Entering the metaverse market: key players in Luxembourg

MARKET INTELLIGENCE REPORT

January 2023

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Entering the metaverse market: key players in Luxembourg

INTRODUCTION

The metaverse is seen as a "disruptive technology - constantly changing, while simultaneously changing everything it touches" (Forbes, 2022). The metaverse market is expected to reach $996 billion in 2030 (Global data, 2022).

The metaverse is meant to be a catalyst for innovation, yet its impact on businesses remains to be fully assessed. Luxembourg aims to become "a European leader in the full digitalisation of key strategic sectors" (Ministry of the Economy, 2021), and it is expected that the metaverse will play a key role in the digital transition of the national economy.

The objective of this study is therefore to understand which companies have positioned themselves in the metaverse market in Luxembourg. This includes mapping current technology providers as well as providing a broader view of the players enabling the emergence of the metaverse market. The study was performed by the Luxinnovation Market Intelligence Department in July 2022.

CONTENT

1. The metaverse market: background, scope & definitions
2. The metaverse value chain market: key players in Luxembourg
3. A broader view of the metaverse landscape in Luxembourg

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The metaverse market
BACKGROUND, SCOPE & DEFINITIONS

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The metaverse market
BACKGROUND, SCOPE & DEFINITIONS

This first chapter introduces the material collected to set the scope of this study of the metaverse key players in Luxembourg. It focuses on definitions, market information and the reference framework to understand the metaverse.

- The metaverse concept emerged some 30 years ago. However, there are many definitions, all trying to define an "object" that is in constant evolution. The most relevant definitions used to set the scope of this study are included in the next pages.

- Market research, as well as current international metaverse market maps, also provide a good overview of the challenging dimension of this emerging market, while featuring the most relevant international players.

- In order to map the current players in Luxembourg, the focus was on better understanding the different layers/technologies that make up a metaverse system. The objective is to be able to assess the strengths and weaknesses of the national ecosystem as far as metaverse technology is concerned.


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Defining the metaverse
EXAMPLES OF METAVERSE DEFINITIONS

"The metaverse is a vision of what many in the computer industry believe is the next iteration of the internet: a single, shared, immersive, persistent, **3D** virtual space where humans experience life in ways they could not in the physical world.(…) The concept is not new: The term *metaverse* was coined in 1992 by author Neal Stephenson in his sci-fi novel *Snow Crash*, and work on the technologies that underpin a virtual reality-based internet date back decades."

Techtarget.com, 2022
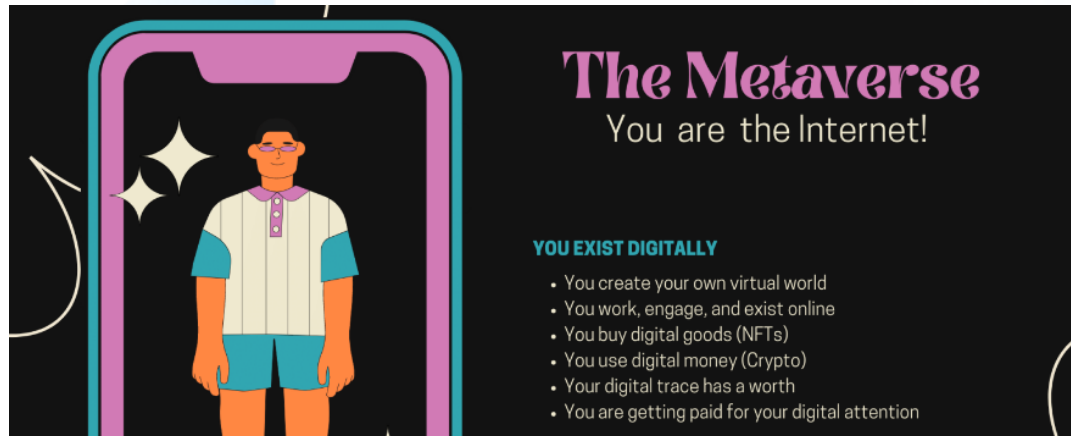
Source: *Egorythms*

"An expansive network of persistent, real-time rendered 3D worlds and simulations that […] can be experienced synchronously by an effectively unlimited number of users, each with an individual sense of presence."

