

METaverse

MEETS BANKING

InnovEcoS



Can the Metaverse become the future of consumer engagement for Financial Services?

What has already changed today with the Metaverse? PAGE 3

What are the key primitives to help understand the change? PAGE 6

How can early adopters from the financial industry take advantage of this change? PAGE 12

+ Insights and use cases from financial institutions and global regions

IMAGINE, IT'S 2030

- You witness the Mars landing using extended reality, and step onto Mars alongside the first astronaut.
- Digital real-estate, currencies and other assets are now commonly included in wills.
- **What will banks do in the Metaverse?**

Get in contact with us

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At CRIF, we provide trusted information, advanced cutting-edge solutions and unique expert knowledge to a community of more than 10,500 financial institutions globally, with the mission of creating value and new opportunities for our clients.

This mission includes anticipating their future needs, as well as constantly monitoring the trends shaping the future of the industry.

The "Metaverse" is one of the key trends considered by many as complex and threatening, made worse by anxiety toward the unknown.

At InnovEcos, powered by CRIF, we decided to actively study the Metaverse and its impacts to our audience and beyond – [this whitepaper is an introduction to what we have observed from over 100 use cases in the Metaverse from pioneer banks and financial institutions worldwide.](#)

It aims at allowing the reader to start thinking about the possible impact on their company's long-term strategy. The reality is that ignoring this issue is no longer an

option, but the good news is that there is still time.

The Metaverse is still years away from being fully realized, but experts, Wall Street, Big Tech, governments and brands believe it will become a multi-trillion dollar opportunity by 2030. It will be the entry point to most online experiences, and will also underpin much of the physical world.

It is too big for financial institutions to ignore, and it presents a tremendous opportunity, as the technology and new digital habits will alter how people, especially GenZeders, the future consumers of financial services, interact with businesses and each other in the digital world.

In this document, we aim to guide you through the Metaverse, bringing you key concepts plus an understanding of the key trends and challenges that will shape banking through some relevant use cases with a focus on financial institutions, preparing for more in-depth and broader individual discussions.



THE DIGITAL SHIFT

The past five years have been marked by digital disruption on a scale and at a pace never seen before. The COVID-19 pandemic has accelerated our shift toward digital, in work and leisure, and our social life will likely be increasingly impacted by this fundamental shift in our habits and preferences. From this, emerges a new vision of our future: *the Metaverse*.

Technologies are Converging, Disruption is Accelerating

From reusable rockets to gene editing, protein folding, autonomous vehicles, or conversational agents.

These disruptions emerged from tech innovations such as AI, the cloud, blockchains, virtual reality, robotics, 5G and IoT evolving and converging at the same time.

Digital is Taking Over Our Lives

We are spending more of our free time online, and the pandemic has accelerated this well-established trend.

By 2030, experts expect a flip, with users spending 52% of their free time online and 48% offline.

(Source: Ark Invest¹¹)

Digital Wallets are the #1 Payment Method online and offline

Dominating e-commerce payments since 2017, digital wallets surpassed cash in 2021 in point-of-sale (POS) payments, probably in response to the COVID-19 pandemic.

(Source: Ark Invest¹¹)

“We believe that historians will look back on this era as one of unprecedented technological foment—and they will say: everything changed.”

– ARK Invest¹¹

THE METAVERSE IS THE FOURTH COMPUTER REVOLUTION

The "Metaverse" – a concept drawn from science fiction - captivates imaginations despite the lack of a clear definition – much like the Internet when it was coined "the Information Superhighway" in the 1990s.

It is not a place, not an app, not a website. It is not restricted to virtual reality or gaming, and it will not be built by a single company.

It is a network of interconnected 3D experiences, underpinned by an ecosystem of technologies and enablers that, once combined, are set to disrupt how we consume, socialize, and manage money online, but also interact with the physical world.

It is better understood as the next evolution of what the Internet can be in the future. It will become the entry point to most online experiences, and also underpin much of the physical world.

