

**EXECUTIVE SUMMARY**  
**ITMO University's Development Strategy for 2021-2030**  
**Open-Source University**

***ITMO's mission and strategic goal***

**Values:** academic freedom, respect for the individual, openness, integrity, and love.

**Mission:** To provide opportunities for the holistic development of individuals and to inspire them to tackle global challenges.

**Strategic goal:** To generate new knowledge, technologies, markets and individual self-fulfillment in a VUCA world.

**Strategic development goal for 2030:** To train world-class specialists for the R&D sector and address the country's scientific, social, and economic challenges, taking into account national goals and priorities, strategic objectives of this stage of the country's and the university's development, and dynamics of market and regional development in order to achieve strong industry and society collaboration and involvement in all phases of the life cycle of knowledge, technologies, and markets.

***ITMO's target model for 2030***

At the heart of **ITMO University's target model** are its **ambitions** and **key qualities**, which define its image for the next ten years.

**ITMO's ambitions for 2030** (focused on institutional changes, as well as external tasks, and ensuring the university's alignment with national goals and priorities):

- **Ambition 1.** Top-level research beneficial for society (ITMO shapes the scientific agenda in rapidly-growing fields and on the scientific frontier, ensures the safety of technologies and the public's trust towards them, prioritizes the humanization of technology; ITMO is to reach Nobel Prize levels of discovery by 2030; ITMO is to become a hub for citizen science);
- **Ambition 2.** Top-level education (This means the best students, the best lecturers, and the best graduates; it means research-based education, an international environment, learning paths built using both internal and external content and educational products from ITMO and its partners, and the university's own Bachelor's and Master's degrees);
- **Ambition 3.** Inspiring environment (first and foremost, it's an environment that attracts talents; ITMO is a university that creates open-source products, services, and

technologies; it is a place for impact entrepreneurship and the validation of breakthrough technologies; ITMO is a university that has the people's trust).

The **qualities of ITMO's target model** that were formed during the previous stage of development and became part of the university's DNA are that it's a research, entrepreneurial, global, and socially responsible university. At this new stage of development **we expand our list of key qualities by adding SPEED** (of decision-making, transformation, and reaction), **OPENNESS** as a tool for cultivating public trust, and **RESULTS for PEOPLE** – meaning that our focus is on meeting people's needs at a given moment in time and changing their lives for the better (at global, community, city, and family levels) using ITMO's technologies.

#### **The goals of ITMO's 2030 Development Strategy**

- *Increasing the university's output and value* to the nation, society, and individuals (through the technologies of strong AI, communications, robotics, information security, personalized health, and digital humanities).
- Forming new markets for products and services in top-priority industries: digital technologies, advanced healthcare, cyberattack prevention, and intelligent logistics and telecommunications systems; providing effective solutions to major challenges using humanities methods.
- Providing staff for scientific organizations, technological development centers, and companies in the real sector of the economy.
- Strengthening ITMO University as a trusted center of expertise through the development of an open environment for science, learning, and the development, verification, and transfer of technologies.

#### **Some qualitative and quantitative properties of the 2030 target model:**

- Share of highly-cited publications (in top-1% journals) – no less than 3% of ITMO's total;
- ITMO researchers are recipients of Nobel Prize-level awards;
- ITMO in Nature Index's top 3 for Russia;
- Young PIs: no less than 20 frontier-focused research labs;
- Successful defenses by PhD students at ITMO in natural and exact sciences amount to at least 5% of the overall national count;
- Unique TRL 7-8 R&D&I are integrated into the Russian digital economy;
- 100 million users of ITMO's products and inventions;
- 6,000 new high tech jobs at ITMO Highpark;

- The ITMO Digital Science platform;
- 4% of ITMO graduates have their own startup or business;
- ITMO Accelerator receives at least 30 international teams every year;
- 25% share of international students;
- Minor programs and micro-degrees (3 million students);
- Hub for open data and services.

### ***Strategic projects for achieving the goals of the target model***

In order to achieve the goals of ITMO's Development Strategy, ITMO University will launch four strategic projects.

#### **Strategic project 1. ITMO.Impact**

**Aim:** To train, in collaboration with ITMO's partners, specialists, as individuals and in teams, capable of quickly advancing from research to engineering to entrepreneurship and to ensuring their products' impact on the society and economy. The key qualities are the SPEED of development and adoption of innovations, as well as the OPENNESS of all processes so as to gain the trust of individuals, the public, and the industry.