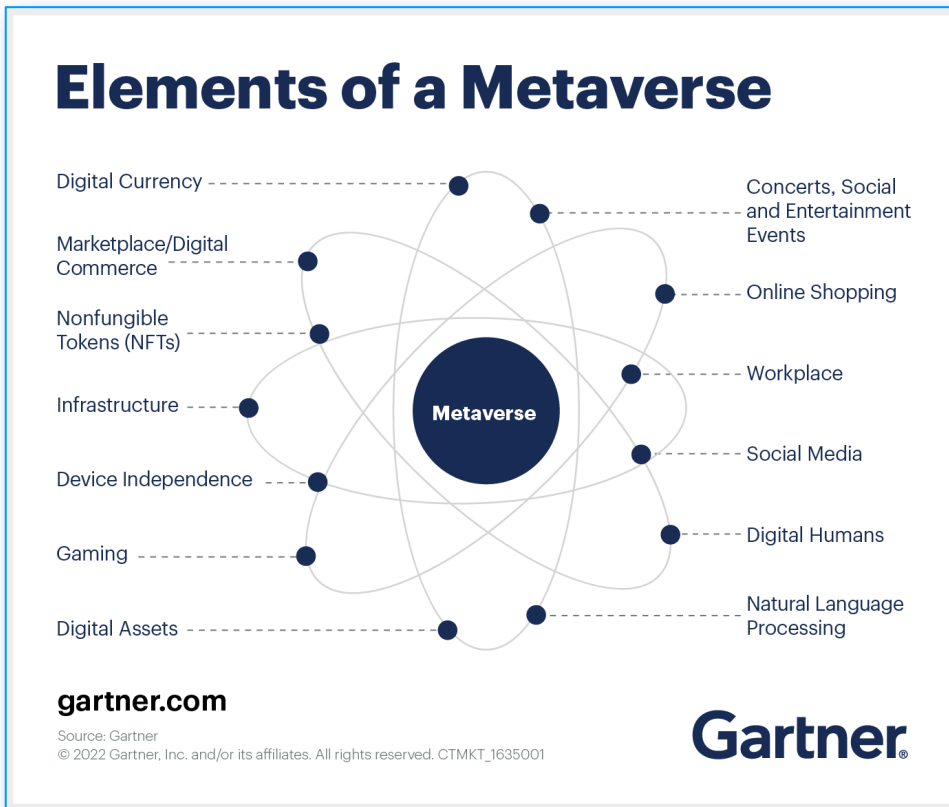*Matthew Ball*

"The Metaverse is indeed a compilation of all virtual worlds created with blockchain technology. It might be gaming worlds, NFT galleries, curated territories, or digital streets. The most fundamental aspect of the Metaverse to understand is that it is not a single location. Media companies, music publishers, clothing labels, and bitcoin analytics tools can all be found in the Metaverse."

Rejolut, 2022

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Defining the metaverse

EXAMPLES OF METAVERSE DEFINITIONS

Elements of a Metaverse

Digital Currency

Concerts, Social and Entertainment Events

Marketplace/Digital Commerce

Online Shopping

Nonfungible Tokens (NFTs)

Metaverse

Workplace

Infrastructure

Social Media

Device Independence

Digital Humans

Gaming

Natural Language Processing

Digital Assets

gartner.com

Source: Gartner
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Gartner®

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What is a metaverse?

[...] It is a collective virtual space, created by the convergence of virtually enhanced physical and digital reality. In other words, it is device-independent and is not owned by a single vendor. It is an independent virtual economy, enabled by digital currencies and **non-fungible tokens (NFTs)**.
A Metaverse represents a combinatorial innovation, as it requires multiple technologies and trends to function. Contributing tech capabilities include augmented reality (AR), flexible work styles, head-mounted displays (HMDs), an AR cloud, the Internet of Things (IoT), 5G, **artificial intelligence (AI)** and spatial technologies.

To understand the concepts of a Metaverse, think of it as the next version of the internet, which started as individual bulletin boards and independent online destinations. Eventually these destinations became sites on a virtual shared space—similar to how a Metaverse will develop. "

Gartner, 2022

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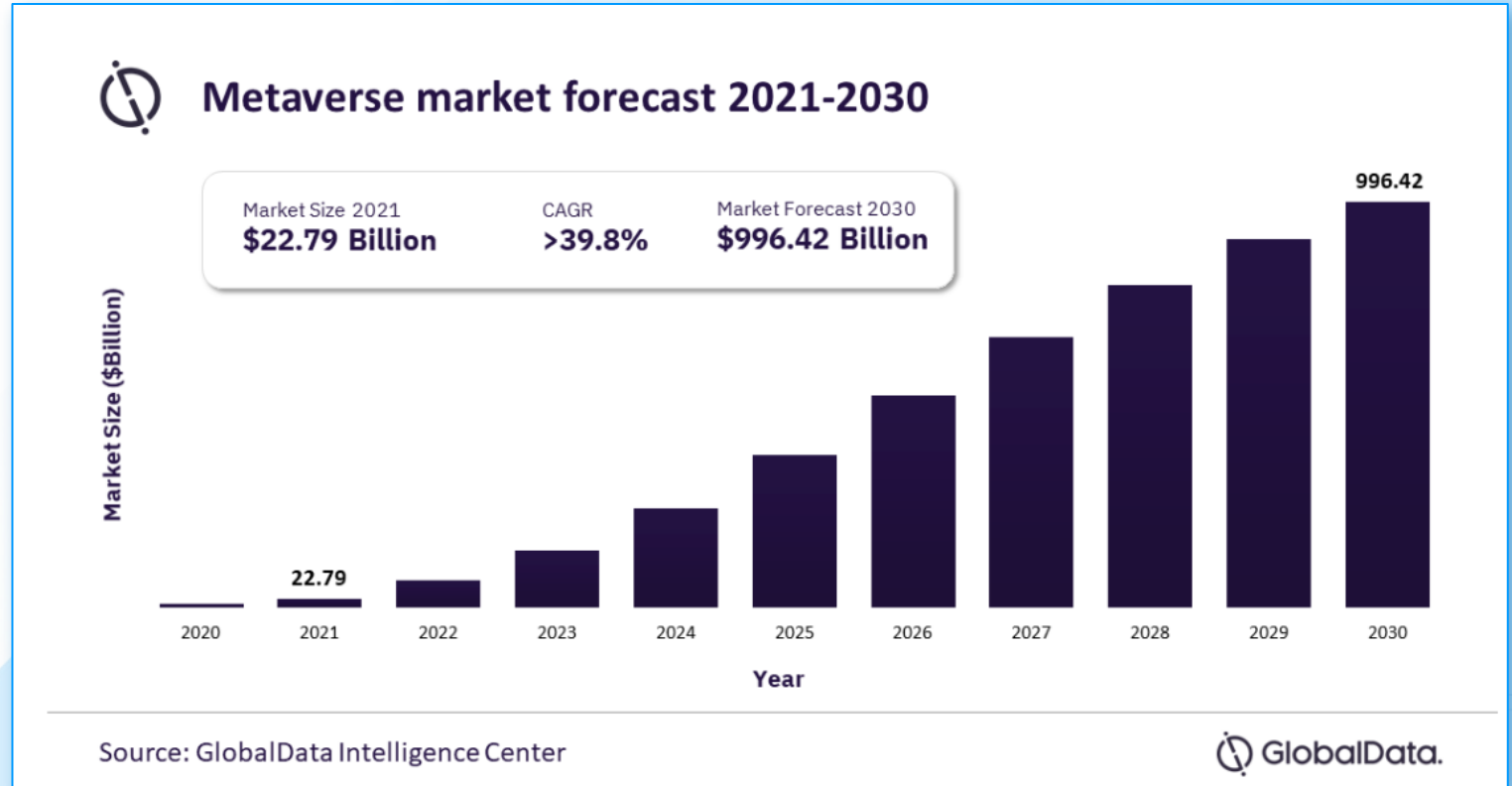#MakingInnovationHappen

