students**
- a. Including the assessment of the quality of teaching in financial mechanisms (in relation to academic staff and teaching units)
 - b. Building a transparent, competition-based system for access to additional funding to support innovative teaching activities

- c.** Establishing a system for the distribution of subsidies that takes into account the variation in teaching costs, which depend on financial factors and labour costs that vary considerably between educational areas
- d.** Expansion of the scholarship system, including externally funded programmes, taking into account particularly gifted people who achieve measurable successes (external awards, results in competitions, especially international ones)

COMMUNITY

OUR TARGETS:

- ⇒ A welcoming ecosystem that strengthens relationships between community members
- ⇒ An established culture of continuous improvement in all groups of the academic community
- ⇒ An efficient talent support system

THE ACHIEVEMENT OF OUR TARGETS WILL BE MEASURED BY:

- the percentage of employees, students and doctoral students defining the Warsaw University of Technology as a friendly place to work and study
- the number of foreigners employed in research or teaching positions
- the number of long-term internships and mobility in foreign research centres
- opinion of students taking part in individual study plans

The Warsaw University of Technology is first and foremost about people who value a unique atmosphere, shared academic standards and the chance to perform important tasks that build a common future, above and beyond the usual professional motivations. The unique and inimitable organisational culture is built by creating patterns of cooperation, a creative atmosphere, a sense of awareness of goals and satisfaction from joint achievements.

Organisational culture at the Warsaw University of Technology

The organisational culture of the Warsaw University of Technology is a culture of academic excellence, integrating all staff around a mission and common goals. It is a culture of continuous improvement across all groups of the academic community, promoting models of academic scepticism and criticism and activities characteristic for academic discourse. Finally, it is a culture of courageous leadership, marking the role of the supervisor in supporting staff development, encouraging risk-taking, responsibility, initiative, creativity, teamwork, mutual support and flexibility in thought and action.

A friendly place to work and study

Great Science is born by investing in people, appreciating them, creating conditions for their work and development, and sometimes by clever matching of interests and competences. To make the Warsaw University of Technology a friendly working environment, a number of measures should be taken to simplify bureaucratic procedures and foster mutual friendliness between the administration and staff, students and doctoral students. These actions are to increase openness to the invention of teams and faculties, improving working and studying conditions. Bearing in mind that the initial, and potentially further, period of implementation of the Development Strategy is an unusual time – a time of pandemic – affecting the mental health and well-being of all members of the academic community, the Strategy also provides for activities related to the promotion and support of academic sport, the access to professional psychological care for members of the academic community and the activation of the student community in terms of academic culture. The Human Research Excellence in Research distinction awarded to the University by the European Commission, confirming the standards in force at the Warsaw University of Technology, is associated not only with prestige, but also with a commitment to continuous improvement of the activities carried out in this area. These include: increasing the attractiveness of working conditions, internationalisation of the staff, implementation of an effective system for identifying particularly talented young scientists (employees and doctoral students) and supporting the development of the scientific and professional careers of all employees of the university, as well as supporting the mobility of employees and doctoral students of the Warsaw University of Technology. A remuneration system that allows for significant differentiation in the level of remuneration depending on the activity of individual employees is essential. The lack of such a system, combined with the low level of salaries when compared to the market is a strong demotivating factor, especially for young staff. Therefore, the creation of systemic mechanisms supporting employee development and satisfaction, i.e. a system of professional development based on employee appraisal criteria, promotions and salaries, is one of the objectives in this area.

Talent management

Talent management is not just about identifying outstanding individuals and creating development or promotion paths for them. It is a process based on trust, valuing an employee to whom more decision-making power is delegated, but from whom continuous improvement of skills and competences is also required. It is about scholarship programmes, grants for outstanding students

and doctoral candidates, but also training and workshops, coaching sessions and career counselling. It is also the organisation of mobility, internships abroad and study visits to top institutions and research centres.