#### **Strategic project 2. Scientific Breakthrough**

**Aim:** To produce breakthrough results at the Nobel Prize level and to implement full-cycle innovative projects with a focus on direct integration of IP, resulting in a direct, measurable impact of the university's performance on Russia's social and economic development. ITMO's top-priority R&D fields up to 2030 will include existing fields of high scientific and technological prominence as well as new high-potential fields, including transdisciplinary ones, that are designed to provide unique knowledge and form new markets.

#### **Strategic Project 3. Highly Personalized Value-Based Education**

**Aim:** to attain a new quality of education at ITMO University – one that results in a new generation of specialists. This is manifested in the fulfillment of students' individual potential, the formation of their unique competency profile, and a high level of personal achievements within the context of a rapidly-changing world. Such quality of training is owed to a combination of fundamental approaches, transparency, accessibility, and continuous renewal of education ("6G education") – as well as targeted support by employers and attention to the demands and needs of individuals, the public, and the state.

#### **Strategic project 4. Well-Being**

**Aim:** to create a positive environment that promotes the all-round development of the members of ITMO.Family and provides an optimal balance of emotional, intellectual, physical and creative well-being through programs that support and promote sports and a healthy lifestyle, maintain a comfortable environment, promote a culture of conscious consumption, and strengthen social connections and future careers. These programs are also to be shared with the higher education community and the public.

### ***ITMO's M-platforms: a new tool for implementing the development strategy and achieving the target model***

In order to integrate education, research, technology, and innovation at the university, as well as to develop connections with scientific organizations, real economy businesses, development institutes, professional associations, and social organizations, ITMO University is creating a dynamic system of functional partnerships – M-platforms. The need for this new approach is due to qualitative changes in the university's development strategy which prioritizes the advancement of promising high-tech markets through the implementation of high-tech R&D&I and adoption of new technologies through the establishment of new collaborative relationships.

The initial stage of the development strategy will include five M-platforms.

#### **(1) Next-Gen Cyberphysical Systems (CPS 2.0) M-platform**

**This M-platform focuses on** the development and integration of autonomous systems for the monitoring and control of remote objects and distributed infrastructure using a new mathematical (AI) and physical (photonics and new materials) basis. The development of this field makes it possible to automate a wide variety of routine, unsavory, and dangerous activities as well as processes that call for significant amounts of physical movement.

**Consortium founders and members:** CSRI Elektropribor JSC, SMARTS-Quanttelecom LLC, MTS Artificial Intelligence Center LLC, Sberbank PJSC, Gazprom Neft PJSC, Russian Railways JSC, RUSNANO Management Company, Fund for Infrastructure and Educational Programs, Committee on Informatization and Communication of St. Petersburg, Internet Initiatives Development Fund, European XFEL, Vavilov State Optical Institute, and the General Physics Institute of the Russian Academy of Sciences.

#### **(2) Cognitive Informatics M-platform**

**This M-platform focuses on** transforming key processes in science, industry, business, and the social sector through the systematic adoption of strong AI technologies. The development of this field will make it possible to create systems capable of learning independently, adapting to changes in the environment, as well as demonstrating human creativity when approaching practical tasks.

**Consortium founders and members:** National Center for Cognitive Research, MTS Artificial Intelligence Center LLC, Center for Speech Technologies LLC, Mail.Ru LLC, JSC Diakont, Gazprom Neft Research Center LLC, Open Code LLC, JSC Er-Telecom Holding, Almazov National Medical Research Center, Siemens LLC, PJSC Sberbank, Gazprom Neft PJSC, RUSNANO Management Company, Committee on Informatization and Communication of St. Petersburg, Internet Initiatives Development Fund, Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences, Ivannikov Institute for System Programming of the Russian Academy of Sciences, Far Eastern Federal University, Yaroslav-the-Wise Novgorod State University, Lobachevsky State University of Nizhny Novgorod, STANKIN Moscow State University of Technology, INO APE Research and Education Center JetBrains, and Management Company Rocket Group.

### **(3) Human. Nature. Technology M-platform**

**This M-platform focuses on** the integration of convergent technologies, applied genomics, and digital and targeted technologies that deal with personalized health monitoring and control. This focus area concerns the economically and socially vital matters of longevity, health, quality of life, environment, and sustainability.

**Consortium founders and members:** Innovation Centre Biryuch CJSC, Heineken Breweries LLC, FMBA, Tehno LLC, Gazprom Neft PJSC, RPC Helix LLC, RUSNANO, and the Fund for Infrastructure and Educational Programs.

