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Gaming the Metaverse

User Experience Analysis and Insights from Fortnite

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Abstract

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This thesis explored user experience (UX) in metaverse landscape design, focusing on user-generated content (UGC) and Massive Multiplayer Online (MMO) gaming platforms, with Fortnite as a case study. The analysis aimed to address challenges in motivation and engagement, emphasising user retention.

Methodologies included theoretical frameworks, comparative metaverse platform analysis, playtest, players' feedback session, and UX professional interviews. The findings emphasised the balance between freedom and structure in UGC platforms, highlighting the significance of gamification, challenges, rewards, and progression systems. Player preferences for community and teamwork, alongside concerns about negative behaviour, were identified. Common themes included usability critiques, incentivising rewards, and the impact of customisation on engagement.

The thesis concluded by underscoring gaps in metaverse-specific UX methodologies, advocating for tailored frameworks. Insights from experts, players, and gamification analysis contributed to understanding metaverse challenges and opportunities. The discussion explored implications emphasising user-centred design and informed analytics offering methodologies for enhancing user experiences in the evolving metaverse design landscape.

Keywords: User experience, UX, metaverse design, virtual worlds, Game UX Framework, Fortnite, XR, UCG, MMO, user engagement, user retention, user motivation, gamification analysis

Contents

1 Introduction

In this thesis, "Gaming the Metaverse: User Experience Analysis and Insights from Fortnite," I explored the application of UX design within the metaverse, specifically through the lens of User-Generated Content (UGC) and Massively Multiplayer Online (MMO) gaming platforms, using Fortnite as a case study. The aim was to identify UX methodologies that not only bolstered user engagement and retention but also tackled the unique challenges of motivation and interaction in these expansive digital realms.

The research began with an examination of current metaverse platforms, highlighting a notable gap in UX design approaches specifically crafted for these environments. By employing the Game UX Framework - a tool traditionally used for game analysis - I dissected the complex UX strategies employed by Fortnite, thereby uncovering insights into enhancing engagement in metaverse platforms. This involved analysing the game, conducting playtests, and interviewing both players and UX experts.

A significant finding was the unanimous agreement among experts on the importance of balancing freedom with structure, particularly in UGC platforms. The study delved into key UX elements like simplicity, consistency, customization, and clear error messaging, alongside gamification aspects such as challenges, rewards, and progression mechanisms. The role of community and the challenges of user behaviour were also examined through player feedback.

The thesis underscored the need for metaverse - specific UX methodologies, proposing the development of a tailored framework to effectively meet these challenges. By providing insights from experts and players, it contributed to the broader discussion on metaverse design, offering a fresh perspective on evolving UX strategies in this dynamic digital landscape.

2 List of Abbreviations

AI	Artificial intelligence
AR	Augmented reality
B-money	The first cryptocurrency to introduce the traditional Mint concept, Commemorative Coin as a digital system called Memento.
Co-op	Cooperative Video Game
CTA	Call to Action
DAO	Decentralized Autonomous Organization.
F2P	Free-to-Play
FOMO	Fear of Missing Out
FTUE	First-Time User Experience
MaaS	Metaverse-as-a-Service
Misc	Miscellaneous Virtual Worlds
MMO	Massive Multiplayer Online
MMORPGs	Massively Multiplayer Online Roleplaying Games
MR	Mixed Reality
NFT	Non-Fungible Token
NPC	Non-Player Character

PVE	Player versus Environment
SDT	Self-Determination Theory
SLT	Social Learning Theory
UCD	User-Centred Design
UGC	User-Generated Content
UI	User Interface
UX	User Experience
VR	Virtual Reality
XP	Experience Points

3 Literature Review

This exploration set out to chart the metaverse, delineating its aspects and qualities before delving into the growth of gaming within these virtual environs. It closely examined the user experience challenges within contemporary metaverse platforms and concluded with an analysis of prevalent design approaches in the gaming and extended reality sectors. The analysis traced the trajectory of the metaverse, critically assessing the innovative tactics and obstacles that sculpt these expansive digital worlds.