COMMUNITY – strategic and operational objectives, actions

S1. Creating a welcoming ecosystem strengthening relationships between community members

1. Building the activities of people around shared values and a widely accepted strategy for the development of the university

- a.** Developing and implementing a democratic, participatory model for improving and implementing the university's development strategy
- b.** Building a sense of pride and personal satisfaction by involving as many community members as possible in joint initiatives and activities
- c.** Creation of university-wide scientific, teaching and organisational pilot projects, enhancing integration and sense of community (embedded in the priorities of the Strategic Impact Areas)
- d.** Implementing traditional academic values and principles related to the University's social responsibility

2. Creating a friendly working and studying environment

- a.** Improving the existing system of welfare benefits tailored to the needs of the university community
- b.** Creation of an effective support system and removal of barriers limiting students, doctoral students and staff with disabilities
- c.** Modernisation and expansion of the leisure centre facilities and the Student Chalet of the Warsaw University of Technology, as well as increasing the quality of the services offered there
- d.** Modernisation of student halls of residence
- e.** Development and implementation of a "friendly space" project - organisation of places for relaxation and informal contact between employees, doctoral students and students on the campuses of the Warsaw University of Technology e.g. green areas, restaurants, cafés, outdoor gyms, as well as a place for joint and quiet study for students

3. Creation and development of an "Academic Trust Centre"

- a.** Provision of professional psychological care for members of the academic community
- b.** Definite counteracting any symptoms of intolerance, unequal treatment, mobbing, harassment and other pathological behaviour and responding firmly and consistently to incidents that occur

4. Supporting the student research movement

- a.** Construction and development of student laboratory centres - places of activity for student research clubs
- b.** Developing solutions for safe and comprehensive student access to the university's laboratory facilities

- c. Strengthening the cooperation of student research groups with the business environment – creating a patronage system
- d. Increase in the implementation potential and the level of intellectual property protection of student research groups
- e. Professionalisation of promotion and information activities related to the student research movement
- f. Establishing a system of effective support for tutors of student research groups
- g. Implementing a system to include documented achievements of student research groups as educational outcomes and including supervision of student research groups in staff appraisal criteria

5. Supporting the activation of the student and doctoral community in terms of academic culture and academic sport

- a. Continuous and active cooperation of the university management with the Student Government and the Council of PhD students
- b. Supporting the activities of student clubs to restore their former position in the cultural life of Warsaw and Płock
- c. Providing arts units operating in the university with a place to conduct their activities comfortably
- d. Expansion of the university's cultural and sporting facilities in Warsaw and Płock (e.g. renovation and launch of the Academic Cultural Centre at the D.S. Riviera hall of residence, construction of a sports complex at the Syrenka stadium)
- e. Promoting and supporting academic sport in cooperation with the University Club of the Academic Sports Association of the Warsaw University of Technology
- f. Introducing mechanisms to promote the social and artistic activities of students and doctoral students

S2. Fostering a culture of continuous improvement in all groups of the academic community

1. Implementing a culture of academic excellence

- a. Implementing, cultivating and promoting the best academic values, including fostering attitudes of responsibility, kindness, openness, truth and trust
- b. Broad communication and integration of the community around the mission, vision and development goals of the university
- c. Promoting models of scepticism and scientific criticism, activities of academic discourse nature and a culture of dispute free of sophisms

2. Improving the competence of teaching staff and administration involved in the education process

- a. Increasing the availability of training in teaching methodology, interpersonal and language competences
- b. Highlighting indicators of teaching excellence in the staff appraisal system and building the prestige of teaching masters

- c. Strengthening the link between teaching achievements and the system of rewards (honorary, financial) – creating systemic solutions in this respect

3. Building systemic mechanisms to support employee development and job satisfaction

- a. Implementing an incentive-based professional development system based on staff appraisal criteria, promotions and salaries
- b. Building a culture of academic excellence that integrates all staff around a common mission and shared goals
- c. Promoting health-oriented attitudes and implementing transparent rules for accessibility to the university's social infrastructure
- d. Introducing a system for monitoring staff competence development
- e. Introduction of language courses for all employee groups

4. Enhancing the mobility of people (in and out of the European Union academic system)

- a. Organisation of long-term internships at partner universities and increasing the participation of foreign staff in the teaching activities of the university
- b. Increasing student migration, through the creation of an inter-university, international teaching offer and open access to this offer
- c. Increasing the number of short-term teaching projects conducted in an international environment (workshops, summer schools)
- d. Participation in international programmes building common standards of teaching quality and a common system of certification of achievements

