Chapter 16.

INSURANCE IN THE METAVERSE

The Metaverse is a vision that aims to provide a hybrid environment that merges the physical and digital worlds. It consists of computer-generated worlds, independent areas that consistently follow the same value systems. Users will be provided with impressive cyber-virtual experiences in the physical world by connecting virtual spaces into an integrated 3D hybrid world wide web. The Metaverse is considered to be the successor to the Internet or the next generation Internet (3D Internet). It is not a project or a product of one company, but a concept and a direction towards which all large companies investing in the future aspire. It is an immersive digital experience where users using Artificial Reality (AR) and Virtual Reality (VR) can develop their social networks, have the opportunity to live as digital natives and have the opportunity to experience an alternative way of life through a virtual environment. Various realistic scenarios for the use of the Metaverse are available in various fields, such as education, healthcare, tourism, etc.

One of the main drivers of this wave is the corona virus pandemic, which has led to fundamental changes in how people work, entertain and socialize today. Furthermore, the Metaverse has positioned itself as a core component of a future where users increasingly perform conventional tasks remotely. It is recognized as a developing paradigm.

The Metaverse was first mentioned just 30 years ago, in 1992, in the science fiction novel Snow Crash[1] by Neal Stevenson. It describes a virtual world into which the protagonists constantly escape from the real world. Shiny glasses project a brilliantly lit boulevard in front of the main character Hiro's eyes. His computer displays an image of virtual reality - the Metaverse. Hiro's real life in California is pretty miserable, but in the Metaverse he is royal. Having bought the license early in the development of the Metaverse, he was given a house on the busiest part of the street which is the equivalent of Broadway in New York or the Champs-Élysées in Paris. In that Metaverse, people are represented by avatars – audiovisual bodies. The avatar can look whatever the creator wants: beautiful, ugly or in the form of a giant talking vegetable. Hiro still looks like Hiro and his virtual part has become a favorite part of his hybrid life.

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[1] Stephenson, N. (1992). *Snow Crash*. New York: Bantam Books.

"The best way to predict the future is to create it" . This quote highlights the power of human activity and the potential for transformative change when we actively participate in determining the future we envision. However, the author was probably not aware that the future he fantasized about is so close, that computers are in everything and everyone is in computers and that virtual realities are conquering the world so that no one is sure what is real and what is not anymore.

Avatars that are representations of people in a virtual world are able to seamlessly navigate through a variety of virtual worlds, including Sub-metaverses, to experience the digital environment and participate in virtual economic activities through physical infrastructures and Metaverse initiatives. They play a key role in shaping social interactions, creating a sense of presence and individuality. These digital representations of ourselves allow us to move and engage in the Metaverse, making the physical and digital realms well connected. As we interact with others and explore virtual environments, the importance of avatars is evident as they reinforce social ties and give a personal touch to an ecosystem such as the Metaverse. Physical limitations are reduced, and avatars allow us to transcend geographical boundaries and achieve social interaction with individuals from different backgrounds and cultures. Our task is to personalize our avatars to reflect our preferences, interests, aspirations, abilities, skills, etc.

The Internet has always served to connect people. Over the past three decades, Internet technology has evolved and so has the way we interact with it. Much has changed, but the three key eras of online communities are:[2]
- Web 1.0 which connected us online through the revolutionary Netscape browser,
- Web 2.0 introduced us to online communities powered by Facebook,
- Web 3.0 will take us to a decentralized virtual world - the Metaverse.

1. THE CONCEPT OF METAVERSE

Figure 1 shows the basic concepts of the Metaverse and their relationships. It is a complex and elastic ecosystem without clear boundaries and strict rules. The main characteristics of the Metaverse are:[3]

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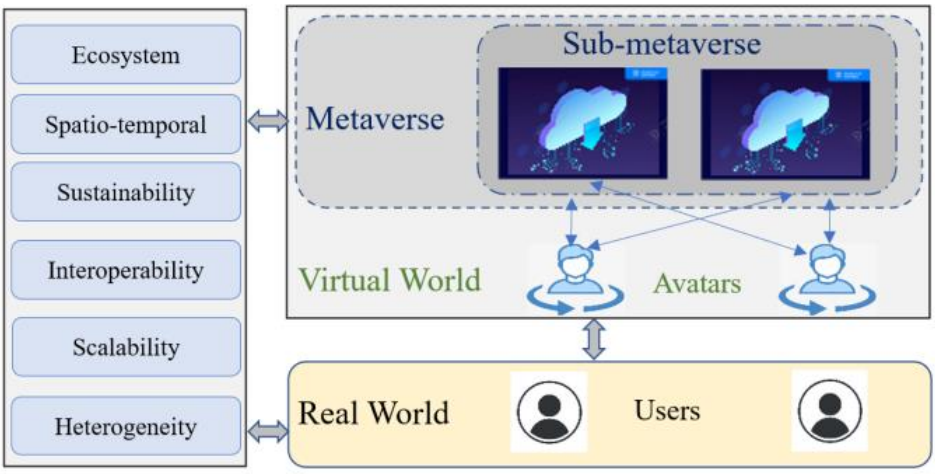
[2] Grider, D., Maximo, M. (2021). *The Metaverse: Web 3.0 virtual cloud economies*. Grayscale Research, p. 1-19.
[3] Rawat, D., El Alami, H. (2023). *Metaverse: Requirements, Architecture, Standards, Status, Challenges, and Perspectives*. Washington: Howard University.