3.1 Overview of the Metaverse Concept and Its Evolution

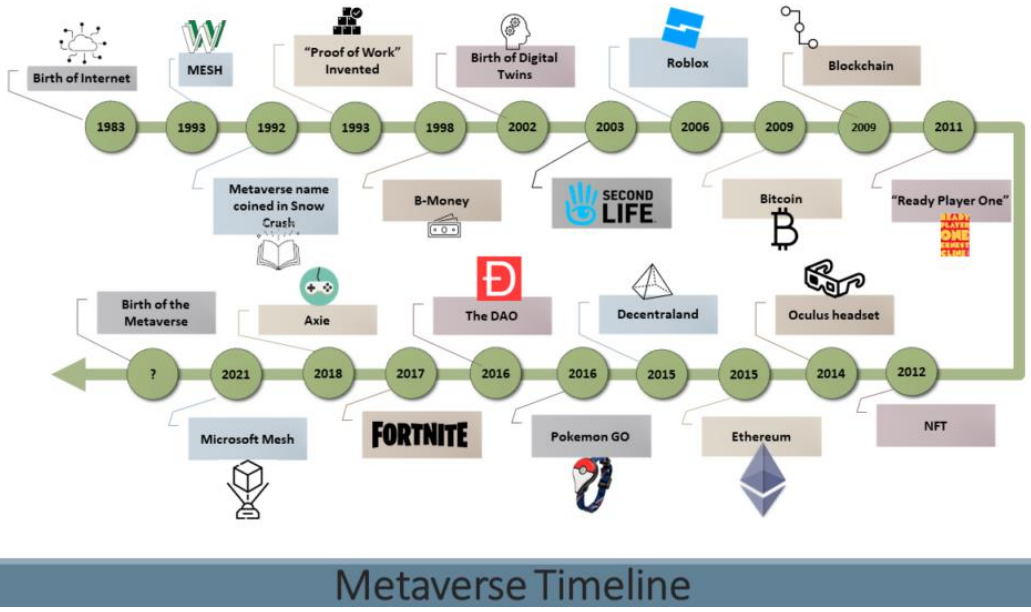


Figure 1. Metaverse timeline (Glen 2022)

The development of the metaverse as depicted in Figure 1 traces back to the inception of the Internet in 1983 with the creation of Transfer Control Protocol/Internetwork Protocol (TCP/IP). Noteworthy milestones include the debut of the Mesh web browser in 1993 and the popularization of the term Metaverse in Neal Stephenson's Snow Crash, published in 1992. The timeline

highlights key moments in cryptocurrency from the conception of Proof of Work in 1993 to the introduction of B-money in 1998.

Platforms such as Second Life in 2003 and Roblox in 2006 have contributed significantly to the metaverse concept by laying the groundwork for user-generated environments. The emergence of Bitcoin in 2009 revolutionized peer-to-peer transactions, while the narrative of Ready Player One in 2011 presaged advancements within VR. Non-Fungible Tokens (NFTs) entered the scene via Coloured Coins in 2012, establishing a framework for asset ownership.

The acquisition of Oculus Rift by Facebook in 2014 signalled a commitment to VR technology, and the launch of Ethereum in 2015 paved the way for decentralized applications and cryptocurrencies. That same year, Decentraland launched, presenting a user-governed virtual world. Pokémon GO's release in 2016 popularized augmented reality (AR), merging digital and real-world experiences.

The significant fundraising achieved by The DAO consortium underscores the potential within networked platforms. In 2017, Fortnite's integration into gaming and Axie Infinity's introduction in 2018 of a player-driven game further transformed the metaverse. Microsoft Mesh entered the scene in 2021 as a mixed reality (MR) platform that supports collaborative interactions within digital environments. These developments not only chart the metaverse's evolution but also underscore its growing expanse over time.

3.2 Definition and Characteristics of the Metaverse Platform

The metaverse refers to a space where various digital experiences are interconnected, providing users with opportunities for engagement, social interactions, and immersive activities.