S3. Introducing a programme of active search, development and maintenance of talents

1. Searching for particularly talented students and university candidates

- a. Increasing the communicativeness of course descriptions, leading to greater congruence between candidates' expectations and their experiences as students
- b. Improving communication between the university and students of selected secondary schools
- c. Development and implementation of talent selection mechanisms among university candidates
- d. Development and implementation of programmes and effective mechanisms to support the development of particularly gifted students, such as a flexible, interdisciplinary mode of study in a system of individual tutoring
- e. Involvement of the most outstanding students in ongoing research work
- f. Increasing the role of university graduates in the student talent support programme

2. Attracting the most talented doctoral students, young scientists and academic teachers to the university

- a. Building a scholarship programme to fund the arrival of high-potential foreign researchers at the university

- b.** Building mechanisms to propagate information about job competitions at the University with international reach
- c.** Implementation of an information campaign building the image of the Warsaw University of Technology as a modern, attractive and friendly employer
- d.** Development and implementation of an adaptation programme for newly recruited staff and visitors, including a programme of care for foreigners
- e.** Creating preferences for the most talented doctoral students and undergraduates in the housing management system of the Warsaw University of Technology and in the allocation of places in halls of residence

3. Nurturing the development of talent among the university's employees

- a.** Developing talent selection mechanisms among all employee groups, by defining above-average capabilities
- b.** Institutional support of ideas for innovative and development-oriented activities and projects
- c.** Organisation of mobility, internships abroad and study visits to top institutions and research centres
- d.** Consultation on research career development and enabling access to specialised laboratories where young, talented scientists can develop their research interests

RELATIONS

OUR TARGETS:

- ⇒ A university that cares about relationships and is open to new opportunities for collaboration
- ⇒ Effective institutional international cooperation
- ⇒ Active and multidisciplinary relationships with national partners
- ⇒ Intensive innovation and technology transfer activities
- ⇒ Efficient centre for innovative entrepreneurship for students, doctoral students and employees

THE ACHIEVEMENT OF OUR TARGETS WILL BE MEASURED BY:

- the number of bilateral doctorate programmes (cotutelle)
- the number of foreigners employed
- the value of revenues from commercialisation
- the number of university technological spin-off companies
- the number of organisations involved in joint national and international projects
- the number of students, doctoral candidates and employees developing their competences in innovative entrepreneurship

The Warsaw University of Technology attaches high importance to building and actively utilising a network of research and educational relationships. Collaborations include national and international institutional and individual entities. In building relationships, the university community focuses on generating value for all parties involved, learning from the best and assisting those who require the support of the university's knowledge and expertise. Faced with the challenges of rapid digital transformation, social change and global events such as pandemics, many participants in economic systems are looking for partnerships, both in content and organisational aspects. The Warsaw University of Technology offers professional and strong relationships, that are competency-based and focused on the results in the form of solutions to contemporary problems, expanding our understanding of the world we live in and producing innovation, especially in technical areas of human activity.

International partnerships

International partnerships, particularly within the framework of European cooperation, are an important dimension of the Warsaw University of Technology's network of relationships. A flagship example of international partnerships is the participation in the ENHANCE consortium of technical universities, where solutions are being developed in the fields of innovative educational methods, academic mobility and the streamlining of administrative processes. Within ENHANCE, universities engage in international cooperation with businesses, local governments, student organisations, research networks and non-profit institutions. International cooperation is seen as a source of exchange of knowledge, experience and research perspectives and as a way of bringing together talented researchers and teachers into groups that are able to achieve synergies, high creativity and efficiency through their combined potential.

Cooperation with the economic environment

The second area of rich relations is cooperation with the economic environment, implemented by supporting initiatives aimed at increasing the competitiveness of industries, regions and new and ground-breaking business ecosystems, including those based on digitalisation and the application of modern technologies. In cooperation with economic institutions, the Warsaw University of Technology focuses its research work on developing innovative yet practical solutions that respond to business challenges and can be commercialised.