The Metaverse is not a new concept, but rather a continuum of technologies already in use, such as virtual reality or AI – now

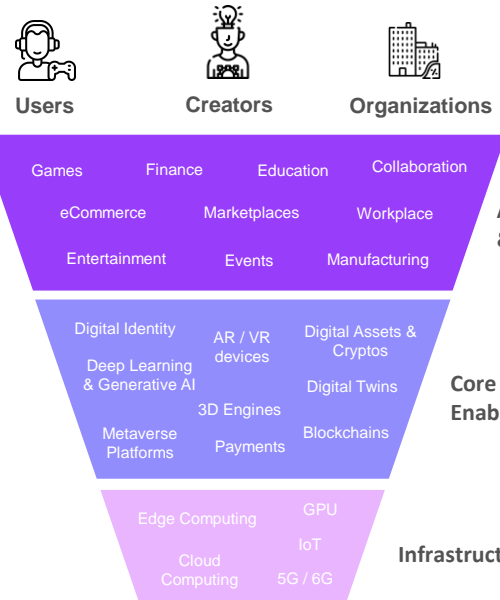
evolving and converging at the same time.

Most of the foundational technology underpinning it, however, doesn't fully exist yet, and could take up to 15 years to build.

The Metaverse is calling for an infrastructure upgrade and computational efficiency improvements of over 1000x today's levels according to Intel¹. Investments will be needed in areas such as computing, storage, network infrastructure, cybersecurity, consumer hardware and game development platforms.

The Metaverse will not replace today's Internet; rather, it will build on and modify it over time, much like today's mobile internet was built on the Internet from the 1960s to the 1990s.

Therefore, the Metaverse presents a tremendous opportunity, as the technologies enabling it will further alter how people interact with businesses and each other in the digital world.



Source: CRIF InnovEcos Analysis, 2022

A TIMELINE OF THE FUTURE

How experts imagine mainstream adoption of the Metaverse

Widespread adoption is most likely to start from 2030, reaching 700 million users of AR/VR devices (HSBC²¹), the adoption of 6G, and 1 billion crypto users (BGC¹⁴), with some significant growth limitations, including but not limited to the regulatory framework, interoperability and others. These features are built on expert opinion, technological and business acceleration triggers, and emerging new use cases. Experts assume that 15-33% of the digital economy will have shifted to the Metaverse by 2040, accounting for USD 2 to 12.5 trillion in market volume (JP Morgan⁵).

15-33% of digital economy

will have shifted to the Metaverse by 2040 (JP Morgan⁵)

25% of people by 2026

will spend at least one hour a day in the Metaverse, for work, shopping, education, or entertainment. (Gartner⁴)

70% of brands by 2027

will have a presence in the Metaverse (KPMG¹³)

700 mio users of AR/VR devices by 2027
(HSBC²¹)

TODAY'S USE CASES IN THE METAVERSE

At InnovEcoS, we have collected quite significant number of use cases from early adopters, allowing to make reasonable assumptions on future development. Below are some of them.*

Product Exploration

Immersive experiences that enable customers to explore products through virtual channels that bridge the gap between website and real –thing. E.g. **Samsung** digital twin shop in Decentraland

Samsung, Hyundai, etc.

Brand Loyalty & Community

Initiatives that revolve around the virtual community aimed at creating a unique emotion and memory associated with the brand, a sense of belonging and strengthen the connection with a brand.

Nike RTFKT, Gucci, YugaLabs

Competitions and games

Social or competitive games around key brand themes offer users the chance to actively engage with them, rather than passively receiving them. E.g. "**Gucci** Garden" mini games in Roblox

Gucci, Walmart, Spotify, etc.

Education & Collaboration

Educational Experience and content that user engage with in a radically different way to facilitate learning and interaction with the content.

Converse, Fidelity Investments, etc.

Community engagement

Immersive experiences in a physical set-up that ultimately serve the purpose of creating a unique emotion and memory associated with the brand. E.g. augmented concerts, museums, sport events

Louis Vuitton, IKEA, Amazon etc.

DEFINITION

Metaverse Platforms

A metaverse platform is a virtual world that lets users interact in real time using mobile, virtual reality and/or augmented reality devices, while providing the framework and tools to help developers create new virtual experiences.

USD 2.0-2.6 trillion

the estimated market impact of the Metaverse on e-commerce by 2030 (McKinsey¹⁵)

METaverse: THE NEW SOCIAL MEDIA PLATFORMS

The Metaverse, in its proto-form today, has already started to profoundly change how we consume, socialize and manage money online.