Market overview

METAVERSE: A "PARADIGM-SHIFTING TREND THAT IS JUST GETTING STARTED"?

" The metaverse market will record a compound annual growth rate (CAGR) of 39.8% to reach $996 billion in 2030, as companies across the globe, including those in non-tech sectors, increasingly invest in the technology for better engagement with customers, brand awareness expansion, and identification of new revenue streams, says GlobalData, a leading data and analytics company. "

Global data, 2022

" Looking back on 2021, the first year of the Metaverse, its breakout was significantly more intense, and market participants' responses were much faster than when the internet first entered global consciousness. "

Rejolut, 2022

Metaverse market forecast 2021-2030

Market Size 2021	CAGR	Market Forecast 2030
$22.79 Billion	**>39.8%**	**$996.42 Billion**

Market Size ($Billion) vs Year — bars: 2020, 2021 (22.79), 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030 (996.42)

Source: GlobalData Intelligence Center

GlobalData.

Global data, 2022

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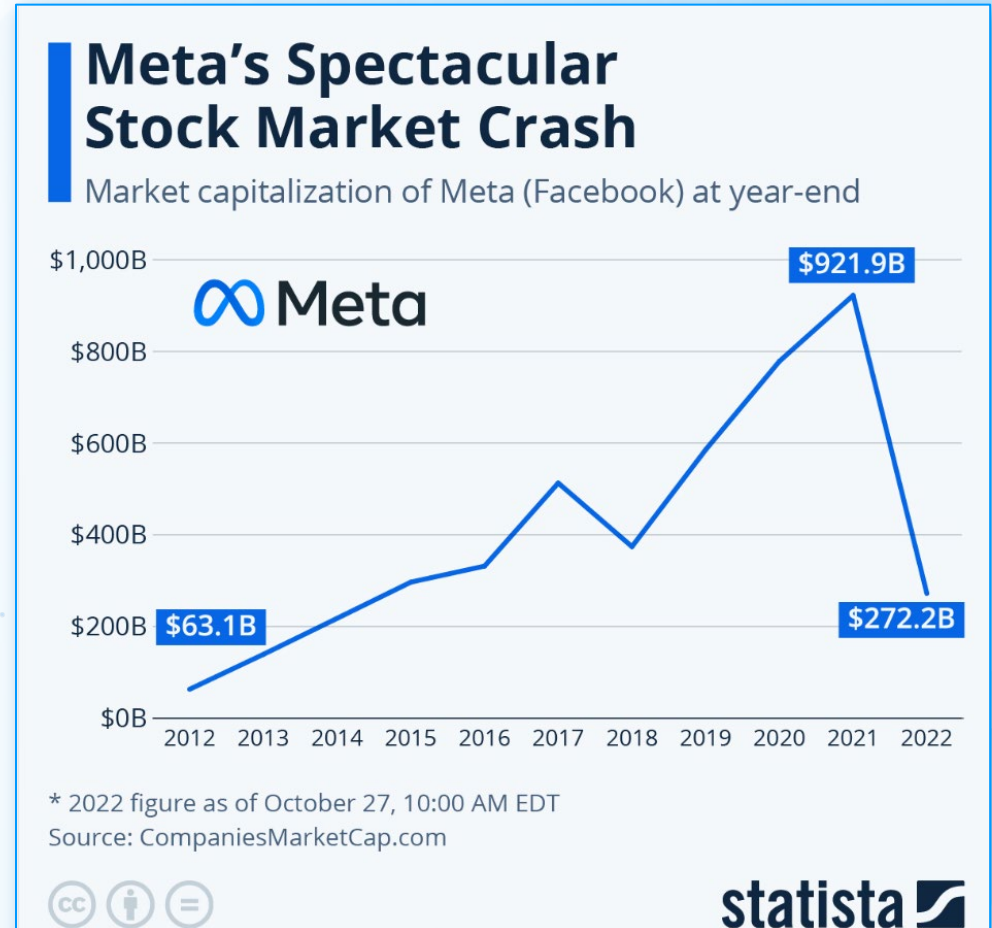
Market overview

METAVERSE: A "PARADIGM-SHIFTING TREND THAT IS JUST GETTING STARTED"?

