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**IT DEVELOPMENT PROSPECTS IN THE REPUBLIC OF BELARUS  
WITHIN THE GLOBAL INNOVATION MARKET****S. PAPOVA, R. SARVARY**  
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*In this article, the author makes review for the current situation of IT development in the Republic of Belarus. There are analyzed the Global Innovation Index, organizations and program documents that regulate the activities of the IT sector in the Republic of Belarus,*

The history of the information technologies development in the Republic of Belarus goes back decades. Back in Soviet times, a strong school of mathematicians, engineers, and programmers was created in the country. And, of course, these specialists became the driving force behind the most progressive projects and the introduction of innovations in all sectors of the economy. In sovereign Belarus, the IT industry is the most dynamically developing industry, and every year it turns into an increasingly powerful driver of the country's economy, a sphere of strategic importance [1]. As a result, the contribution of the production of goods and services related to ICT to the creation of added value is increasing within the development of information and communication technologies. The share of gross value added of the ICT sector in GDP of the Republic of Belarus increased from 2.8% in 2011 to 5.2% in 2018 [2].

In Belarus, 75 thousand students (24 percent of the total number of university students) study in STEM specialties, including about 70 IT specializations. Graduates of the BSUIR account for 35.4 percent of employees of HTP resident companies [3]. It can be noted that BSU has a concept of the future IT University: the country's leading university is ready to create it on the basis of the faculty of applied mathematics and computer science as an independent legal entity in its structure. Moreover, it is assumed that the founders will be the BSU, the BSUIR and the administration of HTP [4].

The main suppliers of IT specialists in Belarus (according to the HTP, 2017):

- The Belarusian State University of Informatics and Radioelectronics – 37 %,
- The Belarusian State University – 27 %,
- Grodno State University named after Yanka Kupala – 6 %.

Since 2016, in Belarus, on the initiative of HTP resident companies and with the support of the Ministry of Education, a project has been launched to train schoolchildren of grades 2-6 in programming skills in the Scratch environment. In 2018, it was announced the creation of an information technology company in the Armed Forces of Belarus. Its goal is the development of software, special and applied programs in conjunction with units of the Military Academy, other scientific and educational institutions. Among the directions for the development of an IT company are military operations modeling, navigation support, and automated control and radar systems [1].

In 2017, a project was formed - the Science and Technology strategies for 2018-2040. This project formulates key priorities for a given period on scientific and technological development.

The implementation of this Strategy involves three stages:

1. 2018-2020- updating the backlogs of the scientific and technological sphere, taking into account the existing structure, the country's positions in the world system of division and cooperation of labor, goals of socio-economic development;
2. 2021-2030-creation of system conditions for digital intellectual modernization of traditional industries and the choice of growth points for the knowledge-based economy of Belarus;
3. 2031-2040-building competencies in the target segments of the intellectual economy and entering them into leading world positions.
4. By 2040, Belarus should gain a new quality of economic growth and reach a world level of competitiveness based on the processes of intellectualization and digitalization of production, the development of high-tech and knowledgebase services based on the achievements of domestic science.

Strategic guidelines for the scientific and technological development of Belarus at the time from 2018 to 2040:

- Large-scale modernization of the industrial and sectoral structure of the economy based on the implementation of scientific solutions related to higher technological structures in its technological basis;

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- Increased participation of Belarus in global innovation processes, taking into account the reduction in the life cycle of generations of equipment and technological structures while ensuring the implementation of the country's priorities and compliance with national security conditions [5].

The National Strategy for Sustainable Development of the Republic of Belarus till 2030 is also currently in force. The strategic goal has two stages of its implementation:

1. The first stage – 2016–2020 The main goal is the transition to a qualitatively balanced economic growth based on its structural and institutional transformation, taking into account the principles of a green economy, the priority development of high-tech industries, which will become the basis for increasing the country's competitiveness and the quality of life.

2. The second stage – 2021–2030 The main goal is to maintain stable development sustainability, based on the growth of spiritual and moral values and the achievement of high quality human development, the accelerated development of high-tech industries and services, the further development of a "green economy" while preserving natural capital [6].

It should be noted that this strategy provides for the country's transition to the 6<sup>th</sup> technological way. Fundamental research in the field of bio-, nanotechnology, universal communication systems, information security comes to the fore. The basis is technological development [7].

For productive way of economic and social development there are several legal acts that mostly regulate an IT sector in Belarus:

1. Decree №8, On the Development of the Digital Economy. Its goals are not only attracting global IT companies and maintaining a unique business climate for representatives of the field, but also creating a comfortable environment for people's lives in the face of rapid technological growth [1].

2. The SCST is a republican government body that implements the function of state regulation and management in the field of scientific, technical and innovative activity, as well as the protection of intellectual property rights [8].