In a way, the Metaverse is here today in gaming, a 155-billion-dollar industry that is seen as the gateway to the next generation of virtual reality, because:

- 3D engines and GPU technologies were created with gaming, and will power all Metaverse experiences
- Online games include a social aspect
- Thriving commerce economies live inside those games where players can buy items

Open ecosystems for creators

Metaverse platforms like **Roblox** go a step further, by giving their users tools to build their own games and avatar items, and monetize them on the platform – a recipe for success for Youtube, TikTok and other content-based social media. This open ecosystem model is followed by Fortnite Creative or Meta's Horizon Worlds. The 40 million games and experiences present today on Roblox were created by a passionate community of developers, who started as players.

This long list of user-generated content provides many

reasons for users to engage, connect and play. The platform attracts 58 million users every day and paid out over \$500 million to creators in 2021 (Roblox²⁵)

More than just games

Metaverse users also spend considerably more time engaged – 2.6 hours per day on average for Roblox (Nasdaq²⁶) - compared to a few minutes a day on TikTok, Facebook or Instagram (Statista²⁷). Players also socialize and play with friends, and hence tend to spend more.

Therefore, brands like **Gucci**, **Nissan**, **Hyundai** and **Ralph Lauren** and music artists create their own experiences on these platforms to engage with a younger audience.

In a few years, we will see more immersive commerce experiences that span the digital and physical worlds via augmented, virtual, and mixed reality platforms. McKinsey¹⁵ estimates that the market impact of the Metaverse on e-commerce will be USD 2.0-2.6 trillion by 2030.

Zepeto

Asia's largest Metaverse platform

Founded in 2018 by South Korea-based NaverZ, Zepeto is a free social gaming app where users can create 3D avatars, chat, share feed photos, interact in branded worlds from Nike to Samsung, with K-pop music bands, or buy avatar items from Gucci or Dior. It has 20 million monthly active users, mostly teenage girls.

Horizon World

Meta's own Social VR World

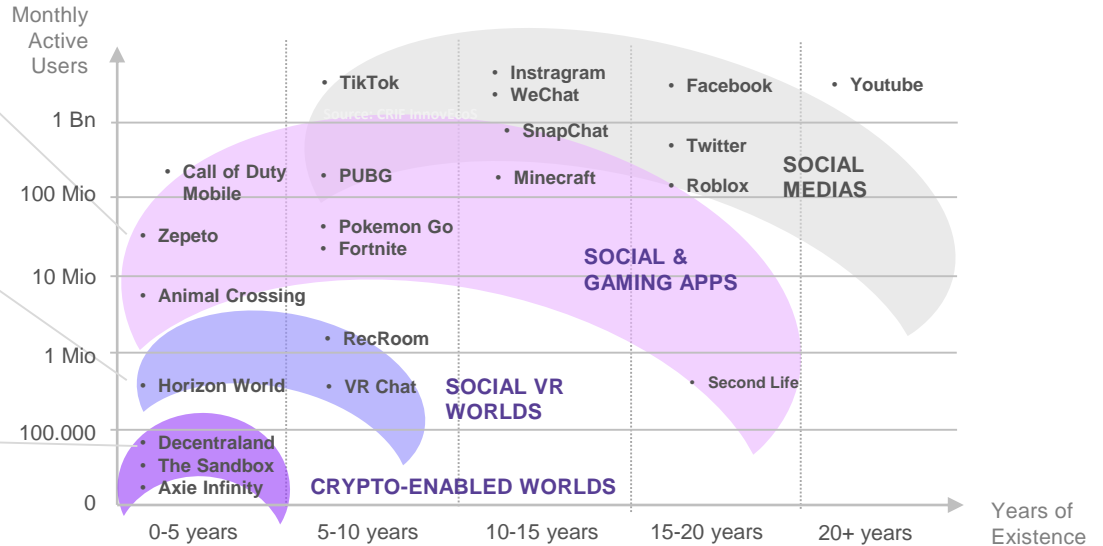
Horizon Worlds is a free virtual reality online video game with an integrated game creation system developed and published by Meta Platforms for Oculus VR headsets.