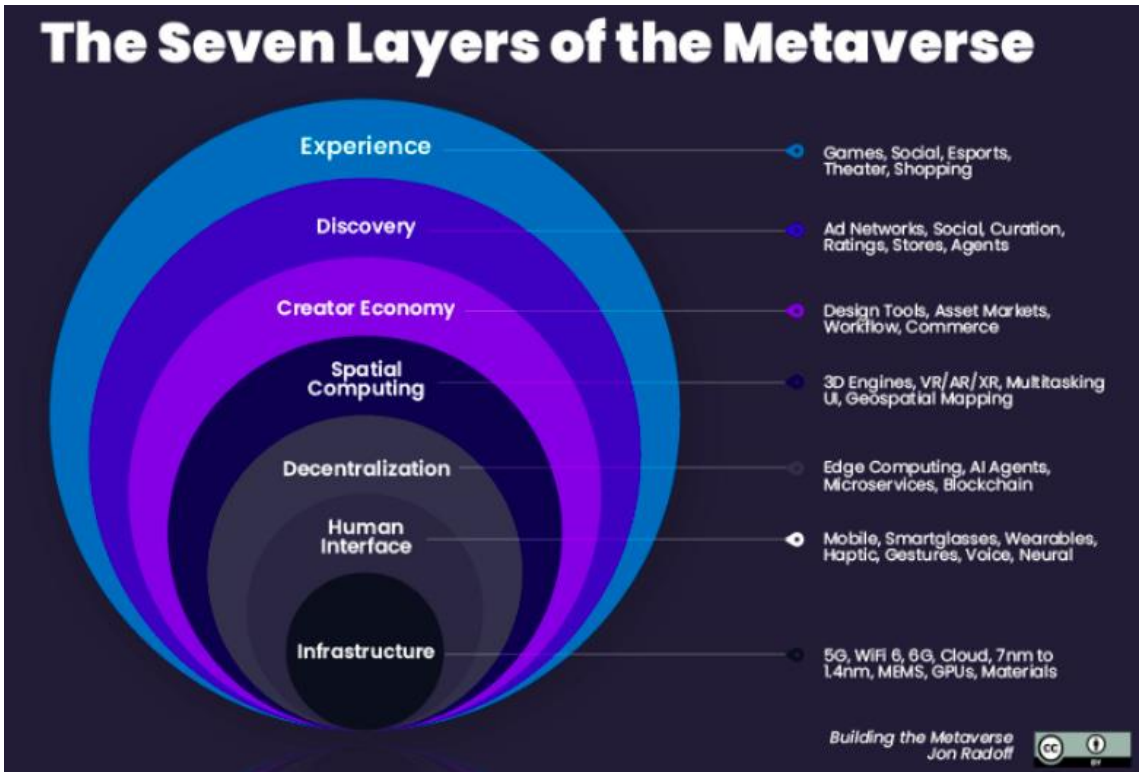


Figure 2. The seven layers of the metaverse. (Radoff 2021)

In Figure 2 the structure of the metaverse is illustrated through 7 layers outlined by Radoff in 2021:

1. **Experience:** The metaverse offers a range of experiences, beyond online settings, including gaming, social interactions, esports, theater, and shopping.

2. **Discovery:** Users can. Discover realms, content, and ways of interaction in the metaverse creating a space for ongoing discovery.

3. **Creator Economy:** The metaverse supports a creator economy where individuals can create, share, and monetize their creations within this environment.

4. **Spatial Computing:** By utilizing computing, the metaverse seamlessly merges physical realities to provide immersive user experiences.

5. **Decentralization:** Moving away from control the metaverse promotes user ownership and independence with technologies like blockchain.

6. **Human Interface:** Interactions in the metaverse are enriched by interfaces and immersive technologies that prioritize user-friendly experiences.

7. **Infrastructure:** Serving as the foundation of the metaverse its infrastructure includes state-of-the-art connectivity and computing technologies to enable real-time engagement across platforms.

These layers collectively define the architecture of the metaverse while highlighting its focus, on user-centricity and decentralization. Delving into these aspects is crucial, for steering studies that delve into the financial forces shaping the changing environment of the metaverse.

