МЕТАВСЕЛЕННАЯ: ПРОТИВОРЕЧИВОСТЬ КОНЦЕПЦИИ КАК НОВЫЙ ВЫЗОВ ДЛЯ СТУДЕНТОВ ТЕХНИЧЕСКИХ ВУЗОВ

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В работе предпринимается попытка осмыслить основные подходы к определению понятия «метавселенная», а также связанных с этим технологических разработок. На основе авторского опросника изучается осведомленность студентов университета о данном явлении, его предполагаемых преимуществах и недостатках для решения задач в сфере образования.

Ключевые слова: метавселенная, виртуальный мир, технологии дополненной реальности (AR) и виртуальной реальности (VR), осведомленность студентов.

METAVERSE: CONTROVERSY OF THE CONCEPT FOR UNIVERSITY STUDENTS

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The article presents an attempt to reveal the main existing approaches to the definition of the concept of "metaverse" as well as related technological developments. On the basis of the author's questionnaire the awareness of university students on this phenomenon is studied with consideration of its prospective advantages and disadvantages for educational applications.

"Metaverse" is considered to be the latest buzzword in technology and business. The term "metaverse" is made up of two words, from the Greek word "Meta" (beyond) and the English one "universe". Having stated his company rebranding to Meta and intention to focus its future on the upcoming "metaverse", Mark Zuckerberg renewed interest to the concept "metaverse" late year 2021. It is assumed that in the next 10 years the metaverse will have at least a billion users, and a new ecosystem for its expansion will create millions of jobs in a couple of years both for developers of software products and services, and for content authors [3].

For the first time the concept of metaverse was introduced in the Neal Stephenson's book "Snow Crash" in 1992 to describe the virtual world in which people run away from the gloomy reality. Though this concept has a fictional meaning, it is viewed as a dimension like "the future of the internet" or time.

There is no concern on defining "metaverse" among researchers. Some treat it as the next-generation social media platform, others as a version of the internet or even as a specific type of technology [4]. It is agreed that "metaverse" provides gripping alternative realm for human sociocultural interaction [2].

Virtual worlds (VWs) are persistent   permanent online computer-generated environments where multiple users in remote physical locations can interact in real

time for the purposes of work or play. VWs worlds constitute a subset of virtual reality applications, a more general term that refers to computer-generated simulations of three-dimensional objects or environments with seemingly real, direct, or physical user interaction. It is expected that a set of independent VWs worlds should move to an integrated network of 3D VWs or Metaverse, and it is a major challenge for VW developers [2].

The concept of metaverse is intertwined with artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) technologies. The metaverse foundation is supposed to be Web 3.0 to support a user-owned cryptocurrency and data economy [4].

Education-based activations in the virtual world, cryptocurrencies and shopping with them, internet-integrated games and digital-based interactions such as virtual concerts, meetings, building a virtual city or buying land in this game, online shopping sites can be perceived as a metaverse. The metaverse is dominated by augmented reality, with each user controlling a customized version of oneself in this virtual world known as an avatar.

The relevance of this notable innovation set a task to find out students' awareness and enthusiasm for the concept of metaverse. In the framework of study, 124 second-year students of two universities, the Bonch-Bruevich Saint Petersburg State University of Telecommunications (SPbSUT) and Saint-Petersburg State University of Information Technology, Mechanics and Optics (ITMO), whose future profession is related to infocommunication technologies, technological management and innovations were surveyed by means of the questionnaire [5] with the following results (see Figure 1):

➢ nearly the half of students (47 %) have a clear understanding of the concept, while 37 % of respondents have only heard the term without knowing the meaning;

➢ 14% of students without understanding of the concept demonstrate a strong intention to study it;

➢ only 1 % represents their lack of total interest to this phenomenon;

➢ another 1 % has a personal experience of interaction in metaverse environment.

If to differentiate students' polling   from SPbSUT and ITMO, there is a slight discrepancy between them, *e. g.* ITMO students have heard the term a bit more often. However, they have not tried it personally whereas the students from SPbSUT have got some personal experience as their digital avatar.