Employee and student relations

In the dimension of individual relations, the Warsaw University of Technology considers it crucial to nurture an open and friendly dialogue with employees, building a culture of continuous improvement of ways of working, motivating and building the success of the individual as a path to the success of teams and the university. The second area of most important individual relationships is building lasting bonds with our students. We believe that nurturing these relationships is required at every stage of a student's development, from the formation of academic interests and support for teaching in secondary school, through accurate recruitment, then through the successive stages of academic and research development, to achieving graduate status.

Graduates of the Warsaw University of Technology are in many cases successful people, both professionally (in science and business) and personally. They define their success as the possibility of self-fulfilment, i.e. using their potential to achieve their goals, a sense of meaning, usefulness, taking pleasure in their work and feeling satisfied with it, as well as being able to influence their surroundings. Despite a number of interesting initiatives carried out as part of establishing relations with university

graduates in previous years, this area still needs to be improved, and taking action to implement global practices in the area of shaping relations with graduates seems essential.

It is our responsibility to nurture relationships with employees, students and PhD students in a way that identifies potential and talent, supports each person in their comprehensive personal development and maximises their success in the workplace. We are convinced that both employees and students and doctoral students are our best ambassadors, and that the relationships that bind us are a sustainable source of generating value for society.

RELATIONS – strategic and operational objectives, actions

R1. Building a university that cares about relations, open to new opportunities for cooperation

- 1. Construction of a map of relations of the Warsaw University of Technology as a basis for active care for generating values for all parties of the relationship**
 - a. Building centres of expertise
 - b. Seeking strategic partners to strengthen the university's potential in designated fields
 - c. Organisation of events (conferences, workshops, seminars) highlighting the university's profile of interest
- 2. Arranging the status of relations and possible forms of interaction with external partners**
 - a. Creation and regular updating of a professional, university-wide directory of entities that cooperate with the university
 - b. Publication of the research offer catalogue and its coordination with the map of external relations
 - c. Ensuring an effective system for finding experts and partners in a particular area at the university
- 3. Building and maintaining lasting and active relations with university graduates**
 - a. Implementation of global practices in the area of a relations development with graduates
 - b. Development of national and international cooperation with graduates of the Warsaw University of Technology in various areas of the University's activities
 - c. Support and development of networking and mentoring programmes with graduates of the university

R2. Increasing the effectiveness of institutional international cooperation

- 1. Intensifying activities within the ENHANCE consortium and cooperation with other world centres of high scientific standing**
 - a. Support for the formation of international research teams and organisational assistance in shared applications for research funding
 - b. Developing bilateral doctorate programmes (cotutelle)

2. Supporting academic exchange activities

- a.** Strengthening the mobility of researchers, with an emphasis on young researchers and PhD students
- b.** Developing programmes to invite visiting professors, young academics (postdoctoral) and doctoral students

3. Increasing the university's visibility in the global academic system

- a.** Taking steps to successively increase the university's position in the most important world and national rankings
- b.** Creative promotion of the university on websites and social networks in foreign language versions
- c.** Creation of a system of Ambassadors of the Warsaw University of Technology – graduates with outstanding academic achievements or professional successes who promote the University in various environments
- d.** Increasing digital accessibility for foreign students and doctoral candidates
- e.** Development of an English-language version of the University Public Information Bulletin
- f.** Improving the level of English proficiency among staff, including the provision of a full bilingual administrative service
- g.** Strengthening and simplifying employment pathways for foreigners

R3. Building active and multidisciplinary relations with national partners

1. Intensifying cooperation with central (government, ministries, national agencies) and local government institutions

- a.** Supporting the participation of the university teams in government agency-funded programmes related to the area of activities identified as priorities by the University
- b.** Cooperation with the local governments of Warsaw, Plock and the Mazovian Voivodeship in solving complex social and economic problems by providing expertise and implementing joint projects and initiatives
- c.** Participation in the social development process (i.e. economic, civilisational, ethical, cultural dimensions)

2. Increasing effectiveness of cooperation with business environment institutions, business representatives, NGOs, local communities

- a.** Development of effective cooperation with business environment institutions and business representatives to enhance the region's competitiveness and innovation
- b.** Organisation of activities and events aimed at popularising knowledge (Third Age University, activities for children and schoolchildren, courses for teachers, cooperation of student research groups with secondary schools, etc.).

