

The collage features several key elements:

- Top Left:** A photo of Valeriu Ioan-Franc, President of the Romanian Academy, with text: "ALEGE CEL MAI PERFORMANT MODEL DE EDUCAȚIE!" and "RAU Rector Costel Negricea".
- Top Center:** A graphic with the text "ARTIFICIAL INTELLIGENCE IN SUPPLY CHAIN NETWORK".
- Top Right:** A photo of Valeriu Ioan-Franc with text: "Valeriu Ioan-Franc, C.M. Romanian Academy".
- Middle Left:** A photo of Bernd Hallier, ERA President, with text: "Bernd Hallier, ERA President, Germany".
- Middle Center:** A photo of Virgil Popa, Founder SCM4ECR, with text: "Virgil Popa, Founder SCM4ECR".
- Middle Right:** A photo of Ruediger Hagedorn, Consumer Goods Forum, with text: "Ruediger Hagedorn, Consumer Goods Forum".
- Bottom Left:** A photo of John L. Stanton, Saint Joseph's University, with text: "John L. Stanton, Saint Joseph's University of Philadelphia, USA".
- Bottom Center:** A photo of two men standing in front of a presentation screen, with text: "18-19 March 2021 Webinar - Sustainability".
- Bottom Right:** A photo of a Zoom meeting interface with participants: Valeriu Ioan-Franc, Virgil Popa, Dr. Gerd Hofmann, and Ruediger Hagedorn.
- Text Overlays:**
 - "The gait of ideas and of economic reflections on the path to the next normal and the touch point between citizens and their local community represented by a retail progressively adapting to the technology trends" (Valeriu IOAN-FRANC, Ioan-Matei PURCĂREA).
 - "The management of digitization in Supply Chain with Shoppers and Users" (Conference Theme).
 - "20 Years of Inspiring Academic Economic Research - from the Transition to Market Economy to the Interlinked Crises of 21st Century" (The 2nd International Conference on Economic Scientific Research).
 - "The gait of ideas and of economic reflections" (2020/2021).

Abstract

Keywords: Digital twins; Web3; Metaverse; Value innovation; Retail market; e-commerce;

JEL Classification: D83; L21; M21; M31; M37; O31; O33

Focused on the future of e-commerce impacted by the disruptive technologies we looked, in our last RDCM issue, out the window of opportunity represented by the metaverse (Purcarea, 2022). As demonstrated by Krasnokutsky' (2022), businesses' competitiveness involves to develop

new applications for their customers with the help of the metaverse development powered by various technologies better understood, critical to innovation being to recognize where these technologies intersect while continuously advancing (web3 development being driven by these technologies) on the path to create their own applications. Within this framework, it was underlined, for instance, that digital twins are representing appropriate applications of Internet of Things (IoT) in the metaverse, allowing the creation of virtual representation of an environment using IoT sensors. By re-creating the physical world in the digital field, the digital twins make it possible the closely imitation (as digital counterpart in real-time) of systems, devices, places, things, and people (AI, Data & Analytics Network, 2022).

It is worth recalling that:

- Digital twins were developed in the beginning in manufacturing settings in order to enable engineers to both test, and refine physical assets, currently organizations already building digital twins of various business processes (IAN, 2022).
- Digital twins (defined as “a virtual supply chain replica that represents hundreds of assets, warehouses, logistics and material flows, and inventory positions”) help achieve the vision of the so-called Bionic Company (Schuster, Nath and Mitjavila, 2020), as shown in figure below (Hutchinson et al., 2019).