Decentraland

The first crypto-enabled virtual world

First decentralized virtual world governed by its users. Visitors are free to explore and discover the venues and events taking place there. Users can buy virtual plots of land on the platform as NFTs via the MANA cryptocurrency, which uses the Ethereum blockchain

Social and Gaming Platforms by Monthly Active Users and Years of Existence



Source: CRIF InnovEcos Analysis (June 2022)

THE NEXT GENERATION OF CONSUMERS IS ALREADY EMBRACING IT

Younger generations, namely GenZeders and millennials, have been fast in adopting the new technologies of the Metaverse. This will profoundly change how they consume as the Metaverse develops.

The typical Metaverse user is young – for instance, 80% of **Zepeto** users are teenagers, and half of **Roblox** users under 12. So, the Metaverse is primarily inhabited by Generation Z – people born between the late 1990s and early 2010s.

Some have been building 3D worlds in **Minecraft** for 15 years. They also value digital assets – even more than physical ones – embracing the purchase of virtual branded apparel from **Nike** or **Gucci** to dress their avatars

Expansion of the Metaverse will likely increase the importance of millennial and Gen Z consumers as a customer base.

"Metazens": forefront of an immense market opportunity

These "Metazens" are today's early adopters of the Metaverse and Web3 – approx. 13% of the population, according to OliverWyman²⁰.

More digital, optimistic, socially oriented and consumer-oriented, they play online games, and invest in crypto and NFTs. 70% of them are willing to pay to access the Metaverse.

Getting inside the brains of early adopters will be crucial to understanding how to develop products and services that appeal to the tech-savvy masses and accelerate the transition into products designed specifically for a new generation.

13%

of the population are "Metazens" across nine surveyed countries.

(Source: OliverWyman²⁰)

70%

of Metazens are willing to pay to access the Metaverse

THE MAINSTREAMING OF DIGITAL ASSETS AND OWNERSHIP

With the Metaverse growing in popularity, digital assets will gain in economic value, and so will their importance. Digital assets will increasingly become an integral part of human wealth, influence and power, linked to real-world finance and securitization.

DEFINITION

Digital Assets

A digital asset is anything that exists only in digital form and comes with a distinct usage right. It is created and stored digitally, is identifiable and discoverable, and has or provides value.

Today, digital assets in the Metaverse exist as game items or avatar skins inside gaming platforms or inside decentralized blockchain networks such as Ethereum or Polygon.

In online games, digital assets cannot be used outside the platform, meaning that your Gucci bag is stuck inside Roblox – a so-called “walled garden”. This is why crypto-fans believe that decentralized blockchain

USD 150 billion

the size of the virtual economy by 2025 (BCG¹⁴)

1 billion

crypto users by 2030 (BCG¹⁴)

33% of the digital

economy shifting to the Metaverse (Goldman Sachs³)

networks can help in building the interoperability of digital identities, digital assets and ownership required by the Metaverse.

With the Metaverse growing in popularity, digital assets will gain economic value.

More digital assets will be created by content creators or companies, and exchanged between users and companies. The types of digital assets one can own will also explode - from virtual land to avatar fashion,

tickets, stablecoins, invoices, credentials and personal data.

As we will routinely and seamlessly exchange these digital assets in everyday transactions, **the demand and value to secure these assets will increase too.**

Strong privacy and identity protection will be also required – think how important our mobile phones already are today in our daily lives; and multiply that by five or ten for the Metaverse.

WEB3: EMERGENCE OF A NEW DIGITAL ECONOMY

NFTs are just one example of digital assets in the Metaverse. Together with crypto and blockchains, it is set to become an important part of realizing the Metaverse's potential.

In 2021, NFTs became a global phenomenon in art, collectibles and virtual land, encouraging more people and companies to regard them as digital assets or alternative investments.

Crypto and NFT prices crashed in H1-2022, plagued by incredible levels of speculation, fraud and scams. In gaming, **Minecraft**, **Sony** and **Ubisoft** rejected the use of NFTs in games, pressured by gamers. Several Metaverse leaders even doubt that there is any future for crypto.