3. Building a system of cooperation with strategic partners in priority areas

- a.** Involvement in cooperation programmes on a national scale, together with partner universities as well as representatives of the socio-economic environment, especially in projects that are in the area of the university's priority activities (the Strategic Impact Areas concept).
- b.** Establishing permanent collaborative relationships, based on formal agreements, with strategic research and economic partners

R4. Increasing the intensity of innovation activities and technology transfer

1. Development and implementation of a new innovation management policy

- a.** Building an effective and transparent system for innovation and development activities
- b.** Increasing institutional support for staff and research teams carrying out innovative work
- c.** Intensification of cooperation with external partners in implementation projects with a high level of technological readiness
- d.** Fostering creative innovative attitudes among staff, students and doctoral candidates

2. Optimisation of commercialisation and processes of knowledge and technology transfer

- a.** Implementation of best global practices in the area of commercialisation of research results
- b.** Increasing the efficiency of the commercialisation process of research results
- c.** Providing a one-stop-shop for staff, students and postgraduates on the protection of intellectual property
- d.** Improving the knowledge of university employees in the field of commercialisation
- e.** Development and implementation of mechanisms for valuing intellectual property
- f.** Implementation of the 'Patent IP' programme to support applications for international patents
- g.** Implementation of the "WUT Best Innovators" Programme – study visits to the world's best academic innovation centres

3. Popularisation of the University's innovative activities

- a.** Development and implementation of effective tools for the dissemination of innovative activities of the university
- b.** Implementation of projects and initiatives to popularise science, disseminate technological achievements in the field of new technologies and research and development projects, in particular technology offerings
- c.** Promoting innovative activities and entrepreneurial attitudes in the academic community
- d.** Building and disseminating the image, including international image, of the Warsaw University of Technology as an innovative university

R5. Development of an innovative entrepreneurship centre for students, doctoral students and employees

- 1. Disseminating knowledge and supporting activities concerning innovative entrepreneurship**
 - a.** Building awareness and disseminating knowledge of innovative entrepreneurship among students, doctoral students and employees
 - b.** Supporting the use of research results in the process of creating technological and social innovations for the development of the Polish economy and modern society
 - c.** Professionalisation of support for the incubation of innovative ideas, start-ups, university technological companies spin offs, modern forms of entrepreneurship and cluster initiatives
 - d.** Implementation of the "WUT Accelerator" Programme – support for the creation and development of spin-off companies in terms of solutions developed as part of the university's R&D projects
 - e.** Proactive acquisition of resources for the development of the university's innovative entrepreneurship

RESOURCES

OUR TARGETS:

- ⇒ Modern, effective and strategic management of the university in a sustainable manner
- ⇒ Rational financial policy and management of university property
- ⇒ Structured spatial development processes

THE ACHIEVEMENT OF OUR TARGETS WILL BE MEASURED BY:

- the percentage of income from sources other than the basic subsidy
- the number of digitised processes
- the number of elements of the university's real estate resources included in the digital geo-information base
- implementation of an electronic catalogue of available housing stock

The university's resource management is oriented towards maximising the use of its resources in order to provide a stable base for the achievement of its statutory objectives, while implementing strategic optimisation and development activities. The Warsaw University of Technology pays the utmost attention to the rational disposal of allocated resources, which constitute a valuable part of the public good.

Intangible resources

In addition to research laboratories or lecture halls, repositories of publications, data and projects are key resources of the Warsaw University of Technology. In view of the mass digitisation of documents and processes of information circulation, the Warsaw University of Technology is investing in the construction of efficient, integrated and globally connected databases. The internal order of the university, which consists of organisational structures, communication channels, forms of cooperation, management methods and decision-making schemes, reporting and measurement of activity, as well as all processes: research, teaching and administration, is also treated as a strategic resource. The dynamic changes of today's world require the Warsaw University of Technology to operate in an agile mode and within a philosophy of continuous improvement of ways of working, while maintaining respect for academic tradition and the philosophy of open and free science. Of particular importance for the university is further digitalisation, which not only increases the agility of processes, but also opens up new opportunities (e.g. international cooperation, building communities and platforms for collaboration) and allows the risk of the operational model to be reduced (e.g. in a pandemic situation). Moving the life of the academy to the virtual world involves the emergence of new dangers, hence the need to emphasise solutions that ensure cyber security and respect for human rights, including those arising from the protection of personal data.