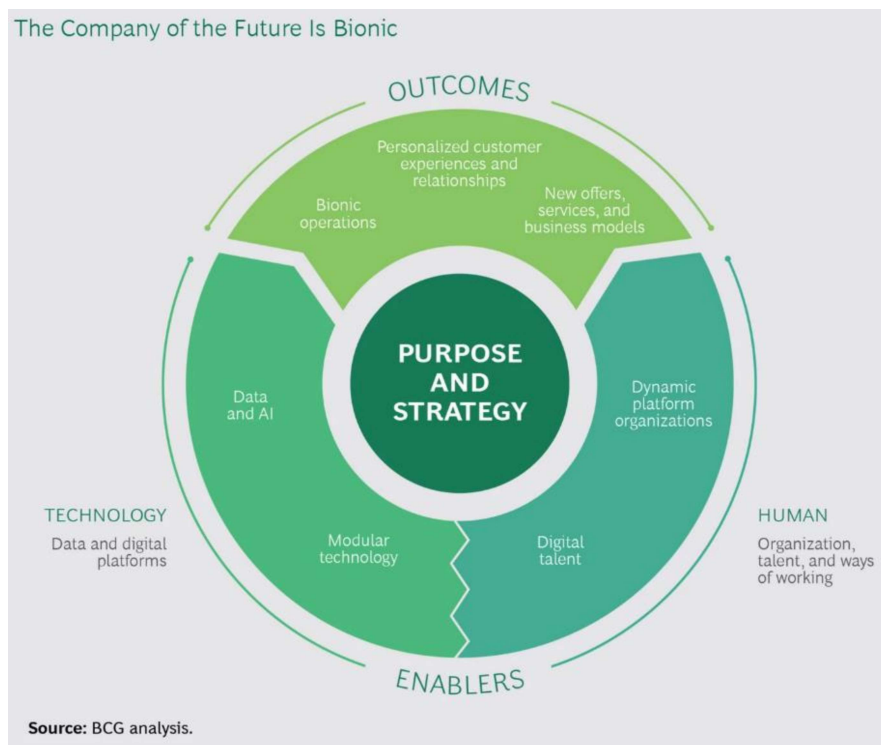


Figure no. 1: The Company of the Future is Bionic

Source: Hutchinson, R., Aré, L., Rose, L. and Allison Bailey, A., 2019. The Bionic Company, BCG, November 07, 2019 (work cited)

- In case of application of digital twins (which can take many different forms) to products, manufacturing processes, or value chains, enterprises must choose their appropriate form of digital twin, whose design can vary across the dimensions shown in figure below (Brossard et al., 2022). According to this approach, digital-twin technologies are seen usually as a core strategic capability by the most advanced enterprises.

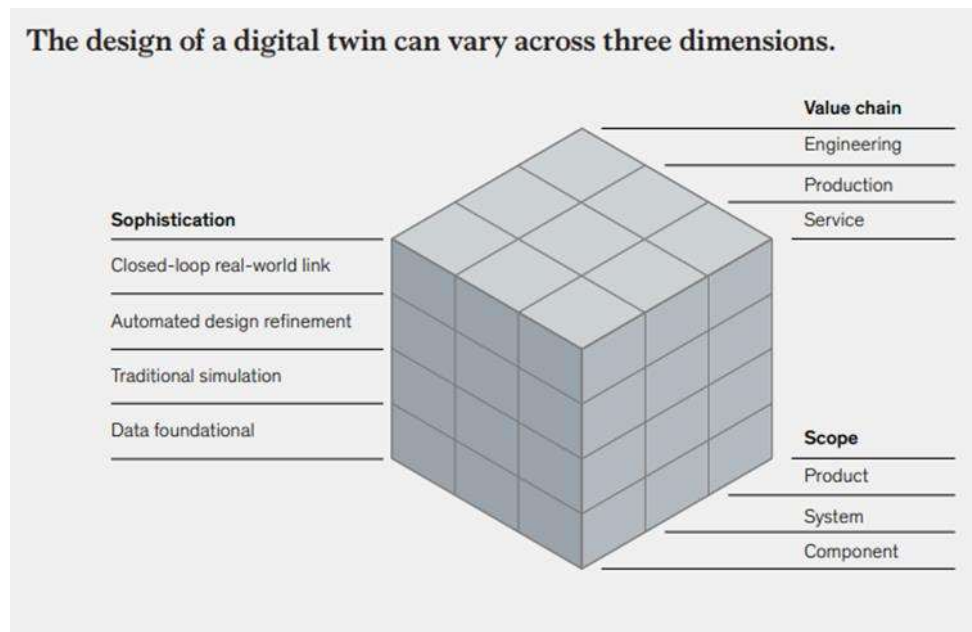


Figure no. 2: The design of a digital twin can vary across three dimensions

Source: Brossard, M., Chaigne, S., Corbo, J., Mühlreiter, M. and Stein, J.P., 2022. Digital twins: The art of the possible in product development and beyond [pdf] McKinsey's Operations Practice, April 2022, p. 5 (work cited)

The trending large jump into the metaverse, the Metaverse Index, and how Web3 applications and use cases are built

In the above-mentioned last RDCM issue we underlined among the various key technologies shaping the future of e-commerce, according to CB Insights (2022), the role of metaverse shopping in driving increased customer engagement and purchasing behavior, the early adopters being younger users and gamers. In the same time, we also made reference to Azeem Azhar (2022), who brought attention (among other aspects) on companies' planning for an expansion of both Web3, and the Metaverse (which is not a new phenomenon, but which has not yet so developed).