The institutional structure is formed from the following government bodies and organizations:

- Council for the Development of the Information Society under the President of the Republic of Belarus;
- Operational and analytical center under the President of the Republic of Belarus;
- Ministry of Communications and Informatization of the Republic of Belarus;
- National Academy of Sciences of Belarus;
- State Military Industrial Committee of the Republic of Belarus [9].

ICT accounts for 10.5% of GDP in the services sector and 5.1% of the total GDP of Belarus.

From 2005 to 2016, exports of IT services and products grew 30 times, and the share of IT exports in total exports of goods and services increased from 0.16% to 3.25%. In 2017, the export of OEMs for the first time in its history exceeded \$ 1 billion: exports amounted to \$ 1.025 billion and grew by 25% (in 2016 - \$ 820 million) with the import of services of \$ 5 million. The total production volume of the High-Tech Park amounted to more than \$ 1.08 billion, an increase of 20% compared to 2016. The main sales of Belarusian IT-companies are in foreign markets. More than 90% of the software produced in the OEM is exported: 49.1% - to European countries, 44% - to the USA and Canada, 4.1% - to Russia and other CIS countries. Six HTP resident companies were included in the list of the best outsourcing service providers (2017 Global Outsourcing 100 ranking): Bell Integrator, Ciklum, EPAM, IBA Group, Intetics and Itransition. 10 companies from the ranking of the largest software companies in the world Software 500 have development offices in Belarus: EPAM (107), Bell Integrator (281), IBA (281), Itransition (368), Coherent Solution (393), SoftClub (409), Artezio (416), Intetics (419), Oxagile (456), IHS (482) [1].

The development of the world economy at the beginning of the XXI century will be determined by the following trends:

1. Strengthening globalization, international integration.
2. Increased competition in world markets and the depth of differentiation of countries in terms of economic development.
3. The growth of global migration processes.
4. The increasing role of human capital.
5. Acceleration of the pace of scientific and technological progress.
6. Depletion of world reserves of natural resources.
7. Strengthening the significance and impact of the environmental component on the dynamics of economic growth.

The expected results of the implementation of the objectives in the context of the three main components of sustainable development should be:

- Increase in life expectancy at birth to 77 years;
- GDP growth in 2016–2030 by 1.5–2.0 times;
- An increase in per capita GDP by 2030 to \$ 28–36 thousand at PPPs (versus 17.6 in 2013);
- Increase in research and development costs - up to 2.5 percent of GDP in 2030;
- Growth in the share of environmental protection costs - up to 2-3 percent of GDP in 2030;
- Belarus position in the International rating on environmental performance index - not lower than 25 places [6].

The international index “Global Innovation Index” contains detailed data on innovation activity in 130 countries and territories of the world.

Eighty indicators, which are analyzed, allow you to get a general idea of innovation, including in terms of the political situation, the development of education, infrastructure and business [10].

In table 1 we derived the rating of the country from 2015 to 2019.

Table 1. – Ranking of countries in the Global Innovation Index for the period from 2015 to 2019

Year Place	2015	2016	2017	2018	2019
1	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland
2	Great Britain	Sweden	Sweden	Netherlands	Sweden
3	Sweden	Great Britain	Netherlands	Sweden	USA
4	Netherlands	USA	USA	Great Britain	Netherlands
5	USA	Finland	Great Britain	Singapore	Great Britain
6	Finland	Singapore	Denmark	USA	Finland
7	Singapore	Ireland	Singapore	Finland	Denmark
8	Ireland	Denmark	Finland	Denmark	Singapore
9	Luxembourg	Netherlands	Germany	Germany	Germany
10	Denmark	Germany	Ireland	Ireland	Israel
53	Belarus				
79		Belarus			
88			Belarus		
86				Belarus	
72					Belarus

Source: Authoring based on data [12].

After analyzing the data in table 1, we came to the conclusion that Switzerland 5 times has taken the first place in the ranking of GII. According the GII 2018, the key factors for Switzerland's innovative and sustainable success are its high-class rules in the field of patents and intellectual property, high-tech production, excellent universities and high investment in research, and development [11]. Taking into account our declining in the Global Innovation Index we should pay much attention to the international way of development in an IT sector and to try using it in Belarusian reality as well if it's possible.

Nevertheless, based on the analysis, we can conclude that currently in Belarus the IT is the most dynamically developing industry, and every year turns into an increasingly powerful engine of the country's economy, a sphere of strategic importance. It should be noted that the state education system, which, introducing new IT specialties in the country's universities, makes a huge contribution to the development of the IT in the Republic of Belarus. The export of IT services and products is developing very rapidly, which leads to an increase in GDP and the strengthening of the country's economy as a whole.

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