- Immersiveness - This feature implies that the analog and digital worlds are merged, stuck together, in such a way that there is no space in between, there is no sense of border when moving from one to the other. It refers to a computer-generated virtual environment that is realistic enough for users to feel both psychologically and emotionally. With the development of artificial intelligence, it is possible to act on the sense of sight, hearing and touch as well as follow and understand expressions, such as gestures and signs, and thereby understanding emotions and reactions;
- Space-time unlimitedness - The real world has limitations due to the finite nature of space and the irreversibility of time. This feature refers to the breaking of space and time constraints in the Metaverse because virtual space and time here are infinite;
- Sustainability - A high degree of independence and closed economic cycles indicate that the Metaverse has a sustainable and consistent value system;
- Interoperability – This implies that users can seamlessly move between virtual worlds (i.e. Sub-metaverses) without interruption, giving an impressive experience. One of the main requirements is that digital assets can be used and exchanged between different Sub-metaverses;

Figure 1. Basic concepts of the Metaverse



Source: Rawat, D., El Alami, H. (2023). *Metaverse: Requirements, Architecture, Standards, Status, Challenges, and Perspectives*. Washington: Howard University.

- Scalability - Refers to the Metaverse's ability to not lose performance even with a large number of concurrent users/avatars. The level of complexity of the scene, the scope and range of interactions between users can vary significantly and should be prepared to respond to this;

- Heterogeneity - It is expected that there are heterogeneous virtual spaces in the Metaverse. Heterogeneity is reflected in different implementations, different physical devices as well as different interfaces. In addition, there are heterogeneous types of data, communication, modules and processes, and human psychology and nature are also diverse.

Basic elements of the Metaverse

Each new vision is usually a combination of already developed technology, trends and markets. The technology that enabled the construction of the Metaverse is actually a collection of all advanced technologies that have already proven themselves well in application, such as: cloud systems, Internet of Things (IoT), Artificial Intelligence (AI), Blockchain, digital twins, AR/VR, digital avatars and the like. In addition, new resources, standards and tools are necessary to be developed for the realization of the Metaverse.

The main technological bases and prerequisites for the existence of the Metaverse will be described in more detail below. Certain components are basic and any further upgrade is not possible without them, while others are optional and not every segment of the Metaverse needs to contain them.

Distributed/decentralized cloud: The Metaverse requires a stable and scalable support for its huge and intricate digital landscapes. Using the cloud, it is possible to increase or decrease resources as needed, which allows adaptation to a large number of users or increased traffic. Cloud computing ensures availability from anywhere, at any time. Users can access virtual worlds and environments from their desktop computers, laptops or mobile devices, which is key to the widespread adoption of the Metaverse and its growth as a platform. Cloud technology provides improved reliability as cloud service providers invest heavily in the infrastructure and resources necessary to ensure the availability and reliability of their services. An example of such a cloud is Microsoft Azure, although there are many other providers fighting for their share in the Metaverse.

Communication and networking: Numerous technologies enable reliable real-time communication between the physical and virtual worlds, as well as between Sub-metaverses. These are 5G/6G Software Defined Networks (SDN), IoT and resource allocation platforms. SDN facilitates flexible and scalable network management on a large scale through the separation of control planes and data planes. Physical devices and resources on an SDN are managed logically using a standardized interface such as OpenFlow, which allows storage and bandwidth resources to be allocated dynamically based on the real-time needs of the sub-Metaverse. IoT sensors are extensions of human senses in the Metaverse. The

Metaverse requires massive resources for intensive data processing and support for rendering immersive landscapes, huge storage resources, and massive network resources to maintain ultra-high-speed, low-latency connections.

Ubiquitous computing: By creating an environment where a computer system can be accessed anywhere at any time, ubiquitous computing aims to allow users to access the Metaverse at any time. By integrating ubiquitous smart objects in the physical environment and powerful computer systems in the cloud, fluid interaction of users with their avatars is enabled, without the need to use specific equipment, phones or laptops.