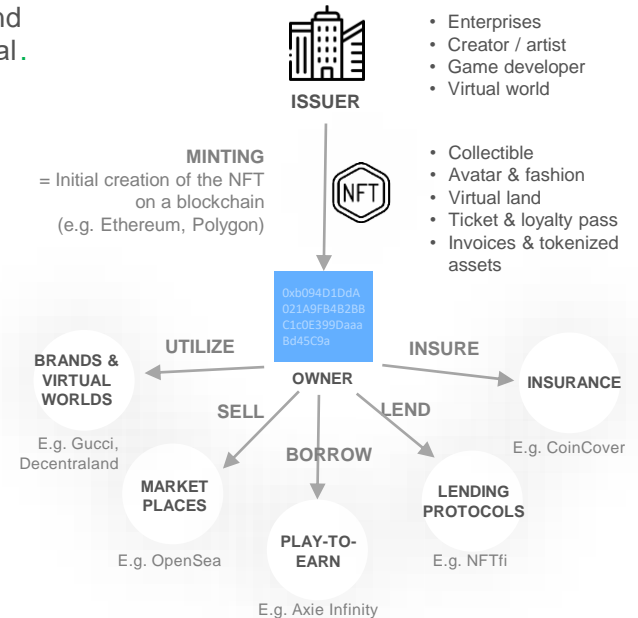
Despite this, more and more enterprises are gradually realizing the value of NFTs in consumer commerce:

- Brands like **Gucci** and **Nike** issue exclusive NFTs to engage with their fans; while **Starbucks** and **Budweiser** plan more accessible NFTs in their loyalty programs.

- players in the eCommerce ecosystem like **Shopify**, **SalesForce**, **eBay** and **MasterCard** are simplifying the issue, purchase and trade of NFTs for more merchants and consumers.
- Banks like **Mitsubishi UFG** and **Sumitomo Mitsui Bank Corp** announced plans to enable the issuance and listing of NFTs.

This broader adoption may contribute to reaching a tipping point soon, according to Gartner²⁴. Still, risks are high, "killer apps" have not yet arrived, and most regulators do not seem to be moving any faster to protect and regulate the relevant parts of the market.

The NFT environment is expected to develop further - providing proactivity in protecting customers against fraud, falsification, and loss of content value due to speculative transactions in the NFT market.



Source: CRIF InnovEcoS, 2022

FINANCIAL SECTOR IN FOCUS: THE NEXT WAVE OF DIGITAL BANKING DISRUPTION

As immersive experiences gain popularity, and as we routinely and seamlessly exchange digital assets, the Metaverse will gradually, then rapidly, lead to waves of disruption in banking that banks must anticipate.

Skills challenge

The Metaverse is a skills challenge. For instance, the **Bank of America**²³ launched a training program for its 50,000 employees to practice tasks and simulate client interactions through a virtual reality environment. **Julius Bär**²⁹ and **Woori Bank**²⁸ launched virtual worlds to attract young talent who will help them build tomorrow's Metaverse experiences.

Web3 and DeFi also bring new business models and thinking approaches – from smart contracts, to NFTs, bridges and DAO (Decentralized Autonomous Organization) – and banks such as **Citi**³⁰ are hiring talent in these areas too.

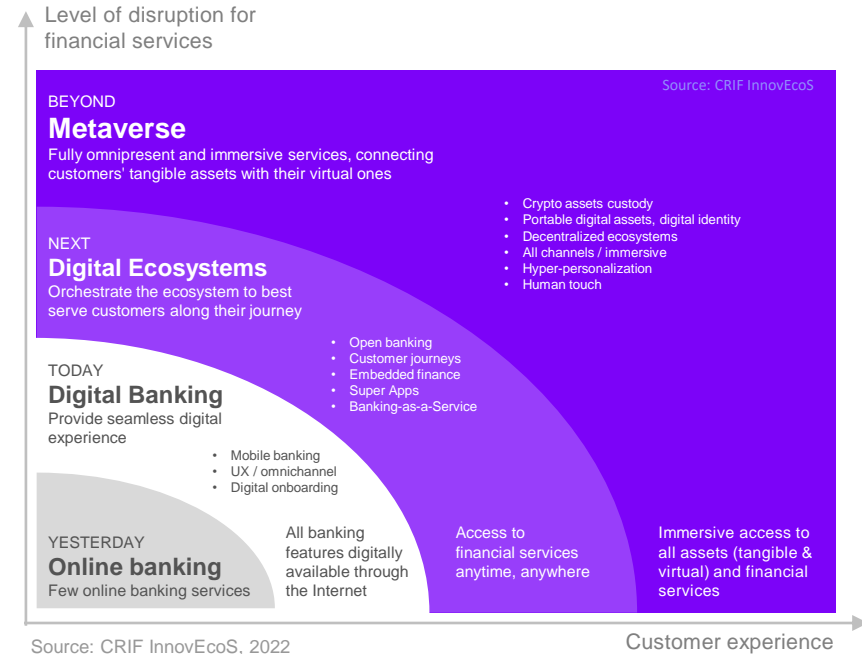
Integration challenge

Bringing these new process flows into reality involves disrupting the current technology systems used by traditional companies. Integrating such solutions into the present-day infrastructure will require a massive amount of human capital, and greater education.