Focusing on Augmented Reality (AR) trends of 2023, another representative of MobiDev (Makarov, 2022) underlined from the very beginning the trending large jump into the metaverse, making reference, among other aspects, to avatars, as well as spatial audio (being well-known metaverse technologists' preoccupation with including in the process the five senses). On the other hand, the retail giant Walmart is known as making various moves in the metaverse,

designing experiences while thinking about shoppers' next generation and looking to learn from significant partnerships (Repko, 2022).

It is worth remembering that among the 16 tokens launched up to the present time by Index Coop (a decentralized autonomous organization/DAO that powers structured decentralized finance/DeFi products and strategy tokens) is also the so-called Metaverse Index (MVI) which includes projects developing virtual environments in entertainment, gaming, and sports (Team Blockdata, 2022). And considering the well-known linkage between the metaverse and Web3 (having as main distinctive feature the decentralization of business models), it is useful to take a look at the technology fundamentals on which are built Web3 applications and use cases, as shown in the figure below (Banerjee et al., 2022).

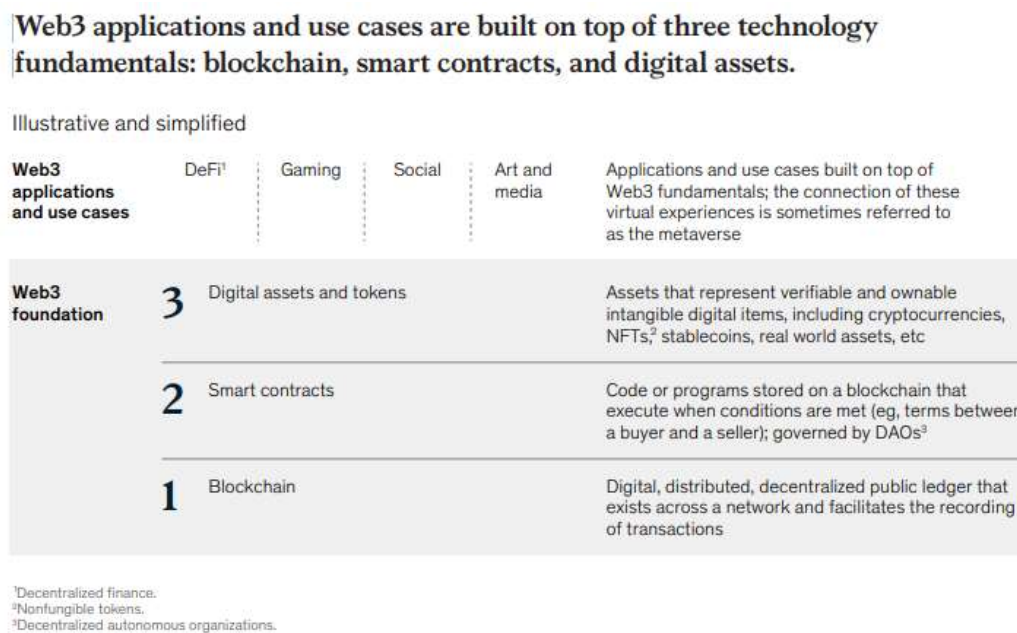


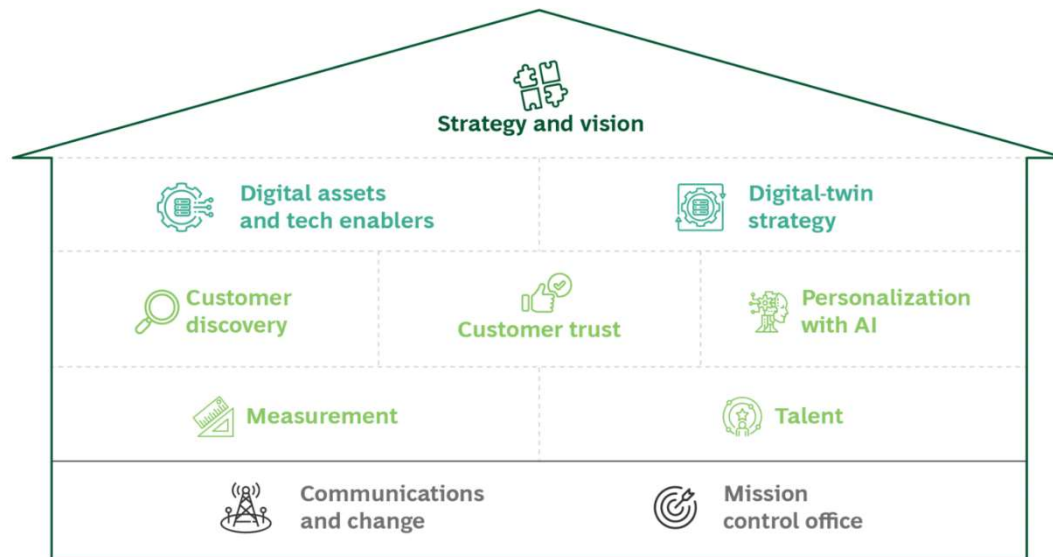
Figure no. 3: Web3 applications and use cases are built on top of three technology fundamentals: blockchain, smart contracts, and digital assets