Material resources

In terms of the management of the university's physical assets, a wide range of needs for the modernisation of the infrastructure of the Warsaw University of Technology has been defined. It concerns the historical substance, faculty buildings, administrative and technical buildings, as well as student dormitories and housing – for university employees, but also for visiting representatives of other universities and organisations. In the coming years, the Development Strategy assumes the streamlining of processes related to the implementation of renovations and new investments, through a comprehensive view of material resources: from an analysis of the condition of the existing infrastructure and the needs of users, through planning and prioritising the investment schedule, to maximising the potential of specific facilities, while ensuring an appropriate level of maintenance funding.

Financial resources

Rational management of the university's finances is a critical factor, allowing it not only to maintain continuity of operations in conditions of economic and regulatory volatility (e.g. price increases and deterioration of salary levels reducing the competitiveness of employers, changes in public procurement processes), but also the implementation of the development investment programme. The Warsaw University of Technology continues to seek non-subsidiary sources of funding, through the commercialisation of research results, grants, paid education and international programmes. In addition to the revenue side, the university is also taking active steps to optimise costs and understand their development trends. Bearing in mind that the basis for efficient financial management is to maintain high transparency in the processes of planning and accounting for funds and to strengthen accountability for budgets at various levels of the organisation, the Development

Strategy assumes the introduction of new methods for creating unit budgets, continuous monitoring of financial performance and professional support for units in financial management.

RESOURCES – strategic and operational objectives, actions

Z1. Shaping modern and effective management of the University in a sustainable manner

1. Improving the University's management model

- a.** Consistent adherence to the principle of managing the University in a democratic, open and transparent manner
- b.** Making the best possible use of the University Council as a body that supports and oversees the university, but also as its ambassador in the economic and administrative environment
- c.** Electing all bodies, representatives and managers as democratically as possible
- d.** Using the opinions and taking into account the views of collegiate bodies and groups of the academic community in all matters and to the maximum extent possible
- e.** Building an efficient administrative and legal apparatus, efficiently relieving the Rector, Deans and staff from time-consuming organisational activities

2. Shaping the organisational and spatial model of the Warsaw University of Technology

- a.** Development of the WUT campus in a manner consistent with the priorities of environmentally friendly architecture and technical infrastructure
- b.** Integrating sustainability standards into all of the University's investments (business, production, construction)

3. Optimisation of the administrative structure and management methods

- a.** Aligning the structure with the university's strategic goals and needs, continuously reviewing the organisational structure for optimal resource allocation, addressing current issues of staff and team availability
- b.** Introducing proven, modern management methods and models at the University, in particular strategic objective management and process management
- c.** Building a culture of leadership - emphasising the supervisor's role in supporting employee development, linking supervisor appraisal to the performance of his/her team
- d.** Conducting ongoing monitoring of the effects of the changes implemented, including staff satisfaction levels

4. Pursuing widespread digitisation of resources and management processes

- a.** Implementation of electronic document management
- b.** Expansion and improvement of IT tools supporting management processes
- c.** Provision of an efficient academic EDUROAM network in all units of the university

- d. Widespread introduction of mLegitymacja – mobile equivalents of student, doctoral and employee ID cards
- e. Gradual, consistent introduction of a centralised system for managing access to premises
- f. Continuous monitoring of the level of security of information systems and websites, creation of a system for immediate response to threats

5. Improvement of internal cooperation and increased exchange of experience

- a. Creating platforms for collaboration – in the form of groups, meetings or common goals
- b. Implementing a system for sharing the work and activities of individuals
- c. Development of an internal internship programme (exchange of people within jobs)
- d. Developing mechanisms to enable the creation of task teams

Z2. Conducting a rational financial and property management policy of the University

1. Maximising the level of subsidies and increase of income from external projects and funds, including international funds

- a. Conducting a detailed analysis of all factors affecting the level of subsidies and costs of the university's activities
- b. Increasing the share of external funding in the revenue structure (from projects, research services, paid education, etc.)

