4.2 METAHUMAN AND OTHER INDUSTRIES

Metahuman systems will change many facets of how we think about organizations and work. They will push information systems research in new directions that may involve revising the field's research goals, methods, and theorizing [9]. With Metaverse, many companies have started to explain their Metaverse strategies. Companies can open virtual offices in Metaverse, publish company advertisements, and hold their meetings virtually. Some companies have begun to announce their future projects. One of them belongs to the company Niantic. Niantic announced in November 2021 that they had developed a planet-scale AR engine called the "Lightship" [10].

With metahumans, we will be found in many virtual environments realistically. We will be able to visit virtual cities. We will attend events such as theatre, concerts, and sports and meet our friends. It is thought that metahumans will contribute the most to the business world. Because we will be able to attend our meetings with our own Metahuman, we will interact in this way with our digital copy, transferring our gestures in real-time. With too many such features, Metahumans are effectively coming to the fore in the business world.

4.3 METAHUMAN AI

Today, high-tech artificial intelligence causes innovations and developments in many areas of our lives. Artificial intelligence has made significant progress in health, medicine, military, space, informatics, communication, industry, and similar fields [11]. Artificial intelligence is a field where the most severe and intensive studies are carried out globally [12].

Metahumans ushered in a new AI era in the 2020s. There have been countless opportunities with artificial intelligence models, but it has brought up the issue of controlling artificial intelligence, which has been talked about for a long time. It is not yet predictable to what level the artificial intelligence technology of metahumans will advance in the future. Still, these artificial intelligence models will significantly impact our future lives and change our lives [13].

5 Omniverse: Another Virtual Universe

Omniverse is a metaverse populated by Industrial Digital Twins, autonomous (virtual) robots allowing a company to create in the virtual space with all the constraints and details of the physical space [14]. Omniverse was developed for industry operations. It is used in the business world. It appears effectively in subjects such as entering the business field, understanding the process, and designing services. It is a platform created for people who want to collaborate virtually. It is a working environment created by physically simulating real-time. As shown in Fig. 4, we will attend meetings with our very realistic digital people with Omniverse avatars. This avatar, which has many features, can simultaneously speak in different languages [15].

Fig. 4 Omniverse Avatar [16].

6 Blockchain: Large Network That Cannot Be Changed

Blockchain technology enables functions in networks to be performed in a decentralized manner and at lower costs. Blockchain is a database system made up of interconnected blocks. Any information involving a transaction

can be processed into this database. New transactions are added to the previous block, and a new block is created. These blocks are linked chronologically. In this way, the new incoming block also increases the security of the records by verifying the information in the previous blocks. Everyone in these blocks is encrypted and therefore has a distributed structure. Thus, this change becomes almost impossible as changing historical records in this network requires modifying other users' records. The larger the network, the more individual records it has, and the more secure it becomes. This eliminates the verification and auditing costs mentioned above and provides an accountable and reliable structure.

To put it more simply, let's think of the blocks in the blockchain as ledgers. Have a copy of these notebooks distributed to everyone on the network. Each new transaction is recorded in these books simultaneously, so the records of the transactions are kept in many places, not in one or a few places. Since there is only one record in a central structure, it is a severe cost to ensure the security of these records. However, since it is impossible to change all records in the decentralized blockchain structure, a more secure system is created [17]. The representation of the blocks is shown in Fig. 5.

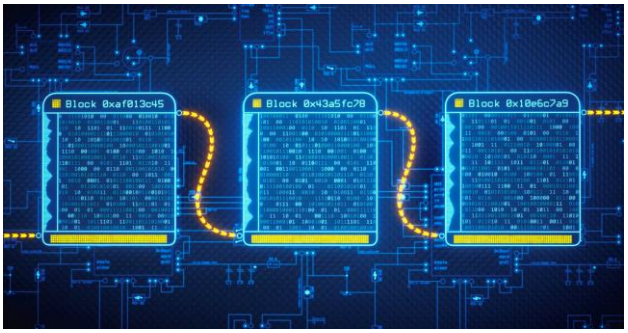

Fig. 5 Representation of blocks [18].

7 NFT: Unique Identifier

NFT, which can also be expressed as a type of crypto money, can represent a valuable asset, unlike other crypto money types, apart from classical definitions. For example, goods that exist in the digital environment and belong to a person can be classified as NFT. In this sense, NFTs view value as a commodity or product rather than a cryptocurrency. One of the main reasons for their similarity with cryptocurrencies is that NFTs are tied to a blockchain-based structure like Bitcoin or Ethereum. NFTs are items that are mostly considered collectibles. For example, playing cards, which were very popular in the past, can be seen as NFTs in the digital environment. Another difference between NFT from cryptocurrencies is that it has a digital signature that cannot be copied; it is a unique work of art. It stands for 'originality' in the digital world [19].