Digital Twins: It is a digital model of a planned or actual physical product, system or process. It serves as its digital counterpart which is indistinguishable in terms of practical purposes, such as simulation, integration, testing, monitoring and maintenance. From its initial introduction, the digital twin is intended to be a basic assumption for product life cycle management and exists throughout the entire life cycle (creation, construction, support and disposal) of the physical entity it represents. Since the information is granular, a digital twin's representation is determined by the value-based use cases for which it was created to implement. A digital twin can and often does exist before a physical entity exists. Using a digital twin at the creation stage allows the entire lifecycle of the envisioned entity to be modeled and simulated. A digital twin of an existing entity can be used in real time and be regularly synchronized with the corresponding physical system. Although the concept originated earlier, the first practical definition of a digital twin came from NASA's attempt to improve the simulation of physical models of spacecraft in 2010. Digital twins are the result of continuous improvement in product design and engineering activities. Product drawings and engineering specifications have progressed from hand-drawn blueprints to computer-aided design to model-based system engineering and tight signal linkage from a physical partner.

Extended Reality (XR): The development of increasingly miniaturized sensors, integrated technologies, as well as the development of XR technologies, create conditions for the main terminal to enter the Metaverse to be XR devices. By integrating VR/AR/MR technologies, XR provides impressive experiences and real-time interaction between people, avatars and 3D environments created in a virtual world. Specifically, VR offers the ability to immerse oneself in a virtual world, AR provides the ability to experience real-time holograms, graphics and video in the real world, while Mixed Reality (MR) offers a transitional experience between these two technologies. Therefore, the interaction between the user and the avatar will no longer be limited to mobile devices (e.g. mobile phones and laptops), but will be available in a wide range of interactive devices. Furthermore, the combination of low-latency computer system interfaces and real-time AI-

driven rendering can eliminate negative experiences such as dizziness when using XR devices (e.g. VR helmets).

Security and privacy: In light of the many potential applications of the Metaverse in modern life, security and privacy represent a significant and crucial requirement. In addition, the Metaverse is very vulnerable to various threats and attacks. Various cyber-defense techniques such as detection, risk assessment, countermeasures and privacy must be considered to ensure data security and protection in the virtual and real world.

Digital assets: Blockchain technology is the basis for a virtual economy in the Metaverse. It supports open and decentralized solutions such as Non Fungible Token (NFT). It is a technique that can be used to identify assets and trace the origin of ownership in the chain. An NFT is a digital product, digital value, digital money or token and can be anything in digital form: image, photo, design, gif, video, text, etc. An important feature of NFT is that there is only one original and it is clearly presented who owns it. A copy can have countless but the original is what has value. One of the most expensive NFTs cost $69.3 million. It is a collage by a graphic artist called "The First 5,000 Days". In addition, the concept of decentralized finance (De-Fi) is used in the Metaverse and is designed to provide secure, transparent and highly complex financial services.

Artificial intelligence: By combining artificial intelligence with other technological requirements such as communication, ubiquitous computing, interaction, security and privacy, the Metaverse is able to create secure, scalable and realistic virtual worlds that are always available. Different areas of artificial intelligence are used to improve the performance and reliability of the infrastructure: Machine Learning (ML), Deep Learning (DL) and Reinforcement Learning (RL).

IoT sensors and other human-machine interaction devices: By using sensors, simple human movements or some complex actions can be analyzed and recognized based on ML/DL. As a result, the user's physical movements in the real world are projected into the virtual world, allowing them to fully control their avatars in order to interact with other objects in the Metaverse. These avatars can also perform speech and emotion recognition with analysis based on Natural Language Processing (NLP). These NLP processors have extremely high accuracy and processing speed compared to natural speech.

Applications: Numerous applications that use the Metaverse platform to provide hybrid solutions and services.

2. REALIZED METAVERSES

Metaverse is still in the preparation and testing phase. However, we know that its elements will include existing digital environments that focus on providing impressive experiences for users. We can highlight a few that went the farthest according to Forbes' list[4] of the best Sub-metaverses.

Meta Horizons is the successor of the famous Facebook platform. When Facebook founder Mark Zuckerberg renamed his company Meta, he made it clear how important he thought the concept of the Metaverse would be to the future of digital communications, socializing and living. So far, the result has been achieved through several projects: Horizon Worlds (virtual worlds platform), Horizon Venues (events platform) and Horizon Workrooms (virtual office). All of these platforms are interconnected and allow users to create avatars that represent them while exploring and interacting with other users.