" With the dramatic drop in Metaverse-related stock prices in 2022, the capital market's overwhelming enthusiasm has since begun to fade, and people are now seeing the Metaverse prospect more sensibly. "

Rejolut, 2022

" Many people believe that the Metaverse is a passing fad that will fade away soon. In reality, it is more likely a long-term, tectonic, and paradigm-shifting trend that is just getting started. "

Rejolut, 2022

" According to a recent survey conducted by the technology company Ciena, 78% of business users worldwide are interested in leveraging the metaverse. That is why it is critical for businesses to prepare for this technology, strengthen blockchain capabilities, mitigate Metaverse and blockchain security risks, and embrace a new internet era. "

Rejolut, 2022; Ciena, 2022

Although the potential impact of the metaverse on businesses is still under discussion, market forecasts are unanimous about the expected growth of the metaverse market. **How are Luxembourg companies catching up with this trend?**

Meta's Spectacular Stock Market Crash

Market capitalization of Meta (Facebook) at year-end

∞ Meta

$921.9B

$63.1B

$272.2B

$1,000B — $800B — $600B — $400B — $200B — $0B

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

* 2022 figure as of October 27, 10:00 AM EDT
Source: CompaniesMarketCap.com

statista

Statista, 2022

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Metaverse market map

EXAMPLES (1/4)

In order to map the current metaverse landscape in Luxembourg, relevant metaverse **market maps** were consulted.

The most relevant examples are presented in the next pages.

Metaverse Market Map

Metaverse market map
EXAMPLES (2&3/4)