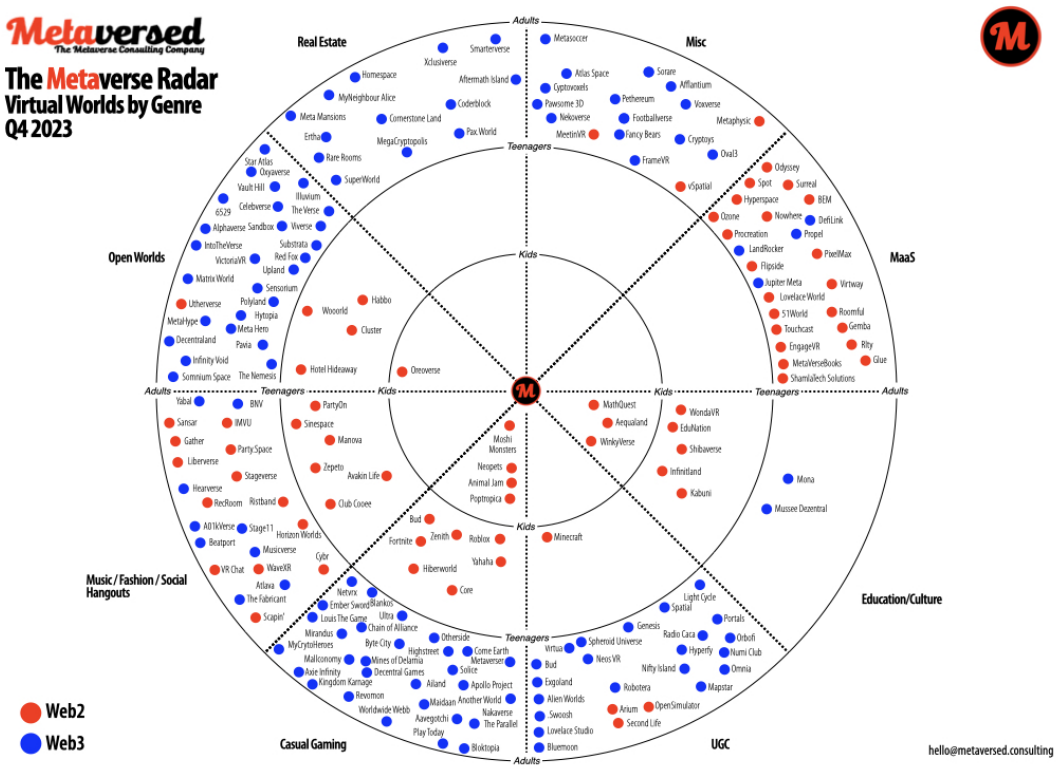


Figure 3. The metaverse virtual worlds by genre radar chart for Q4 2023. (Metaversed Consulting 2023)

Figure 3, as depicted by Metaversed Consulting in Q4 2023, charts the diverse terrain of virtual worlds within the metaverse, organized by genre. This radar visualizes 170 distinct virtual environments, offering a panoramic view of the metaverse's multifaceted ecosystem.

Key genres represented in the chart include:

- **User-Generated Content (UGC):** Spaces like Second Life, which champion user creativity and social connectivity through personalized content and interaction.

- **Education and Culture:** Platforms designed as immersive learning experiences, redefining education by making it engaging and relevant to contemporary trends.

- **Casual Gaming:** Mass-market platforms such as Roblox and Fortnite are noted for their accessible, social-centric gaming experiences that resonate with a younger demographic.

- **Music, Fashion, and Social Hangouts:** Virtual worlds like Avakin Life and Zepeto revolve around lifestyle and social interactions, appealing to a broad audience with interests in these realms.

- **Open Worlds:** Environments such as The Nemesis and Decentraland offer expansive, user-driven experiences where social exploration and events are paramount.

- **Real Estate:** Foundational Web3 platforms that commercialize virtual land and properties, often through cryptocurrencies or NFTs, blending open-world exploration with commerce.

- **Metaverse-as-a-Service (MaaS):** Services like Odyssey and Journee provide customizable virtual space solutions for businesses, facilitating a broad range of applications from pixel-streaming to VR engagement.

- **Miscellaneous:** A category for unique virtual worlds that defy conventional classification, showcasing the vast potential and innovative spirit of the metaverse.

This classification illuminates the metaverse's complexity and the breadth of experiences it offers, from creation and commerce to education and entertainment.

Figure 4. Biggest metaverse are video games. (Deris 2023)

Figure 4, presented by Olivier Moingeon of Exclusible during the Future-proof your fashion brand: Why Web3 is a Strategic Pillar webinar by Deris (2023), emphasizes that key video games such as Fortnite, Roblox, Zepeto, and Minecraft are leading the charge in the metaverse's gaming arena. These platforms, which blend expansive virtual worlds and interactive gameplay, boast significant monthly active users (MAUs) - with Fortnite hosting 80 million, Roblox at 210 million, Zepeto engaging 13 million, and Minecraft reaching 160 million. Moingeon outlined the following categorizations within the metaverse:

- Video Games: Including the likes of Fortnite, Roblox, Zepeto, and Minecraft.

- Web3 Land-Based Platforms: Such as The Sandbox and Decentraland.

- Immersive Multiplayer 3D Environments: Typically developed using Unity or Unreal Engine.

- Custom Technology Platforms: Employing WebGL and Pixel Streaming.

While debates on the precise categorization and definition of the metaverse continue, the intersection of gaming and metaverse trends is unmistakable. The subsequent chapter will delve into the evolution of gaming within the metaverse, exploring its trajectory and implications.