Fortnite is primarily known as one of the most successful online games ever created. But the creators of Epic Games quickly realized that when they gathered millions of engaged, technically savvy gamers on their platform, it potentially became something more than a game. The two main trends that tend to turn the world of Fortnite into a true Metaverse are live music concerts by global superstars such as Travis Scott, Ariana Grande and Billie Eilish. Brands such as Carrefour supermarket have used this creative mode to take their first steps into the Metaverse.

Pokémon Go launched before the hype around the concept of the Metaverse intensified. However, it is a phenomenal application for augmented reality, which is predicted to be one of the foundational technologies around which the Metaverse will be built. It is one of the best examples of how the Metaverse will involve the merging of the real and digital worlds. Its creator Nintendo further blurred the boundaries by allowing real businesses to establish a digital presence within the poke-verse by launching advertising and promotional campaigns.

Liberverse (Liberland Metaverse)[5] is a virtual representation of the state of Liberland. The seven square kilometer peninsula on the Danube River between Serbia and Croatia has become the subject of a dispute between these two countries because neither of them recognize the mentioned area as their own. Serbia considers the Danube to be the border between it and Croatia, while

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[4] www.forbes.com/sites/bernardmarr/2022/05/16/the-10-best-examples-of-the-Metaverse-everyone-should-know-about/

[5] https://liberverse.net

Croatia recognizes cadastral borders that include the area on both sides of this river. As the Danube changed its course over time, this area remained unoccupied. Liberland was self-proclaimed a state on April 13, 2015. Vit Jedlicka, the founder and president of Liberland, has very big ambitions in terms of creating a Metaverse associated with this country. Liberland uses the "Liberland Merit" cryptocurrency as its official currency, and when you get an electronic residence card, you get the first merit, which should enable access to services and representatives. At the end of 2021, it was announced that work was being done on a virtual world, called Liberland Metaverse. British architecture studio Zaha Hadid Architects has created a futuristic city with curved buildings where people can buy parcels with cryptocurrency and enter digital buildings as avatars. Jedlicka says that Liberverse is currently open to citizens and people with electronic residence cards, but that anyone can schedule a visit.

3. METAVERSE INSURANCE

The Metaverse is a digital universe that enriches reality. It is a series of impressive digital worlds that exist in the cloud, where people can connect, communicate and transact, and it is a new technology that promises to revolutionize the way people live, but also the way how insurance companies operate. The evolution of the Metaverse is at its beginning, in a period very similar to the early days of the Internet, so it is difficult to predict what the future may bring for insurers and policyholders. It is quite likely that the Metaverse will be a disruptive set of technologies, bringing radical changes to certain areas of human life and work, including the insurance industry.

According to the Accenture Business Trends Survey conducted from April to May 2022, respondents at companies that have some sort of Metaverse strategy believe that in the next three years, about 4% of their revenue will come from new products, services or businesses related to the Metaverse . This represents a value of $1 trillion globally,[6] indicating the size of the economic potential of the Metaverse.

The level of human engagement around computer games, digital media, entertainment, sports, and fashion is sufficient for the growing economic impact of the Metaverse. Very impressive experiences in the Metaverse lead users to value digital assets similarly to physical assets. Cryptocurrencies, such as Bitcoin and Ethereum, can be used in the Metaverse instead of standard (so called fiat) currencies, which are otherwise the most common means of payment. It is

[6] Alon, Sh. (2023). *Metaverse impact on life insurance.* LinkedIn

assumed that the first bank in the Metaverse will not be a traditional bank from the analog world, but rather by a company that combines advanced technologies with finance (FinTech) or one of the IT giants, Google, Amazon or Meta (formerly Facebook).[7] A company with a banking license in the Metaverse will create completely new opportunities in the virtual world. The same will apply for the first insurance company in the Metaverse. American investment banking and securities trading company Morgan Stanley believes that the Metaverse could become the next generation of social media, streaming and gaming platforms. The corona virus pandemic was one of the powerful drivers of the Metaverse. People discovered unforeseen possibilities, as individuals around the world suddenly began living their real lives much more digitally than ever before.

Even 70% of insurance executives in the United States say they have a good understanding of the term Metaverse and most often view it as a virtual space for interacting with other stakeholders.[8]

By investing in the Metaverse and leveraging its unique capabilities, insurers can improve their business, enhance customer experience and address new risks in this rapidly growing space. Whether using avatars for training and customer support, creating digital twins for asset acquisition, or offering coverage for digital assets, the Metaverse expands the existing boundaries in customer experience and risk coverage.