2. Optimisation of costs and budget structure

- a. Introducing new methods of shaping the budgets of the University units, based on a sound analysis of their operating costs
- b. Optimising the university's operating costs
- c. Optimisation of the use of the university's assets and investing free funds

3. Forward-looking and comprehensive investment planning guaranteeing environmental friendliness and comfortable use

- a. Creating a long-term plan for the university's central investments, taking into account current and future development and replacement needs
- b. Implementation of standards for the concept content of any planned investment
- c. Improvement of existing property resources and infrastructure

Z3. Arrangement of spatial development processes

1. Creating tools and funding mechanisms for spatial development planning

- a. Creation of a digital geo-information base covering all real estate assets of the University and a digital model of existing buildings and planned investments

- b.** Development of procedures and introduction of BIM (Building Information Modelling) as a valid standard for drawing up and collecting technical documentation
- c.** Creation of stable mechanisms for financing investment tasks
- d.** Development of a plan for the rehabilitation of historic buildings, taking into account the urgency of conservation and repair, and with a plan for applying for heritage-oriented funding

2. Developing a structured catalogue of tasks and its continuous update in the context of monitoring needs

- a.** Development of a plan for the rehabilitation of historic buildings, taking into account the urgency of conservation and repair, and with a plan for applying for heritage-oriented funding
- b.** Forecasting future user behaviour and needs for education, research, dormitory accommodation and other processes affecting facilities of the university
- c.** Creation of a digital database of room occupancy (teaching, laboratory) and declared space requirement of units
- d.** Identifying priority locations and programmes whose development has a significant impact on the functioning of the University
- e.** Creation of an electronic catalogue of available housing stock with term and financial conditions

3. Creating stable mechanisms for financing investment tasks

- a.** Defining the scope of central investment activities (in relation to individual unit development plans) and a gradual development of a dedicated fund for these activities
- b.** Creation of a fund for investment preparation that will allow studies to be conducted, develop projects and apply for external funding

Resolution no. 87/XLIV/2000

of the Warsaw University of Technology Senate of 13 December 2000

on the *Mission of the Warsaw University of Technology*

The Senate of the Warsaw University of Technology, acting upon § 46 section 1 of the WUT Statute, hereby adopts the document entitled the *Mission of the Warsaw University of Technology*, included in the annex hereto.

The Senate decides that the *Mission of the Warsaw University of Technology* will be published and shall enter into force on 4 January 2001 – on the 175th anniversary of the opening of the Preparatory School for the Polytechnic Institute.

Secretary of the Senate
Teresa Kotaszewicz, PhD

R e c t o r
Professor Jerzy Woźnicki

Annex to WUT Senate resolution
no. 87/XLIV/2000

MISSION OF THE WARSAW UNIVERSITY OF TECHNOLOGY

The Warsaw University of Technology, so named in 1915, continues the tradition of the Preparatory School for the Institute of Technology set up in Warsaw in 1826 thanks to the efforts of Stanisław Staszic. The University's roots also reach down to the Hipolit Wawelberg and Stanisław Rotwand School of Machine Construction and Electrical Engineering, created in 1895. The many generations of engineers it turned out and its significant contributions to the development of technical sciences earned the Warsaw University of Technology an acclaimed position in the country as well as international renown.

Looking back at the history of the Warsaw University of Technology, we see not only achievements in academic teaching and scientific research but also efforts to steep young people in patriotism and to safeguard the academic community ethos. It was the results of these efforts that led the academic community to repeatedly stand up in defence of the highest of values: the sovereignty of the Republic of Poland, freedom and civic rights, ethical principles and spiritual values nurtured over many centuries of Poland's history. Time and again the Warsaw University of Technology paid a heavy price for its commitment to these values – suffering severe repression, seeing its activities curbed, and even being denied its very existence – and yet it always came back to life, under different names, preserving freedom of thought and never weakening in its attachment to the European university tradition. Today too our community carries on to promote patriotism, solidarity, humanity and tolerance in successive generations of students, cultivating the University's heritage and the best of its traditions, taking care to preserve the unbroken adherence to recognized values and maintain the integrity of its

achievements. Its political impartiality notwithstanding, the Warsaw University of Technology retained its own identity as an institution taking an active part in public life, striving as far as possible to provide the young people of our day with equal opportunities to gain an education.