With Metaverse, an exhibition can be created where these works can be put up for sale, and NFTs, digital artifacts, can be purchased from this exhibition in which digital twins participate. Fig. 6 shows a collage by digital artist Beeple called Everydays: The First 5000 Days.


Fig. 6 Everydays: The First 5000 Days [20].

8 Web 3.0: Decentralized Web

The Internet first started with the Web 1.0 revolution, and Web 1.0 was a process that lasted from 1990 to 2005 when 90% of users were just consumers. The Internet, which started its development with Web 1.0, then continued with Web 2.0. It is the point where Internet users come to a position where they can cut off unilateral communication and change the content with Web 2.0. [21]. Web 2.0 is a process that includes today's users, where users are interactive, and this interaction is realized through platforms, where users can be both

consumers and producers. With the developing technology and emerging new requirements, the idea of making websites understandable and using them by machines has emerged [22].

Therefore, Web 3.0 is an approach that enables information to be defined and interpreted not only by humans but also by computers through artificial intelligence. Artificial intelligence is one of the most intense and intensive studies globally [12]. With artificial intelligence and technology development, it has become much easier and faster to reach the desired information by pressing just a few keys [11]. However, it is not enough to apply artificial intelligence to facilitate users' work and provide a high-performance experience [1].

Web 3.0 is a decentralized system, and means agents cannot control the data user. According to some, Web 3.0 is an application that has become smarter and faster with the introduction of artificial intelligence, and according to others, it is an application that allows processes to be managed automatically by the computer. The most crucial point here is that meta-data can be created to manage all data so that computers can make even complex queries and reach the desired correct information. Web 3.0 is a new process that we haven't fully transitioned to yet. For this reason, studies on Web 3.0 and new technologies related to Web 3.0 are critical.

In Web 2.0, applications are referred to as apps. In Web 3.0, applications are called dapp, that is, decentralized application. With these dapps, wallet logic is used instead of applications to browse the internet. In other words, only the content producer will be paid for the content produced, and no other platform or person will be able to profit from these applications.

Metaverse and Web 3.0 are highly related entities. Web 3.0 creates an infrastructure for the Metaverse. VR devices are used both for the Metaverse and can accelerate the transition to Web 3.0. In this process, some of the important methods are that the system is open source, the infrastructure is reliable and the communication is verifiable. Both institutions are important as the future of the internet world.

Fig. 7 shows the future of search. Web 4.0 is a concept that is still developing and there is no consensus on how it should be defined. Machines that can move in parallel with the human brain will create stronger interfaces and work to give the best results. To explain briefly, machines that can read and understand the content on the internet will enable us to achieve the highest quality results with the highest performance.

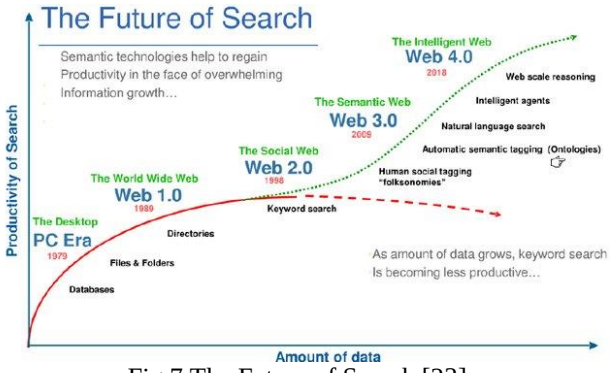

Fig.7 The Future of Search [23].

9 Conclusion

As a result, many technologies that directly affect our present and shape our future have been examined in this study. It seems clear that these technologies will be the basis of the significant changes that await us in the future. It is seen that many assets such as virtual universes, virtual digital twins, virtual values are essential, and other assets in today's world will gradually become virtual and step into a virtual universe. At this point, technologies such as Metahuman, Digital Twin, Omniverse, Blockchain, NFT, Web 3.0, Artificial Intelligence, Augmented Reality, and Virtual Reality will always be important. In addition, it is seen that we will encounter many different and new technologies in the future. While adapting to change provides an advantage in this process, it is not known exactly what disadvantages these technologies will have in the future. It is very important to adapt to these technologies in any way. The future is developing in this direction.