CB Insights, 2022

Metaverse Insider, 2022

Metaverse market map

EXAMPLES (4/4)
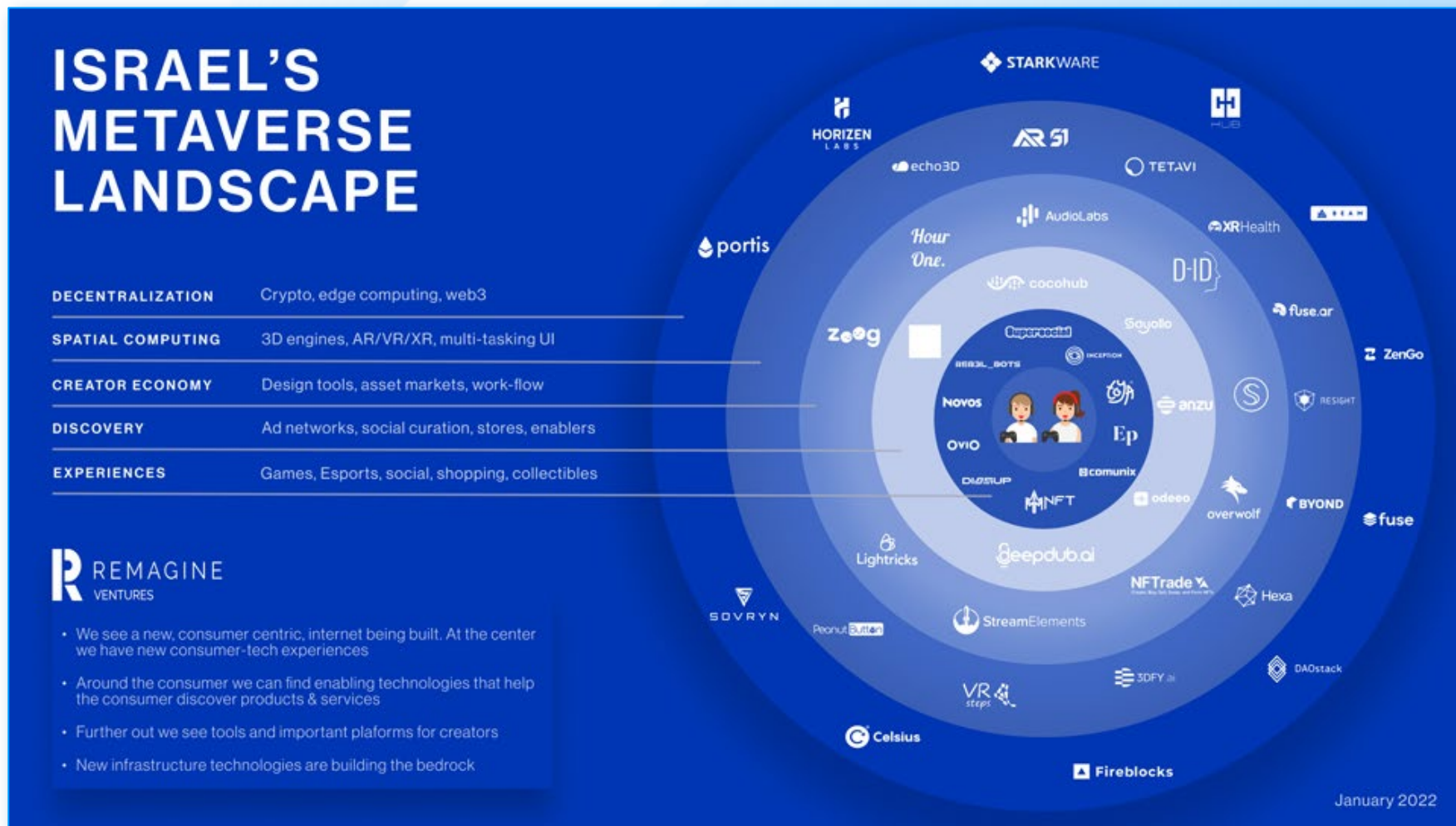
Remagine Ventures, 2022

The metaverse value chain

FOCUS ON THE ECOSYSTEM LAYERS

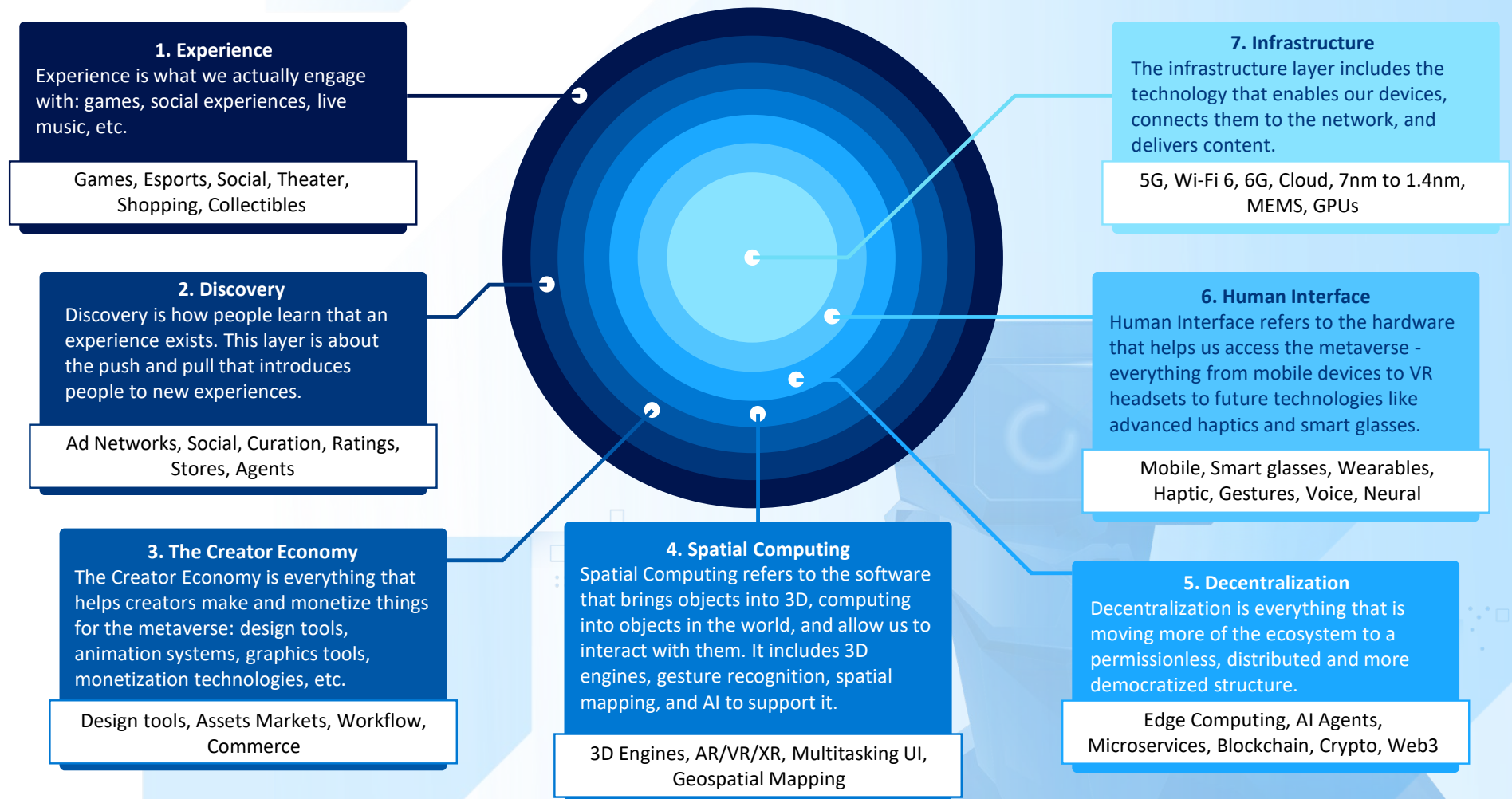In order to map the current metaverse players in Luxembourg, Radoff's seven layers model of the metaverse makes it possible to assess how these players are positioned along the metaverse value chain.

1. Experience
Experience is what we actually engage with: games, social experiences, live music, etc.

Games, Esports, Social, Theater, Shopping, Collectibles

2. Discovery
Discovery is how people learn that an experience exists. This layer is about the push and pull that introduces people to new experiences.

Ad Networks, Social, Curation, Ratings, Stores, Agents

3. The Creator Economy
The Creator Economy is everything that helps creators make and monetize things for the metaverse: design tools, animation systems, graphics tools, monetization technologies, etc.

Design tools, Assets Markets, Workflow, Commerce

4. Spatial Computing
Spatial Computing refers to the software that brings objects into 3D, computing into objects in the world, and allow us to interact with them. It includes 3D engines, gesture recognition, spatial mapping, and AI to support it.

3D Engines, AR/VR/XR, Multitasking UI, Geospatial Mapping

7. Infrastructure
The infrastructure layer includes the technology that enables our devices, connects them to the network, and delivers content.

5G, Wi-Fi 6, 6G, Cloud, 7nm to 1.4nm, MEMS, GPUs

6. Human Interface
Human Interface refers to the hardware that helps us access the metaverse - everything from mobile devices to VR headsets to future technologies like advanced haptics and smart glasses.

Mobile, Smart glasses, Wearables, Haptic, Gestures, Voice, Neural

5. Decentralization
Decentralization is everything that is moving more of the ecosystem to a permissionless, distributed and more democratized structure.