Improvement of the existing business of the insurer

Insurance companies can play multiple roles in the rapidly evolving Metaverse environment. They can establish their presence in VR to strengthen the brand and engage with their customers to educate and share experience about risk exposure, which increases interaction with policyholders and can be used as an additional distribution channel in the future.

Insurance company employees can use Extended Reality to conduct interpersonal and soft skills training for brokers, agents, and customer support staff using avatars and various scenarios in a 3D virtual environment. Offices in the Metaverse allow employees to collaborate and exchange ideas, conduct job interviews, help new hires in adaptation, provide training and manage

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[7] Wilhelm, M. (2022). *The Metaverse: Opportunities and challenges for financial service providers and insurance companies*. ERGO Group.
[8] PwC. (2022). *US Metaverse survey*. https://www.pwc.com/us/en/tech-effect/emerging-tech/the-Metaverse-and-insurance.html

performance with a more personalized and pleasant experience, saving time and resources. The Metaverse has the potential to enable the hiring of other employees from the company in the case of open positions, facilitate their onboarding and speed up training.

It is also easy to imagine how in the future insurers could use the Metaverse to streamline certain key processes, such as risk assessment, virtual underwriting, claims management, etc. using the avatar concept.

VR can be used as a tool to deliver existing insurance services in new innovative ways. This can be particularly interesting in health insurance, where remote consultations, mental health counseling, physiotherapy services, etc. can be provided. at significantly lower prices than in physical health institutions.

The Metaverse offers great opportunities for insurers to improve the interaction among employees, customers and other stakeholders. Metaverse already has various commercial applications that work in practice, especially as a business improvement tool. For insurers, there are already promising opportunities in underwriting and claims processing, product training, risk management, customer support, various customer interactions and marketing.

The concierge service in the Metaverse is particularly interesting for policyholders. It is a personalized experience in the 3D office of an insurance company or agency that allows current and potential customers to interact with an avatar rather than a website or application, providing a more personal digital experience more akin to a physical meeting, for support during purchasing, administration policy and claims settlement.

In underwriting, the review of physical assets is facilitated by the ability to inspect its digital infrastructure in the Metaverse. Of course, it is necessary to first train underwriters how to review assets in the Metaverse, thereby enabling better risk management. The risk of insuring a person can also be assessed by visualizing their health and performance in real time. Also, the Metaverse can help in determining more accurate price of insurance, as well as facilitate the training of risk assessors by enabling risk-free experimentation.

Property claims assessors can use Virtual Reality for damage assessment training in e.g. home, through an intuitive learning course with hundreds of realistic combinations and damage scenarios. Metaverse thus helps to reduce errors and better understand the processes of risk and claims assessment, all in a controlled environment that results in faster resolution of claims, and therefore timely payouts. Using detailed, interactive 3D models in VR, appraisers can take a close look at all the details and virtually walk through a damaged scene to determine

the amount of claims compensation. Metaverse even promises to identify risks in real time and prevent damage entirely by using IoT sensors, which map reality into the digital world. Metaverse can also be used to improve claims processing. For example, an insured who has suffered a loss could use Extended Reality to take pictures of the accident scene and upload them to a virtual office for claims handlings. The insurance company could then use the Blockchain to securely store data and process claims. This could significantly reduce the time and costs of claims settlement.

The Metaverse can be used to create virtual insurance offices, where clients can communicate with agents in a virtual environment. This could significantly reduce the need for physical offices and reduce costs. The Metaverse can also be used to create impressive training simulations for insurance agents, where they can learn how to deal with different situations in a virtual environment.

Improving the policyholder experience was among the top three technology investments insurers could make in 2023. According to research by Gartner, improving the customer experience is ranked higher than other primary focuses of insurers, such as revenue growth and new product development.

New risks in the Metaverse

The growing popularity of the Metaverse creates a range of new risks that have financial implications in the real world. Very few of these risks can currently be covered by insurance, giving insurers the opportunity to create products that protect property and people in both the real and virtual worlds. The true potential of the Metaverse for insurers lies in the development of new products and services. Insurance companies can develop new solutions to protect against risks in the Metaverse, as well as insure its operations, which includes protection of digital assets and NFTs, digital identities, ensuring business continuity and intellectual property protection for the many companies that manage parts of the Metaverse.

In addition, insurers may be asked to play a role in addressing potential problems arising from the use of the technology itself by protecting the real world from some of the potential risks the Metaverse may present (from cyberbullying to addiction issues).