References:

[1] Nalbant, K. G., & Uyanık, Ş. (2021). Computer Vision in the Metaverse. Journal of Metaverse, 1(1), 9-12.

[2] Joshua, J. (2017). Information Bodies: Computational Anxiety in Neal Stephenson's Snow Crash. Interdisciplinary Literary Studies, 19(1), 17-47.

[3] Artlabs. (2021). Metaverse 101: What It Is & Why You Should Care. Access Date: 24/04/2022. https://artlabs.ai/blog/metaverse-101-what-it-is-why-you-should-care/

[4] Cortes M.S. (2021). What is the metaverse? A (kind of) simple explainer. Access Date: 24/04/2022. https://mashable.com/article/what-is-the-metaverse-explainer.

[5] Dick, E. (2021). *Public Policy for the Metaverse: Key Takeaways from the 2021 AR/VR Policy Conference*. Information Technology and Innovation Foundation.

[6] Bea S. (2021). Spatial audio becomes keystone for metaverse; attracts content giants. Access Date: 26/04/2022.https://www.kedglobal.com/metaverse/newsView/ked202107080010

[7] Chopra, D. (2019). Metahuman: Unleashing your infinite potential. Harmony.

[8] Unreal Engine. (2021). Access Date:26/04/2022. https://www.unrealengine.com/en-US/metahuman-creator.

[9] Lyytinen, K., Nickerson, J. V., & King, J. L. (2021). Metahuman systems= humans+ machines that learn. Journal of Information Technology, 36(4), 427-445.

[10] Silberling, A. (2021). Niantic reveals its vision for a 'real-world metaverse,' releases Lightship AR Developer Kit. Access Date: 26/04/2022. https://techcrunch.com/2021/11/08/niantic-reveals-its-vision-for-a-real-world-metaverse-releases-lightship-ar-developer-kit/.

[11] Nalbant, K. G. (2021). The Importance of Artificial Intelligence in Education: A short review. *Journal of Review in science and engineering*, *2021*, 1-15.

[12] Nalbant, K. G. (2021). The applications and position of artificial intelligence in health and medicine: a short review. Journal of Management and Science, 11(4),4954.http://jms.eleyon.org/index.php/jms/article/view/508.

[13] Rothman, D. (2021). The Rise of Metahuman AI. Access Date: 11/02/2022. https://discover.bot/bot-talk/the-rise-of-metahuman-ai/.

[14] Shipman, K. (2021). MetaHumans - a look past the Hype.AccessDate:10/02/2022.https://www.pugetsystems.com/labs/articles/MetaHumans---a-look-past-the-Hype-2139/.

[15] Nalbant, K.G., Uyanık, Ş., "Your Digital Twin: Metahuman", 2nd International Conference on Applied Engineering and Natural Sciences, 10th-13th March, Konya, Turkey, 2022

[16] Saracco, R. (2021). Metaverse vs Omniverse. AccessDate:26/04/2022.https://cmte.ieee.org/futuredirections/2021/11/16/metaverse-vs-omniverse/.

[17] Catalini, C., & Gans, J. (2016). MIT Sloan School of Management Some Simple Economics of the Blockchain Some Simple Economics of the Blockchain (No. 5191–16).

[18] Miyaguchi A. (2022). How can blockchain principles help improve ESG systems? Access Date:26/04/2022.https://www.weforum.org/agenda/2022/03/blockchain-principles-improve-esg-systems/

[19] Wang, Q., Li, R., Wang, Q., & Chen, S. (2021). Non-fungible token (NFT): Overview, evaluation, opportunities and challenges. arXiv preprint arXiv:2105.07447.

[20] Hackett R. (2021). Crazy or cutting edge? Everything you need to know about buying NFTs. AccessDate:26/04/2022.https://fortune.com/2021/04/15/what-is-an-nft-non-fungible-tokens-meaning-buying-investment-what-to-know-risk-supply-returns-should-i-buy/

[21] Bozkurt, A. (2013). Açık ve uzaktan öğretim: Web 2.0 ve sosyal ağların etkileri. Akademik Bilişim, 13, 23-25.

[22] Berners-Lee, T., Hendler, J., Lassila, O., "The Semantic Web", Scientific American, 34-43 (2001).

[23] Balloni, A. J., de Souza Bermejo, P. H., Holm, J., & Tonelli, A. O. (2012). Governance, sociotechnical systems and knowledge society: challenges and reflections. In Organizational Integration of Enterprise Systems and Resources: Advancements and Applications (pp. 22-41). IGI Global.