Source: Banerjee, A., Byrne, R., De Bode, I. and Higginson, M., 2022. Web3 beyond the hype. [pdf] McKinsey & Company, Global Banking Practice, September 26, 2022, p. 3 (work cited)

As shown by Abovitz et al. (2022), there is a real need to gain a vigorous understanding of what is happening at the confluence of the new tools and assets of a Web3-enabled environment with traditional and virtual digital assets, as well as with company's business strategy, in order to obtain success, users' new and unprecedented value being created by the combination in rich ways of multiple technologies with the proliferation of data and content on which the metaverse is based upon. To begin working on building such a vigorous metaverse strategy and capability, BCG analysis recommends companies to consider key components as those described in figure below, where we can see, for example, including a digital-win strategy

or the importance of proceeding along metaverse customer discovery, building metaverse customer trust, and providing personalized attention with AI.

Exhibit 4 - The Key Components of a Metaverse Strategy and Capability



Source: BCG analysis.

Figure no. 4: The Key Components of a Metaverse Strategy and Capability

Source: Abovitz, R., Banerjee, S., Gilliland, G., Liu, C., Sackey, E., Timashkov, A. and Trollinger, R., 2022. How the Metaverse Will Remake Your Strategy, BCG, July 13, 2022 (work cited)

The opportunities created by the above-mentioned combination on which the metaverse is based upon was also more recently confirmed by the second annual Technology Trends Outlook, published by the McKinsey Technology Council, which identified 14 leading trends, the 2022 edition introducing Web3 and immersive-reality technologies (such as: Spatial computing, AR, VR, Mixed reality/MR, On-body and off-body sensors, Haptics, Location services) among the five new trends (together with industrializing machine learning, the future of mobility, and the future of space) added to this year's edition (Yee, Roberts and Chui, 2022). McKinsey's representatives shared thoughts with regard to the research findings highlighted the potential role as 'constraining' resource of creativity (as the way of using together the new technologies) in giving birth to both new experiences and modes of interaction in a truthful way based on new technologies' working together (advanced connectivity, cloud computing, applied AI, immersive reality technologies and Web3) and seen as included into the metaverse. The new consumer experience built within this framework coming from blending creativity, with design, engineering, and data science. For example, the risk of customers' churn or dropping a service can be predicted with the help of advanced industrializing machine learning.

Conclusions: *Value innovation, retail highly competitive market with e-commerce as its flourishing segment, and successful innovation*

It is well-known that the enabling technology, the innovative business model, and the coherent value network are considered key elements required by an effective disruptive innovation, while among the familiar examples of disruptive innovation can be mentioned the smartphones, the online shopping, or the streaming services (Indeed Editorial Team, 2022). The reputed Professors (of Strategy at INSEAD) Chan Kim and Renée Mauborgne (authors of the remarkable books *Blue Ocean Strategy* and *Blue Ocean Shift*) who developed the concept of value innovation (accomplished only at the moment that the whole system of utility, price, and cost is aligned) as the cornerstone of market-creating strategy (Blue Ocean, N.D.), recently stated: “*Value innovation, not technology innovation, is what launches commercially compelling new markets*” (Kim & Mauborgne, 2022).

According to Kachouie, Mavondo & Ambrosini (2022), in order to create superior value for customers organizations operating in highly competitive markets need to engage in the disruptive type of innovation, operational marketing capabilities having a mediating role in the significant connection between value innovation and organizational outcomes. A highly competitive market is, for instance, the retail market (a key indicator of its health being consumer spending) that is reshaped by the disruptive technologies, online shopping being a major driver (the growth of the retail market being influenced by the price variation between online and offline stores), while e-commerce (the fastest-growing segment in the retail industry) channel is driven by the rising smartphone penetration across various countries (Mordor Intelligence, 2021).

And last but not least, allow us to cite David Schonthal (2022), Clinical Professor of Strategy, Kellogg School of Management at Northwestern University: “*The secret of successful innovation is focusing more on the progress people seek to achieve than on the product that gets them there. Customers can’t always tell you what they want, but they can most certainly tell you what they are hoping to accomplish. This is much easier to do when we pay attention to functional, social, and emotional value, understand the “why” behind the “what,” and reduce the friction that almost always stands in the way of adoption.*”

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