3.3 Evolution of Gaming in Metaverse

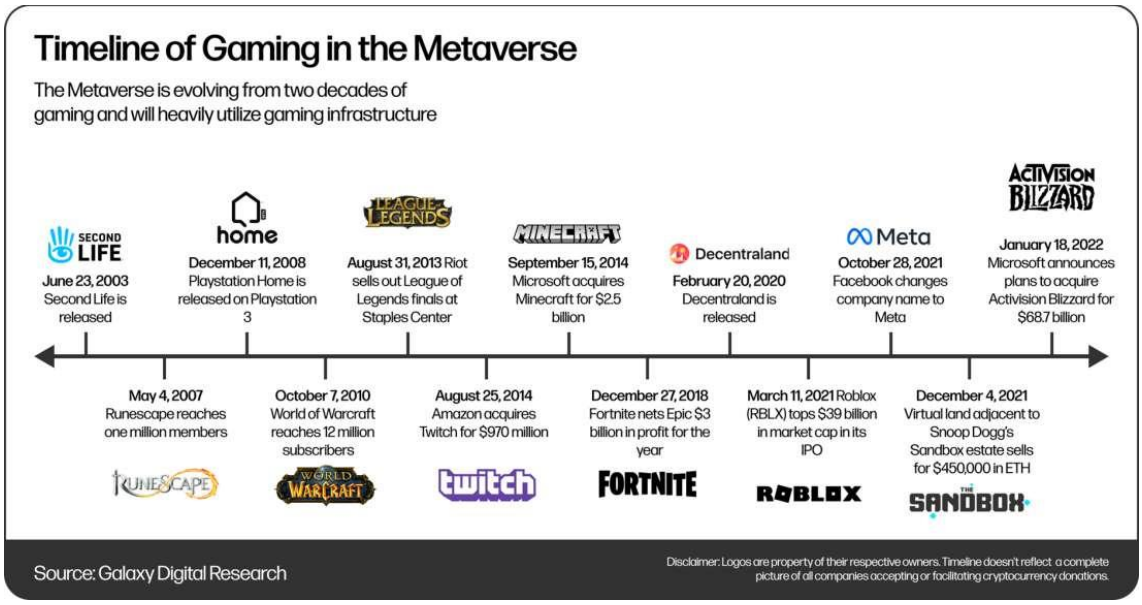


Figure 5. Timeline of gaming in the metaverse. (Sal 2022)

Figure 5, as presented by Sal (2022), showcases a "Gaming Timeline in the Metaverse." It traces the evolution of gaming within the metaverse, starting with the 2000s when initial platforms like Second Life and PlayStation Home set the stage, albeit with their limitations. Massively Multiplayer Online Role-Playing Games (MMORPGs) like World of Warcraft and RuneScape marked the genre as niche. A pivotal shift occurred with the arrival of Fortnite, which transformed the gaming landscape by fostering social interaction and dissolving platform

barriers. Its free-to-play (F2P) model, which monetized in-game items, laid the groundwork for Web3 metaverse platforms such as Decentraland and Sandbox, which introduced NFT-based land ownership and open economic systems. These advancements push the industry forward, but challenges in performance and scalability persist within the metaverse. Leveraging insights from both the gaming and Web3 sectors is vital for advancement. Realizing a fully immersive metaverse experience necessitates innovative solutions across the multifaceted infrastructure of the metaverse.