The Metaverse provides great opportunities for insurers to cover new risks in the Metaverse with new or modified products. The increasing use of the Metaverse leads to greater ownership of various forms of digital assets such as NFTs, virtual real estate and avatars. This creates new risks that cannot be covered by existing

products, i.e. the need to cover those risks. Currently, digital asset insurance is inadequate and expensive. Investors, buyers and creators in the Metaverse need effective protection and affordable premium price against potential financial loss, liability and loss of ability to use their assets. Fortunately, there are practical ways that insurers can meet these stakeholder needs while generating new revenue for themselves.

The new risks specific to the Metaverse, which will be insurable in the future, are as follows:
- Losses due to technological problems such as: poorly programmed events in the Metaverse, limited capacities of the computer network, inability to access the Internet and provider service interruptions, may cause financial losses to users, platforms, brands, companies and event promoters;
- Criminal and malicious behavior in the virtual world similar to cyber risks in the real world;
- Financial fraud related to fake virtual real estate, illegal fundraising and various illegal activities with crypto-currencies;
- Hacking to steal personal data from the real world, avatar data and other virtual assets or destroy VR equipment;
- Theft in the virtual world: theft of identity (avatar), virtual real estate and other digital assets;
- Violations of copyright in VR, which cause financial loss and loss of trust of clients, owners and creators;
- Mental health issues may arise from online harassment, trolling and toxic behaviors that cause emotional pain.

Areas where Metaverse brings revolutionary changes in insurance

Metaverse provides new opportunities for insurers to engage with customers, develop better business and risk strategies and offer innovative coverage and products. As the line between the physical and digital worlds blurs more and more, insurers need to be ready to operate in this hybrid environment and use its full potential to bring about revolutionary changes in following areas of insurance:[9]
- Virtual claims processing - Metaverse will enable insurance companies to process claims more efficiently using virtual reality tools for claims inspection and claim valuation. This will save time and reduce costs;

[9] Abhishek, P. (2023). *10 ways the Metaverse Will Revolutionize Insurance.* Insurance Thought Leadership.

- Risk Assessment - Insurance companies can use the data collected in the Metaverse to more accurately assess risks. This will allow them to offer personalized insurance policies based on an individual's lifestyle and activities;
- Improved customer service - Metaverse will allow insurance companies to provide personalized customer service through 3D virtual assistants and 3D chatbots. This will improve user experience and reduce response time;
- Fraud Detection - Metaverse can help insurance companies detect fraud by using virtual reality tools to verify claims and investigate suspicious activity;
- Dynamic Pricing - Insurance companies can use data collected in the Metaverse to adjust prices in real time based on an individual's behavior and risk profile;
- Cyber Security - Metaverse can be used to test and develop cyber security protocols to protect insurance companies from cyber-attacks;
- Health - Insurance companies can use the data collected in the Metaverse to offer personalized health programs to their customers;
- Predictive Modeling - Metaverse can be used to build predictive models that can help insurance companies predict events and make better informed decisions;
- Digital Identity Verification - Metaverse can be used to verify an individual's identity through virtual reality tools, making it more secure than traditional methods;
- New sources of income - Metaverse will allow insurance companies to create new income by offering virtual insurance products and services, such as virtual property insurance for digital assets and virtual travel insurance for online games.

4. CHALLENGES FOR INSURERS AND REINSURERS

Insurance companies that choose to offer property insurance in the Metaverse will face significant challenges. Indemnification of a realistically estimated loss suffered, as one of the basic principles of insurance, is very difficult to respect in VR, because proving realistic amount for financial losses is very demanding due to the impossibility of determining the true value of NFTs, digital assets, etc.

Insurers will have to spend a lot of resources to be able to understand and assess the new risks that appear only in the Metaverse, due to the lack of experience, historical data on the realization of risks and the dynamics of VR development that leads to the emergence of new risks. Therefore, determining an adequate premium is a great challenge.

In developed western countries, insurance companies are involved in the modern trend of meeting ESG goals in their regular business. In the Metaverse, it is quite difficult to assess ESG targets.

It is not clear which entity is responsible for regulating transactions in the Metaverse, thus creating ambiguities and who is competent to arbitrate potential disputes and enforce potential decisions of regulators or courts. Given the absence of regulation for insurance in the virtual space, operators emerge in the Metaverse to disrupt the market by offering bets that resemble insurance, but usually lack the key principle of insurance, insurable interest. Also, platform operators often offer their own insurance products, which are competitive in price, but not adequate to the carried risk.