### **(4) Information and Functional Security (IFS) M-platform**

**This M-platform focuses on** ensuring fact-driven trust towards complex intelligent systems that function via remote control or a certain level of autonomy. The platform is devised as a center of excellence specializing in the IFS of innovative products and in support of market integration of high-TRL technologies, products, and services.

**Consortium founders and members:** NIIAS JSC, Rostelecom PJSC, Gazprom Neft PJSC, LLC SPA StarLine, St. Petersburg Federal Research Center of the Russian Academy of

Sciences, ARSIB, Committee on Informatization and Communication of St. Petersburg, and the Fund for Infrastructure and Educational Programs.

### **(5) Arts and Sciences M-platform**

**This M-platform focuses on** forming a positive image of the future and fostering individual and public trust towards technologies, the humanization of technologies, and the implementation of the Human Digital concept. The platform's development will enable the emergence of new research in the fields of digital music, digital literature, and narrative design.

**Consortium founders and members:** The State Russian Museum, The State Museum of the History of St. Petersburg, The Institute of Russian Literature (Pushkin House) of the Russian Academy of Sciences, Cyland Foundation Inc., Committee on Informatization and Communication of St. Petersburg, and the State Museum of the History of Religion.

### ***Institutional changes at ITMO University***

#### **In the field of education:**

- A swift integration of digital and flexible educational technologies and approaches in order to boost students' attention and comprehension;
- New tools for improving the quality of education and educational content;
- Accelerated development of entrepreneurial culture and environment.

#### **In the fields of science and innovation:**

- ITMO Digital Science – organizing research, development, and innovation based on new principles in the digital realm;
- Implementing unique R&D&I for the needs of the Russian economy;
- Shifting the focus of the innovation policy towards three new areas: 1) the transfer of knowledge for a specific result; 2) innovation openness – a free database of major IPs for partners; 3) a focus on private investments and the initiative of graduates and staff; an emphasis on IP creators rather than their IPs;
- Staffing research work by training and increasing the number of PIs.

#### **In youth policy:**

- Shaping a conscious approach to one's life path and a readiness to make independent meaningful choices and take responsibility for one's own decisions;
- Integration of extracurricular activities into the educational process;

- Creation of opportunities for the formation of well-rounded and socially responsible individuals inspired by Russian values and historical and cultural traditions.

#### **In human capital management:**

- Attracting new ITMO.Family members – development of the university's HR brand, relocation and talent development programs, engaging students in teaching work (mentors), etc.;
- Creating favorable work conditions – distributed work, service support, adaptation programs, horizontal connections and collaborative initiatives, an environment and infrastructure to support children and families of staff, internship programs, sabbaticals for ITMO teaching staff, etc.

#### **In managing the campus and infrastructure:**

- To create a fluid environment that allows areas to be used for a range of purposes;
- To make the campus increasingly accessible to non-residents (tourists and citizens);
- To harmonize the development of two campuses – a distributed urban campus and the greenfield project ITMO Highpark;
- To develop the university's material and equipment pool and ensure ease of access to the university's resource centers and their convergence and cross-platform availability;
- To follow the green campus philosophy and comply with environmental standards and adhere to international Green Zoom standards;
- To develop customized campus services: respond swiftly to residents' needs, maintain a welcoming, comfortable, clean, and modern environment;
- To ensure the safety of campus residents and the rising amounts of their data;
- To develop the smart-campus-in-a-smart-city concept and synchronize the electronic services of the campus, region, country, and partners.

#### **In digital transformation:**

- Digital culture;
- The digital ITMO.Family community – a collaborative platform for the interaction of digital avatars;
- Data-driven management;
- Hybrid infrastructure – a seamless integration of physical and digital realities within the phygital campus concept;
- Information and cyber security.

#### **In open data policy:**

- Design of an open data publication standard and algorithms, regular data renewal;
- Analysis of licensing and legal issues linked to applying open data policy;
- Establishment of clear and understandable rules and mechanisms for operating with open data that are agreed upon with partners and participants of the data generation process;
- Creation of services and infrastructure (a gateway for the general public) that provide access to data stored on ITMO's digital platform;
- Promotion of the open code principle and creation of sought-after repositories of raw data and algorithms;
- Integration with existing data sharing and repository platforms (i.e., GitHub, IPChain, etc.);
- Involvement of the public in the university's open projects;
- Popularization of ITMO's research results and the practice of public data access, including through social media.