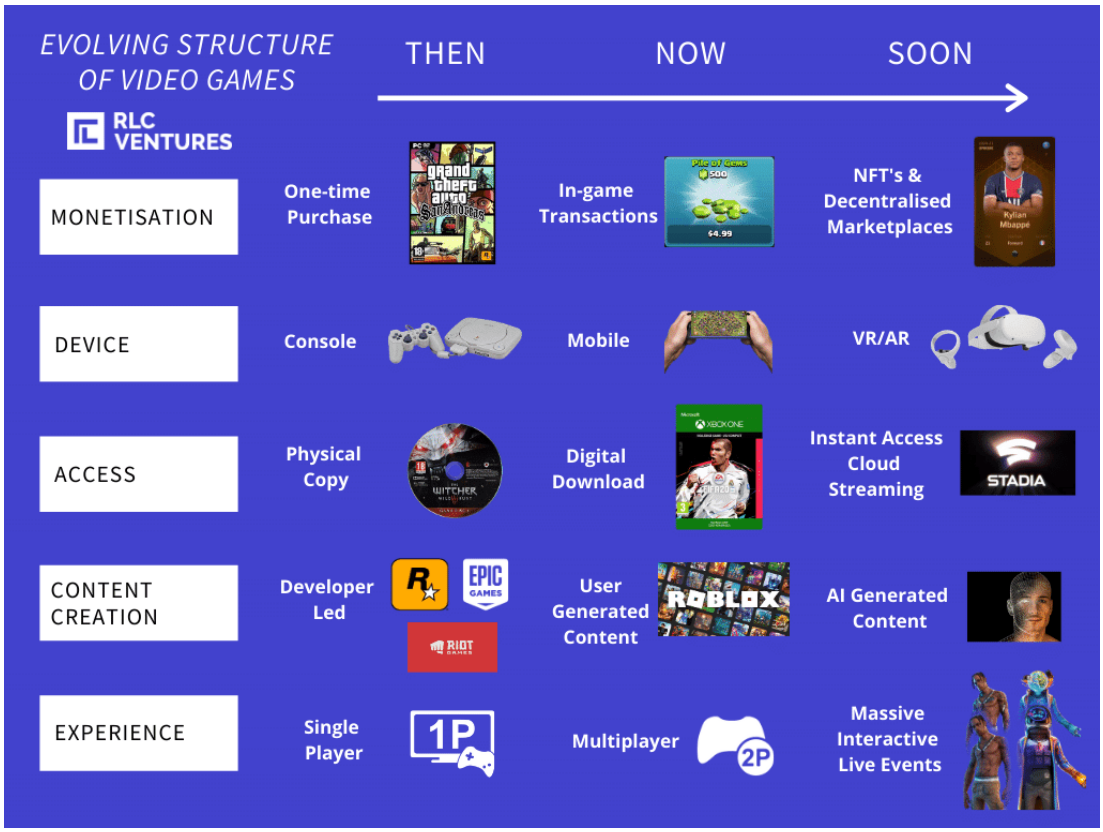


Figure 6. Evolving structure of video games. (Kicks 2023)

Figure 6 shows the stages of video game development outlined by Kicks (2023). Initially, the industry heavily relied on UGC to empower players as creators with platforms, like Roblox leading the way. The advancements in intelligence are now poised to revolutionize content creation making it more accessible by enabling AI to work or even replace human creativity by leveraging its extensive data processing capabilities.

Moving away from CD distribution methods the industry has embraced to play F2P games supported by microtransactions. The introduction of NFTs has changed the gaming economy allowing players to own trade and potentially see an increase in the value of in-game assets thus enhancing the marketplace.

In gaming circles, cloud-based multiplayer games break down barriers between gaming platforms enabling cross-platform collaborative experiences. Industry leaders like Fortnite have paved the way for this trend by focusing on experiences and community building through events and e-sports.

These developments in gaming are setting the stage for what is referred to as the viable metaverse, where cloud gaming, UGC, and AI come together to create personalized content and experiences. UGC is playing a role, in shaping the metaverse paving the way for thriving economies and asset marketplaces to flourish. AI technology empowers players by giving them control over their experiences, delivering gameplay and personalized content based on player actions.

While full realization may be on the horizon, current innovations in platform interoperability, content creation, product offerings, and business models suggest a promising future for the metaverse. This evolving landscape is unveiling an era of interconnected gaming ecosystems where opportunities, for intellectual properties and seamless platform integration are abundant.

	VIDEO GAMES	VIRTUAL WORLDS
PURPOSE	• Specific objectives, challenges, or missions • Set storyline or structured gameplay that guides the player through various levels or tasks	• Open-ended • A simulated environment where users can interact with each other and the digital environment in a variety of ways
OBJECTIVE	• Entertainment, skill development, or competition • A clear path or series of objectives to accomplish	• Lack defined objectives or goals, emphasize exploration, social interaction, and creation • Socializing, building, exploring, or creating content within the world
STRUCTURE	• Scores, progress levels, and specific challenges or enemies	• A more flexible and less structured experience • Simulate real-world elements and physics, but leave the purpose and activities up to the user
USER INTERACTION	• Engage with the game environment, NPCs (Non-Player Characters), or other players in pursuit of the game's goals	• User interaction and engagement are key components
SOCIAL ENGAGEMENT	• Vary widely, but is often secondary to the game's primary objectives	• Designed to foster social interaction, collaboration, and community building • Have the freedom to create their own experiences, whether that's socializing, building businesses, or even creating games within the virtual world
EXAMPLES	• The Legend of Zelda • Call of Duty • Super Mario Bros	• Roblox • Fortnite • Minecraft • Second Life • VRChat

Figure 7. The difference of video games and virtual worlds (Everyrealm 2023)

Figure 7 delineates the characteristics that differentiate video games from virtual worlds, as presented by Everyrealm in 2023. It suggests that while traditional video games have specific objectives and structured gameplay, virtual worlds or metaverses offer open-ended experiences. Here, users can engage not just in gameplay but in a digital reality ripe for self-expression, creativity, and community building.