With the Metaverse further increasing the pace of banking disruption, banks, more than ever, will need to assess their digital capabilities and ensure they are up to date in order to respond quickly.

Regulatory challenge

Because the financial sector has specific stringent requirements regarding risks and compliance management, banks should pay careful attention to the new risks this may bring when applying the Metaverse in the financial sector - along with the modernization of current regulations.



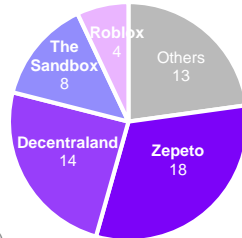
HOW CAN PIONEER INSTITUTIONS STEP INTO THE METAVERSE TODAY?

Only a few pioneers in financial services have planted their flag in the Metaverse up to now. Some offer a mere "animated brochure", while other more ambitious institutions have reimagined how customers will meet bank staff as avatars, will learn via games, or manage transactions in virtual reality.

Pioneer banks target "Metazens" early adopters and their needs, and through this they acquire significant learning on how to create engaging experiences and cater to their needs. They also start building capabilities through small experiments and learn how to fine tune these offerings.

Top 4 Metaverse Platforms for Pioneer Banks

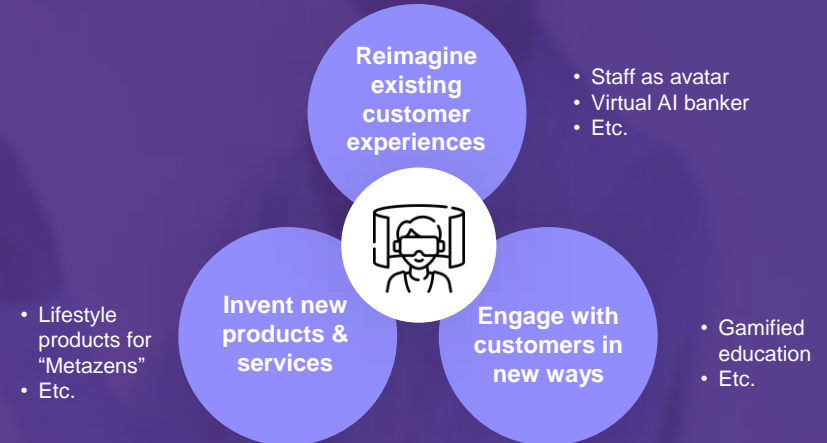
1. Zepeto
2. Decentraland
3. The Sandbox
4. Roblox



Source: CRIF InnovEcos analysis (as-of Oct 10, 2022), based on N=57 experiences** in virtual worlds released or announced by financial services institutions, excluding fintech, crypto exchanges or payment providers

What do pioneer financial institutions do in the Metaverse?

We defined 3 main pillars, including 10+ key reasons for a financial institution to be present on at least one Metaverse platform. Our conclusions were based on N=101 Metaverse Use Cases in Financial Services from financial institutions, banks, Fintech and payment providers – launched or announced.*



Source: CRIF InnovEcos analysis, October 2022

* More detailed information can be provided on [request](#).

HOW CAN WE IMAGINE THE FUTURE OPPORTUNITIES FOR FINANCIAL INSTITUTIONS IN THE METAVERSE?

Enabling the Metaverse to Grow and Scale



Banks looking at enabling the growth and scale of the overall Metaverse industry.