Avatars are not eligible to be persons based on traditional requirements that persons should fulfill, and the corresponding law cannot be applied to them as for human beings. Nevertheless, artificial personality can be attributed to avatars to enable them to acquire legal rights and obligations that would be adequate in the Metaverse. A corporate law framework, although not a perfect solution, could be a better solution for legislation that would address the issue of avatars' rights and obligations in the Metaverse.[10] The rights granted to enterprises should be extended to avatars in the Metaverse because of the enormous possibilities and impact on the quality of human life by promoting the development of the Metaverse. Establishing legal protections for avatars in the Metaverse, especially under the guise of anonymity, would encourage individuals from real life to participate in the development of the Metaverse. Extending legal protection to avatars would encourage business investment, reduce unnecessary litigation and promote creativity. In the short term, potential legal issues in the Metaverse would include the areas of data and privacy protection, intellectual property rights and damages in terms of harassment and injury of personality
. Such problems can be solved by using the existing paragraphs of intellectual property rights as well as the Law on Consumer Protection.

One of the biggest challenges is the interoperability of the different parts of the Metaverse. There are multiple platforms on which the Metaverse is being developed and they may not be able to work with each other. This can lead to the fragmentation of the Metaverse and limit the mass adoption of new technology.

A big challenge is privacy and security in VR. Metaverse involves the collection and processing of large amounts of personal data. This data must be protected against unauthorized access and use.

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[10] Cheong, B. C. (2022). Avatars in the Metaverse: potential legal issues and remedies. *International Cybersecurity Law Review (2022) Vol. 3*. p. 467–494.

5. EXAMPLES OF INSURANCE IN THE METAVERSE

It is important to emphasize out that the Metaverse does not only offer great possibilities to insurance companies in theory and that in Asia certain insurance companies have already taken their first practical steps into the Metaverse. These are: AIA, AXA, HSBC, FT Life, Generali and Prudential Financial.[11]

The Metaverse is big business. For example, Decentralend Virtual World,[12] the largest 3D Metaverse project on the Ethereum Blockchain, consisting of 90,000 plots of real estate that owners can develop or lease to others, is the largest decentralized Metaverse, with an estimated value exceeding $3 billion.[13] By definition the Metaverse is a virtual world, not a physical world, but regardless, there are many types of assets that can exist in the Metaverse: cryptocurrencies; virtual real estate; digital artwork; computer game currencies (e.g. V-Bucks in Fortnite); tools used in games (ego Minecraft tools); other virtual objects that could be destroyed or damaged according to the logic of the particular virtual entity in the Metaverse and the events that logic allows such as: cars, houses, businesses, as well as the avatar's health and lives.

By owning assets in the Metaverse, individual users have a sense of ownership, pride and responsibility for their virtual assets and want to reduce the risk of losing their assets by taking out insurance for their assets in the Metaverse. They are willing to pay a premium to insurance companies in the physical world to insure property in the virtual world. This represents a huge untapped opportunity for traditional insurers.

Korean Heungkuk Insurance in the Metaverse

The COVID-19 pandemic has spurred the development of an alternative to face-to-face interactions between insurance company agents and customers. Agents are now using Zoom, Teams and similar tools to try to sell insurance. This is obviously a temporary solution that can never successfully replace a live sales presentation. While relatively simple insurance products such as auto, home and apartment insurance, pet health insurance and the like have long since successfully transitioned to a digital sales experience on websites and mobile

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[11] Generali Group (2022). *Insurance in the Metaverse - Hype, Hope, Have To?* www.generali.com/thepulse/2022/Insurance-in-the-Metaverse

[12] https://decentraland.org

[13] Prakash, Ch., Jakubek, J. F. (2023). *Insurance trends in the Metaverse*. Simon-Kucher & Partners.

applications, life insurance and other major property insurance products and beyond require personal attendance. Metaverse provides an opportunity to give customers a truly personal experience even in the virtual world.

Heungkuk Life Insurance,[14] the financial arm of Taekwang Group, announced in August 2021 that it is the first life insurance company to join the Korean Metaverse Alliance, a collaboration between Korea's Ministry of Science and Information Technology and more than 300 national companies. They allowed customers to visit a branch in the Metaverse using virtual reality glasses.

Korean Hanwha Life Insurance in the Metaverse

Training of sales staff in all broker agencies and bancassurance channels is a key pillar of sales success for all insurance companies. Employees responsible for training are key factors in onboarding new sales staff and training more experienced sales team members. Traditionally, they have delivered their training programs through physical seminars supplemented with training materials in various written, audio and video formats. However, during the coronavirus pandemic, they had to find ways to move their operations online. While many have used video conferencing tools, Hanwha Life[15] has introduced its own sales training program in the Metaverse, Lifeplus Town. It was designed based on the architectural structure of the premises where the physical training program was held until then. Lifeplus Town consists of a conference hall, a lecture hall, an event zone, a quiz zone and a cafe. Participants can freely move around the virtual space using avatars, attend events and communicate in real time through text messages and video chat. Hanwha Life plans to continue and expand Lifeplus Town in the future.