Key distinctions outlined are:

- Purpose and Objective: Video games are designed with set objectives and a structured storyline, often leading to entertainment, skill development, or competition. Virtual worlds, however, are open-ended simulations that focus more on exploration, social interaction, and user creativity.

- Structure: Where video games offer scores and progress levels, virtual worlds provide a flexible experience, leaving purpose and activity choices to the user.

- User Interaction: Both require engagement with the environment, but virtual worlds emphasize user interaction and UGC as fundamental components of their design.

- Social Engagement: Social elements in video games are usually secondary to gameplay; conversely, virtual worlds are designed to foster social interaction, collaboration, and community building.

The examples cited, including Minecraft and Roblox, underscore the layered experiences these platforms offer, blending gaming objectives with opportunities for user-driven creation. Fortnite, initially a PVE game, has evolved to include creative modes and events, illustrating the shift from traditional gameplay to a more immersive and creative digital environment.

The trend towards such gamified worlds is expected to grow, with the metaverse setting itself apart through features such as unlimited concurrent participants, a broader range of activities, economic opportunities through blockchain, and extensive customization and asset transferability across game environments.

3.3.1 Understanding Gamification

When discussing gamification or gamified experiences, terms such as game elements, game components, game mechanics, and game dynamics are frequently encountered. However, do these terms refer to the same concepts?

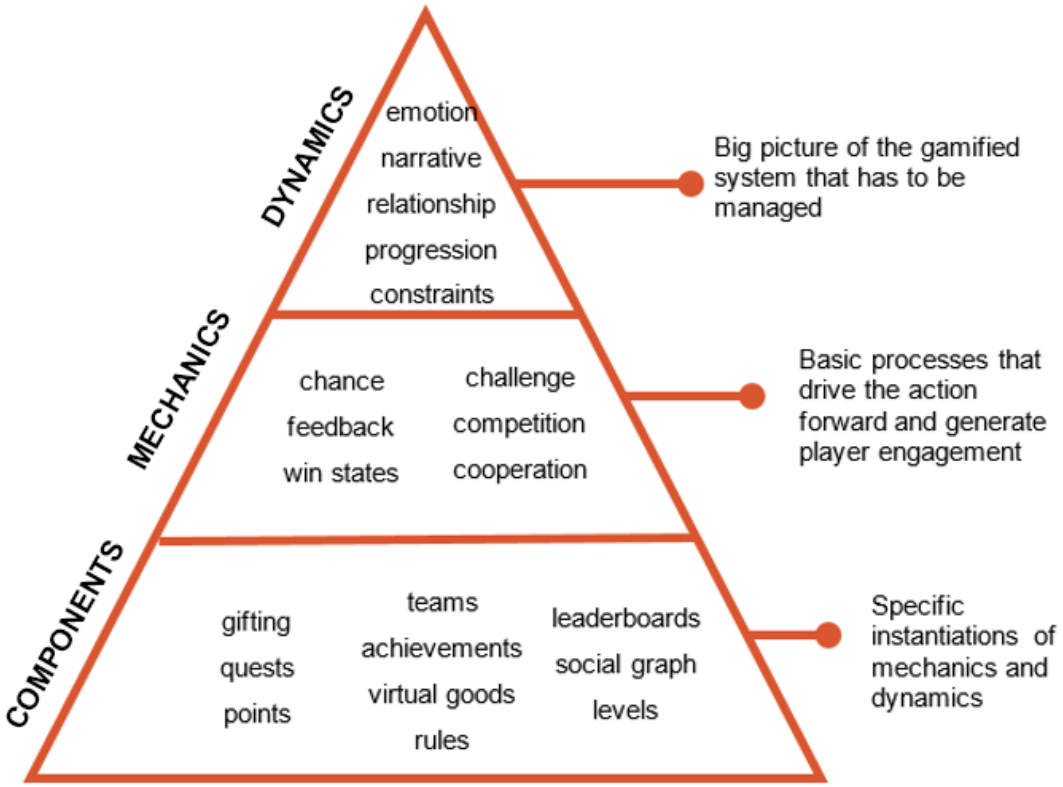


Figure 8. The hierarchy of game elements. (Man 2021)

Figure 8, delineated by Man in 2021, distinguishes between the various layers of game elements—components, mechanics, and dynamics—integral to game design and gamification.

- **Game Components:** These fundamental elements, like points, badges, and leaderboards, are the tangible building blocks that provide structure and form the bedrock for mechanics and dynamics within games.