The Warsaw University of Technology is an academic institution of higher learning, shaping the future social elites – educated people with a broad outlook on the world, conscious of their own views but also understanding and respecting the world views of others. The University not only shapes the minds of its students but also forges their characters, awakens in them the kind of creative attitudes engineers should display, furnishing them not only with knowledge but also with skills. Knowledge is best imparted by those who actively expand it, and skills passed on by those who had to learn them through practice.

Education and scientific research are activities targeting the future, requiring a vision of society and an idea of the individual and collective needs in the times to come. Accordingly, the University must anticipate the roads mankind will be embarking on and the future course of global economic and cultural relations evolution. An academic institution of higher education will be in a position to play the role of an intellectual centre, a place where the increasingly faster changing reality may be taken stock of only if it understands the contemporary world around it and has a vision of the future. The ever greater complexity of the world around us requires technical higher education schools to increasingly transcend their teaching curricula and research the classical boundaries of engineering disciplines, to open up more to exact and natural sciences as well as to sciences dealing with the socio-economic environment. The pace of change we are witnessing has prompted the University to include the promotion of life-long education and the creation of conditions it requires among vital constituents of its mission.

The Warsaw University of Technology is a community of students and teachers. Its unity stood well the test of history. Whenever faced with a challenge – the need to speak out on matters of public import, or looming danger – the community members instantly set aside their mutual animosities, turned a blind eye to differences in opinion, promptly rallied around the same ideas and took united action, placing the common good at the top of their priorities. The sensitivity which naturally characterizes young people requires special emphasis to be placed on fundamental principles and value systems. The community of the University must provide models of good conduct in both academic and public life and must also be exceptionally sensitive to every manifestation of evil and indecency, and especially to every violation of human dignity and every deviation from truth in a bid to further individual or group interests.

In its operations the Warsaw University of Technology attaches special importance to respect for human and civic rights and to academic freedoms. Every member of its community is free to express his or her thoughts, evaluations and convictions while respecting ethical principles and the law. The academic staff enjoy freedom in undertaking research and publishing the results thereof, and are guaranteed a role in drafting teaching curricula. Students of the Warsaw University of Technology share in decision-making with regard to every aspect of their school, and are indeed themselves alone responsible for some areas of its operation.

All students and staff, together and separately, are required to safeguard the good reputation of the Warsaw University of Technology. Such is the tradition of the University, passed on from generation to generation. The Warsaw University of Technology staff are expected to spare no time looking after their undergraduate and postgraduate students, to keep up credibility

of the written and spoken word, and have regard for the reputation of the University when conducting their research. The students are required to honestly apply themselves to their studies and properly represent their University at all times, both within and beyond its walls. The Warsaw University of Technology maintains ties with its graduates, expecting them to demonstrate dignified attitudes in professional and public life, to add to the achievements of the University and to continue upholding its traditions.

Academic activity hinges on creativity in research, teaching and study. Creative attitudes cannot develop and be passed on to future generations without freedom. The Warsaw University of Technology must thus remain an autonomous institution of learning. While invoking the constitutionally guaranteed autonomy of higher education institutions along with the applicable laws and its own statutes as the legal basis of its operation, the University makes use of its autonomy to determine and implement its own strategy and development policy, all the while respecting the requirement of openness in the public domain. Autonomy offers rights but also brings with it obligations and responsibility. Autonomy is the right to independently formulate the University's mission but also the responsibility to provide education in line with the needs and expectations of the public; it means independence in selecting research tasks and responsibility for the property and budget in its trust; finally, it is the right to shape the minds and characters of academic staff and also the responsibility for the weight of the diplomas it confers.

The Warsaw University of Technology works in partnership with other higher education institutions in Warsaw which are particularly close to it in nature. Together, these schools strive to provide a mutually complementary educational and research package. The Warsaw University of Technology also boasts a rich tradition in cooperation with other academic centres in Poland and abroad. Such cooperation is becoming increasingly important in the face of accelerating civilizational changes worldwide. The Warsaw University of Technology, recognized in Europe and around the world, is steadily increasing its contribution to international educational and research projects.

The mission of the Warsaw University of Technology always remains the same: the knowledge and skills imparted to its students and the research it conducts must always serve humankind.