Swiss online insurance Smile in the Metaverse

The largest digital insurance provider in Switzerland, Smile, has expanded its offering into the Metaverse. Through the so-called Smile Experience Lounge, clients can access the virtual world of "smile.meta" and explore the insurer's offer.[16] The living room of the Smile virtual house is dedicated to household

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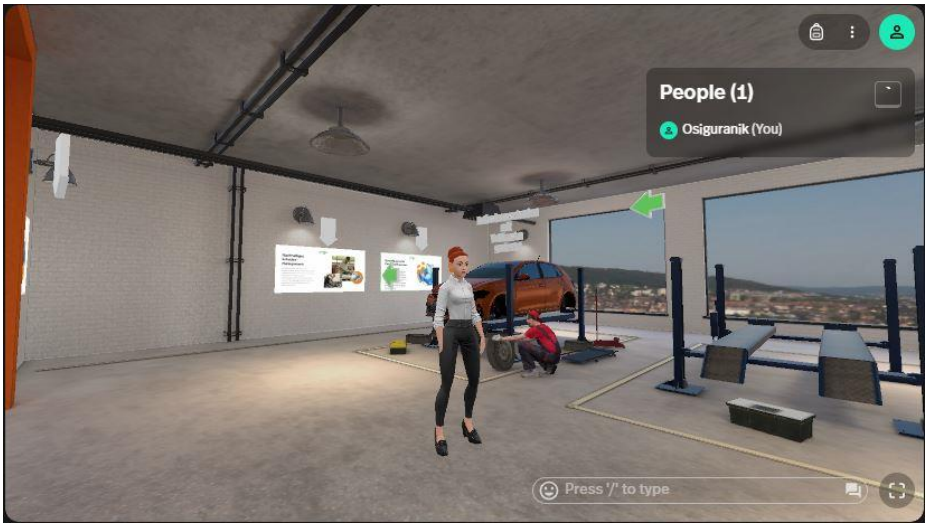
[14] www.heungkuklife.co.kr

[15] www.hanwhalife.com/static/company/english/EN_0000000_P10000.htm

[16] Editorial Office Crypto Valley Journal (2023). *Swiss online insurance dives into the Metaverse*. https://cryptovalleyjournal.com/hot-topics/news/swiss-online-insurance-dives-into-the-Metaverse/

insurance, while the garage is dedicated to car insurance, as shown in Figure 2. Smile is also the pioneer who first enabled virtual insurance consultation in the Metaverse. Here, clients can schedule appointments for consultations and, if they wish, conclude an insurance policy. Technical support for the concept was taken over by the Zurich based IT consulting company, Inacta.

Figure 2. Motor Vehicle Insurance



Source: www.spatial.io

In the Metaverse, digital meetings through avatars become more individual and personal. Metaverse offers new opportunities for interaction with policyholders in the same virtual space as well as with customer care representatives. Access to the virtual world "smile.meta" is easily obtained through a link on the website of the insurance company Smile.[17] VR equipment is not mandatory, but recommended for the full experience. On the website of this insurance company, select the link "Smile goes Metaverse" to open the part of the site dedicated to the Metaverse. By choosing the "smile.meta" link, you enter the Metaverse on the website www.spatial.io, one part of which is the virtual insurance company Smile. It is necessary to log in by opening an account on the Spatial site or through Google with the username and password used for Gmail. First, an avatar is selected and named, then the virtual offices of the insurance company are visited and possibly interacted with other avatars, visitors or employees. In the virtual office, there is also a portal through which one goes to the "smile.green" part of the Metaverse, which is a landscape in the forest with billboards on which the

[17] www.smile-insurances.com

rules of the environmental policy of the Smile insurance company are written. Appointments for consultations in the virtual world can also be booked through this website.

By merging the physical and virtual worlds, physical distance can be easily overcome and digital closeness with policyholders can be strengthened. For example, relevant contract issues can be illustrated by virtually displaying different types of parking damage on a car. Smile has moved its offices to the top floor of the Prime Tower in Zurich and during the consultation in the Metaverse, it not only offers a view of a car park with damaged vehicles, but also a beautiful 360° view of Zurich.

Embracing the Metaverse, Smile has positioned itself as a forward-thinking, technology-driven company committed to meeting the needs of its customers. The use of cutting-edge technology, such as virtual reality and web 3.0, allows the insurance company Smile to improve the customer experience and outperform the competition. Smile sees great potential to create a completely new customer experience and delight its policyholders. It will be interesting to see how this experience in the Metaverse will be accepted by the insurance company's customers and whether this new type of customer loyalty will become a standard offering in the Swiss insurance market.

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