Edge Computing, AI Agents, Microservices, Blockchain, Crypto, Web3

after John Radoff, 2021

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The metaverse value chain

FOCUS ON KEY TECHNOLOGIES

Deloitte's analysis of required technologies for metaverse scenarios and characteristics is also useful to determine the profile of the metaverse players to be identified in the ecosystem.

Figure: Required technologies for Metaverse scenarios and characteristics
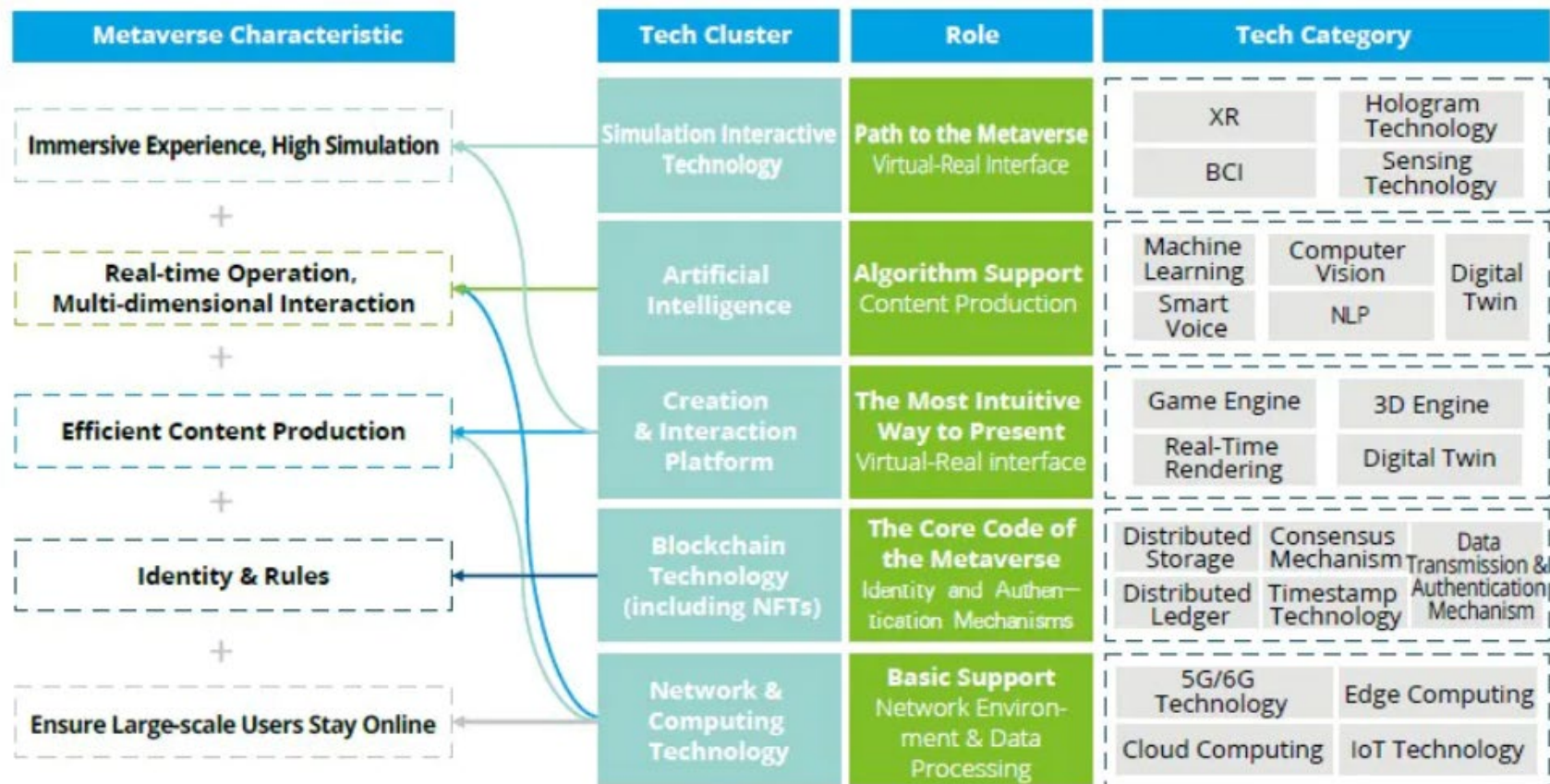
Source: Deloitte analysis

Deloitte, 2022

2. The metaverse market
KEY PLAYERS IN LUXEMBOURG

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The metaverse value chain

KEY PLAYERS IN LUXEMBOURG

This chapter focuses on understanding what companies are already positioned in the metaverse market value chain.

- It provides an overview of the current key metaverse players in Luxembourg, mapped against Radoff's seven layers model. The data collection to create this metaverse market map relies on both quantitative and qualitative approaches.

- It also introduces the three main metaverse projects in Luxembourg: the Duchy, the Luxembourg Megaverse and the planned project by Infinite Reality.

Building a metaverse market map in Luxembourg

METHODOLOGY

To map the metaverse landscape in Luxembourg, quantitative and qualitative approaches were combined.

As metaverse is an emerging technology, few databases include "metaverse" as a vertical or as a technology keyword to characterise companies. Discussions and interviews with some key players in the ecosystem were therefore key to navigate the current landscape and build the final market map for Luxembourg.