- *"Industrialize game platform providers with bank-grade products and access to digital asset platforms; Enable game, merchants and content creators to more easily commercialize their creations"* – **JP Morgan**¹⁵
- *"Contribute to the development of a safe and secure NFT market for the Web 3.0 era by supporting the issuance and listing of NFTs and through considering providing services for their purchase, storage, etc."* – **MUG**¹⁷
- *"Solutions, integrated in the Metaverse with the required scale and low transaction costs, are needed for token transfers and token-fiat currency exchange".* – **Deutsche Bank**¹⁸

Reimagining Customer Engagement in the Metaverse



KB Kookmin Bank is innovating with new ways to engage customers in South Korea's young, dynamic, highly-consumer oriented economy:

- **Aug. 2021:** Launch of an eSport arena in the ZEPETO Metaverse for fans to connect.
- **Nov. 2021:** Launch of a VR branch testbed where users with a VR-headset can access banking services.
- **Early 2022:** Launch of an educational game on Roblox, piloting the incorporation of financial services (e.g. one-on-one counseling, API calls for stock price), first step towards a future virtual branch in Roblox.
- **Feb. 2022:** Launch of a AI conversational agent with 3D character to talk to customers via voice or chat, and respond to their requests – e.g., remit money.
- **Feb. 2022:** Launch of a kiosk-type 'AI banker' to equip offline branches with contactless counseling service.
- **April 2022:** Partnership with Metaverse and NFT games specialist PlayDapp for brand-themed games.

Banks are in a unique position to connect customers' tangible assets with their virtual ones, giving them easier access and a better understanding of their wealth, while also giving banks the chance to strengthen customer relations and offer new services around financing and lending.

We could imagine customers connecting and interacting with bank services as avatars – bringing more humanity back into the relationship.

Customers accessing imperceptible financial services embedded within the Metaverse experiences, through seamless identity authentication and much more...

WHERE CAN FINANCIAL INSTITUTIONS FOCUS ON, CONSIDERING THE HYPE?

Experience it yourself

Understanding today's Metaverse is like riding a bike: you can learn a lot by reading books, but the best way is to actually ride one. You need to experience it yourself to understand what your clients want or maybe what your kids do – or what attracts them there.

Learn about the Use cases.

Learn what others are trying out or doing within your industry or outside of it.

Monitor the space

The Metaverse is moving at an incredible pace, due to the large, vibrant community shaping it. It is important to keep yourself regularly updated about the latest important developments.

How CRIF InnovEcoS can help

Metaverse Use Cases for Financial Services

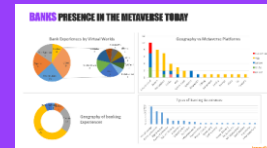
We have been researching the Metaverse since the end of 2021 and we continuously collect use cases in the banking industry to monitor the trends in the most advanced markets thanks to our global team of worldwide researchers.

You can get detailed insights into the practical use cases within financial services and also in other industries that we are continuously collecting.

Use Cases include: JP Morgan, KB Kookmin Bank + 38 other financial institutions, along with 10+ Fintechs, payment providers and enterprises.

Contact us

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ABOUT INNOVECOS

InnovEcos is CRIF's global open innovation hub. Disruptive technologies and business models are where our focus is.

We leverage our network of multidisciplinary professionals, who are passionate about innovation with +5 to +25 years of experience within the Fintech Industry, acting as local hotspots across the globe.

Our **INSIGHT SERVICES** can help financial institutions stay up to date on disruptive challenges and potential threats around innovative digital trends worldwide. Get access to our global knowledge to accelerate research and benchmark your ideas against emerging use cases.

Our research includes topics such as: embedded finance, open banking, synthetic data, conversational AI, Web3/blockchain and much more. Get in touch with us to find out more.

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ABOUT CRIF

CRIF is a global company specializing in credit & business information systems, analytics, outsourcing and processing services, as well as advanced digital solutions for business development and open banking. CRIF is currently the leading credit information banking group in continental Europe and a major player in the global market for integrated business & commercial information and credit & marketing management services.

Through continuous innovation, the use of state-of-the-art technology and a strong information management culture, CRIF supports financial institutions, credit unions, insurance companies, telco, media, utility and energy companies, businesses, and consumers in more than 50 countries. In addition, as part of its end-to-end solutions, CRIF has developed a line of services for individuals and SMEs dedicated to financial well-being and the prevention and protection against fraud and cyber risks, while CRIF Ratings, a credit rating agency authorized by ESMA and recognized as an ECAI, provides ratings on non-financial companies based in the EU.

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