Осведомленность студентов о концепции «метавселенных» (metaverse)

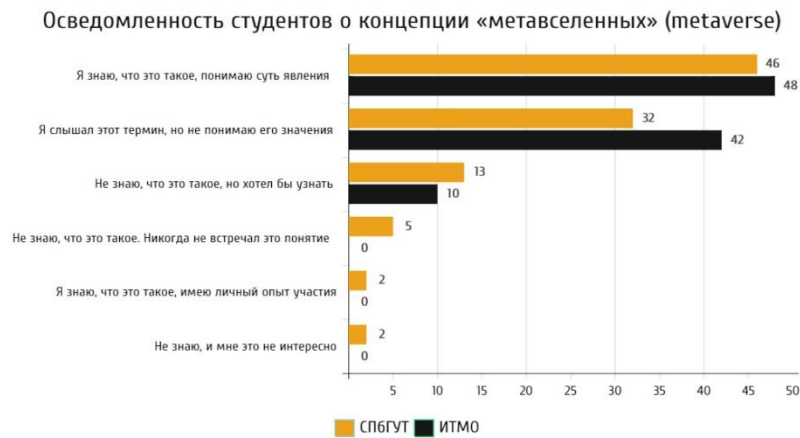|	СПбГУТ	ИТМО
Я знаю, что это такое, понимаю суть явления	46	48
Я слышал этот термин, но не понимаю его значения	32	42
Не знаю, что это такое, но хотел бы узнать	13	10
Не знаю, что это такое. Никогда не встречал это понятие	5	0
Я знаю, что это такое, имею личный опыт участия	2	0
Не знаю, и мне это не интересно	2	0

Fig. 1. University students' awareness on Metaverse.

Regarding the predictive potential of metaverse as a facility for educational purposes the majority of students from both universities (64 %) are not sure about it; although one third (30 %) find more benefits, and 6 % express concerns about threats as it may be seen on figure 2. In addition, some believe this phenomenon will neither harm nor benefit.

- More threats — 6%
- No answer — 64%
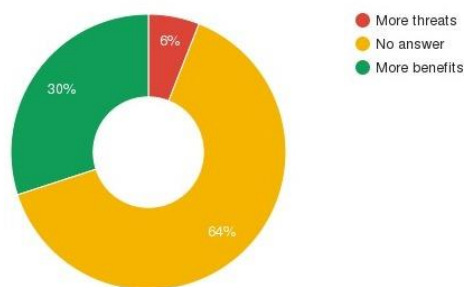- More benefits — 30%

Fig. 2. Students' attitude to metaverse for educational purposes.

Attractive features and shortcomings of the metaverse mentioned by the university undergraduates are presented in Table 1.

Table 1. Pros & cons of the metaverse

Pros	Cons
✓ provide more opportunities f communication;	✓ require special high cost equipment and unified platform solutions and their cross-

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✓ broaden one's horizons; ✓ simplify the search for information ✓ meet real-world locations; ✓ testify to technological progress.	compatibility; ✓ carry various security risks for password attacks / data privacy / online theft (and other cybercrimes); ✓ develop escapism and user addiction.

It seems Metaverse can offer several opportunities for higher education. One of the applications is simulation and the development of role-playing environments. Simulation and immersion can be efficient tools through online education creating immersive scenarios [1].

Some drawbacks are taken into consideration concerning those students with disabilities as hearing and vision problems. They would need special accommodation and might not be able to use it. Moreover, metaverse addiction is a real possibility. Finally, if there is no access to metaverse education due to the lack of VR headsets, it is limited to a selected number of students.

Thus, contemporary virtual worlds are now complex immersive environments with increasingly realistic 3D graphics, integrated spatial voice, content creation tools, and advanced economies. These progressive capabilities enable them to serve as elaborate contexts for work, socialization, creativity, and play and to increasingly operate more like digital cultures than as games. This area is stressed to require further consideration and highly qualified specialists as for its development a huge stack of breakthrough technologies will be needed such as cognitive digital platforms, optical AR / VR devices, new types of controllers to transfer user actions from physical to virtual reality, 5G and newer communication networks, cybersecurity technologies, and much more.

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