Information collection

- Luxinnovation Market Intelligence sources (ecosystem mappings, corporate databases)
- Internal information sourcing (L-DIH, cluster managers, start-up team, etc.)
- Press/web review
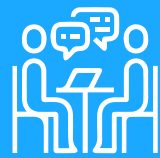
Interviews and discussions

- M. Keune, Product Developer @Vizz, (30.06.2022)
- M. Bracchetti, Founder & CEO Virtual Rangers (07.2022)
- G. Hoffmann, CEO Proximus, (30.06.2022)
- J. Acunto, Co-Founder & CEO, Infinite Reality (ICT Spring 30.06.2022)
- K. Amroune, CEO The Dots, (25.06.2022)
- N. Zubairi, CEO The Lhoft, (20.06.2022)
- P. Steichen, CEO Securitymadein.lu (08.07.2022)
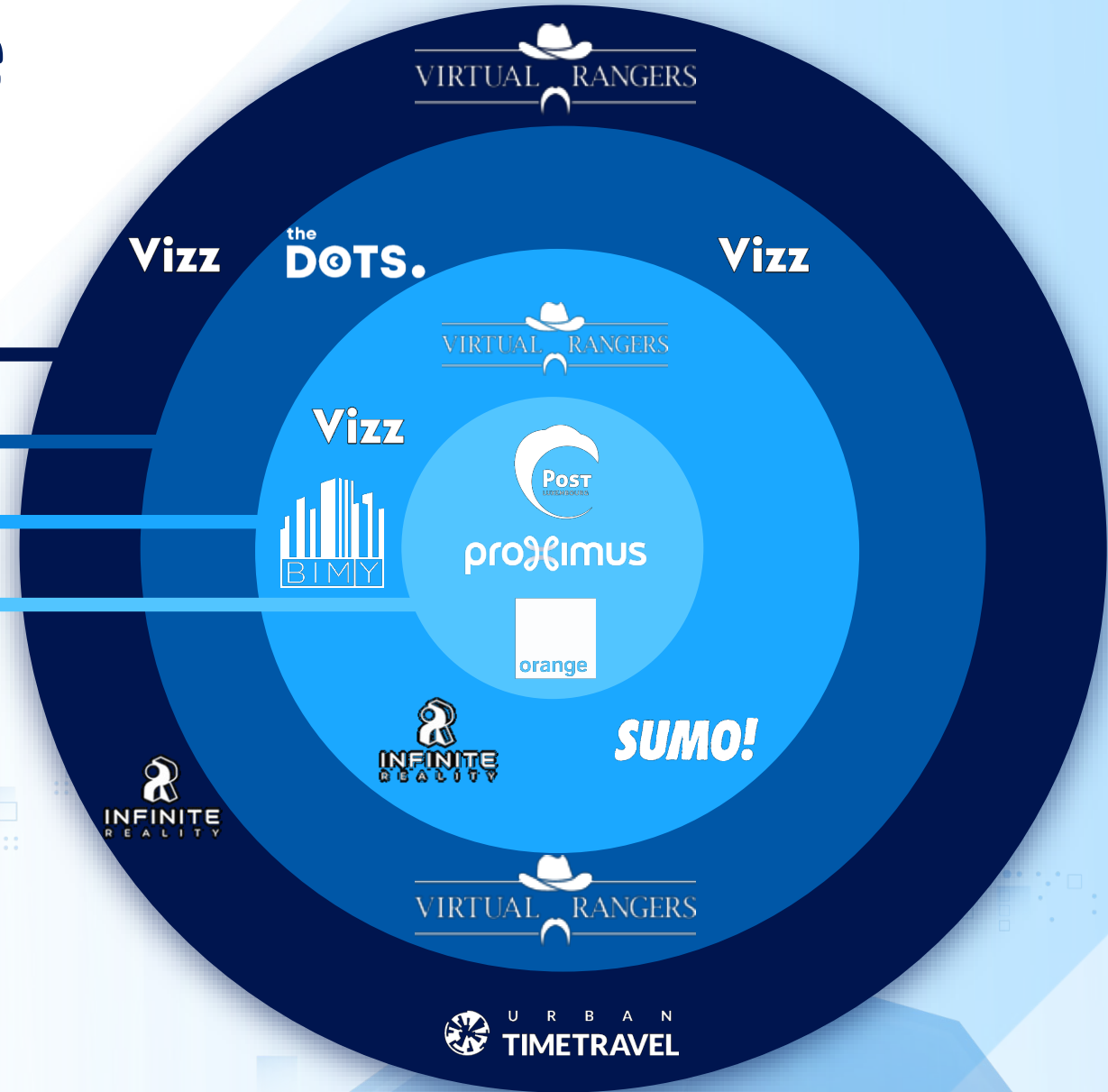- A. Martovoy, Advisor, Innovation, Digital & Payment, ABBL (01.08.2022)

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Luxembourg metaverse market map

Experience

Discovery

The creator economy

Infrastructure

This overview focuses on the metaverse value chain, i.e. it lists all entities being involved at one or several levels of the metaverse value chain.

While metaverse is still considered as an emerging technology, there is no surprise to see that there are still some gaps in the ecosystem. Here we can see that only 4 layers are represented among the 7 layers of the metaverse value chain.

NB: this metaverse market map dates back to July 2022 and might not be exhaustive. If you are involved in the metaverse and would like to be included, please contact us at knowledgehub@luxinnovation.lu
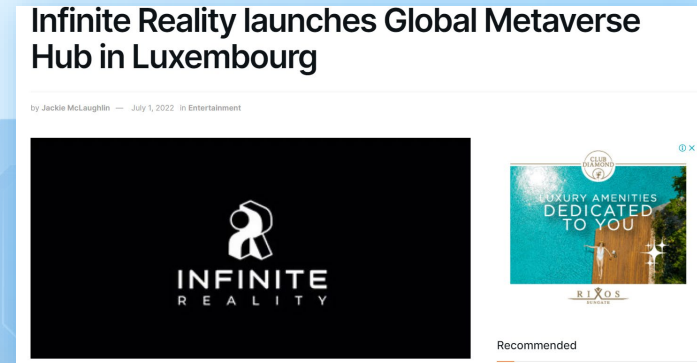
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Metaverse projects in Luxembourg

2 METAVERSES ALREADY EXIST, 1 METAVERSE IS ON ITS WAY

The Duchy.lu

Luxembourg Megaverse

Infinite Reality

3. The metaverse landscape

A BROADER VIEW OF THE METAVERSE PLAYERS IN LUXEMBOURG

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The metaverse landscape
KEY PLAYERS IN LUXEMBOURG

In order to extend our understanding of the current metaverse players, the national metaverse landscape provides a broader view of the metaverse ecosystem.

- The metaverse landscape does not only include the entities positioned in the metaverse value chain, but also players having an interest in metaverse.

- To describe the metaverse landscape, we have categorised Luxembourg's metaverse players in five categories, based on their engagement in the metaverse market: the metaverse enthusiasts, the metaverse observers, the metaverse enablers, the metaverse early bird adopters, and the metaverse investors.

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Luxembourg metaverse landscape

CATEGORISING THE LUXEMBOURG METAVERSE KEY PLAYERS

Luxembourg metaverse market map

CATEGORISING THE LUXEMBOURG METAVERSE KEY PLAYERS (1/3)

Metaverse enthusiasts

The metaverse enthusiasts are the players actively involved in the metaverse value chain, whose business model is based on a technology that is key in the metaverse (e.g. virtual and augmented reality).

These players are behind the 3 main current metaverse projects in Luxembourg. They mainly focus on the top layers of the metaverse (Experience, Discovery, Content).

As the metaverse is an emerging market, these players appear as the front-runners in our ecosystem.

Metaverse observers

The metaverse observers are players who express their interest in the metaverse market, but who are still observing the evolution of the market and its adoption among businesses before getting fully engaged.

The substantial investments required at the infrastructure level may explain why they wish for more certainty before fully investing in this market.

The lack of regulation, together with the security issues raised by the metaverse, are other reasons why some businesses, in particular in the fintech sector, currently choose the observer position.

Luxembourg metaverse market map

CATEGORISING THE LUXEMBOURG METAVERSE KEY PLAYERS (2/3)

Metaverse enablers

The metaverse enablers are the players who can help build the metaverse ecosystem and facilitate access to this market, even though they are not directly involved in the metaverse value chain.

The enablers are for instance part of the R&D ecosystem in Luxembourg. Consulting companies guiding businesses towards the adoption of the metaverse are also important in the ecosystem. Some initiatives such as Orange fab Belux, the "metaverse month" by Deloitte (May 2022) or the PWC event "Metaverse: beyond the hype" are examples of how enablers raise awareness on the business opportunities brought by the metaverse. Investment funds investing in metaverse companies, in Luxembourg and internationally, also strengthen the ecosystem.

Metaverse early bird adopters

The fourth category refers to the companies positioned as users of the metaverse. They are involved in at least one national metaverse project. These companies are entering the metaverse as users.

They see the metaverse as an additional e-commerce or marketing channel (shop). Their use also demonstrates a new generation of services provided via the metaverse (e.g. museums in the metaverse, training courses delivered in the metaverse, etc.). Some of these early birds can be seen as the potential next metaverse players who first use and test the metaverse before investing in this market.

Funding the metaverse

CATEGORISING THE LUXEMBOURG METAVERSE KEY PLAYERS (3/3)

Metaverse investors

The metaverse investors are investment funds located in Luxembourg who potentially are interested in investing in metaverse companies. Using the Pitchbook database, we selected the investment funds that have an entity in Luxembourg (headquarter or subsidiary) and at least one metaverse company in their portfolio. In general, investments were made in metaverse companies located outside Luxembourg.

Investments funds headquartered in Luxembourg that have invested in at least 1 metaverse company

Foreign Investment funds with a subsidiary in Luxembourg that have invested in at least 1 metaverse company

References

[1] **The Metaverse: Framework, Building Blocks and Market Map** | by Swati Bhatia | Level Up Coding. Retrieved from
https://levelup.gitconnected.com/the-metaverse-framework-building-blocks-and-market-map-3bb2ccf0241c

[2] **Market Map of the Metaverse. In my article on the value-chain of the…** | by Jon Radoff | Building the Metaverse | Medium. Retrieved from https://medium.com/building-the-metaverse/market-map-of-the-metaverse-8ae0cde89696

[3] **The Metaverse Value-Chain. Trillions of dollars are pouring into…** | by Jon Radoff | Building the Metaverse | Medium. Retrieved from https://medium.com/building-the-metaverse/the-metaverse-value-chain-afcf9e09e3a7

[4] **The Experiences of the Metaverse. In previous articles I've shared the…** | by Jon Radoff | Building the Metaverse | Medium. Retrieved from https://medium.com/building-the-metaverse/the-experiences-of-the-metaverse-2126a7899020

[5] **Mapping The Israeli Metaverse Startup Landscape.** Retrieved from
https://nationworldnews.com/mapping-the-israeli-metaverse-startup-landscape/

[6] **The future of the metaverse will be shaped by these 3 technologies** | World Economic Forum. Retrieved from
https://www.weforum.org/agenda/2022/02/future-of-the-metaverse-vr-ar-and-brain-computer/

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