- **Game Mechanics:** This layer represents the core rules and reward systems that make gameplay engaging. Mechanics are the strategic and tactical underpinnings that drive actions and behaviours, offering a structured path for gameplay as described in MDA; A Formal Approach to Game Design and Game Research by Hunicke et al. (2004).

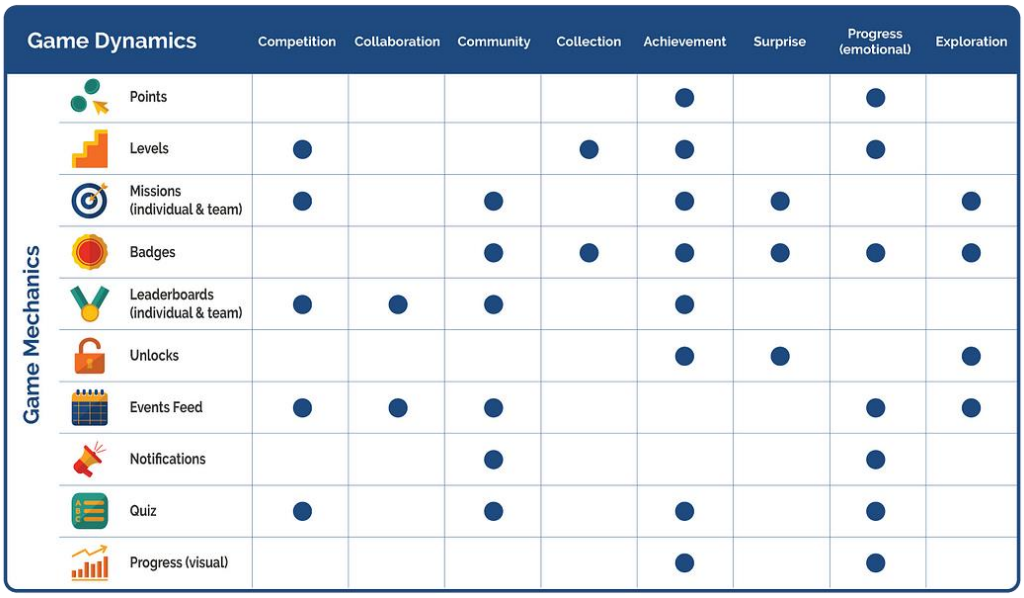


Figure 9. Game mechanics and game dynamics. (BI Worldwide 2018)

- **Game Dynamics:** At the apex are the overarching narratives and relationships, the emotive and progressive elements that captivate and propel players through the game's journey, crafting the emergent experience.

The narrative weaves a comprehensive picture of how the metaverse amalgamates distinct gaming elements, forming an intricate tapestry that enriches user engagement. It underscores the metaverse's capacity to bolster real-time interactions with digital avatars, facilitating a spectrum of activities from communal events to economic engagements. As such, the metaverse is portrayed as a dynamic platform where social connectivity, creativity through user-generated content, immersive mixed reality experiences, and a decentralized economy based on cryptocurrency transactions coalesce. This

synergy fosters an environment where not only is gameplay elevated, but it also supports the fluid exchange and utility of digital assets across various gaming universes.

3.3.2 Recent Gaming Trends in the Metaverse

In the evolving world of the metaverse brands must. Come up with new ideas to stay relevant in the market. The growing economy of the metaverse allows users to trade platform currency for goods opening possibilities for brands to set up virtual shops or build their own mini metaverses to engage customers better. These virtual spaces offer personalized interactions and digital asset transactions giving brands access, to real time data.

Some notable trends in gaming include:

- **Automated Digital Twins:** This technology transforms customer engagement by creating versions of products. Consumers can virtually test out clothing explore stores pre-launch or visualize furniture in their living spaces.

- **Realistic Avatars:** The push for avatars is on the rise as they act as a connection between users and their online identities. Companies are leveraging AI to craft avatars.

- **Fashion in the Metaverse:** The fashion industry sees the metaverse as a marketing stage. Through NFTs brands design clothing that users can dress their avatars with, like skins seen in games like Fortnite.

- **Extended Realities:** As VR headsets gain popularity the gaming industry is focusing on creating experiences while upcoming technologies, like body suits promise even more immersive adventures.

- **Virtual Company Environments:** Businesses are now exploring spaces, for work related tasks. Platforms that use VR or AR technologies recreate a physical office setting in a realm.

- **Online Events:** The popularity of events during the pandemic is expected to endure. Events such as Metaverse Fashion Week are drawing interest with forecasts indicating market growth.

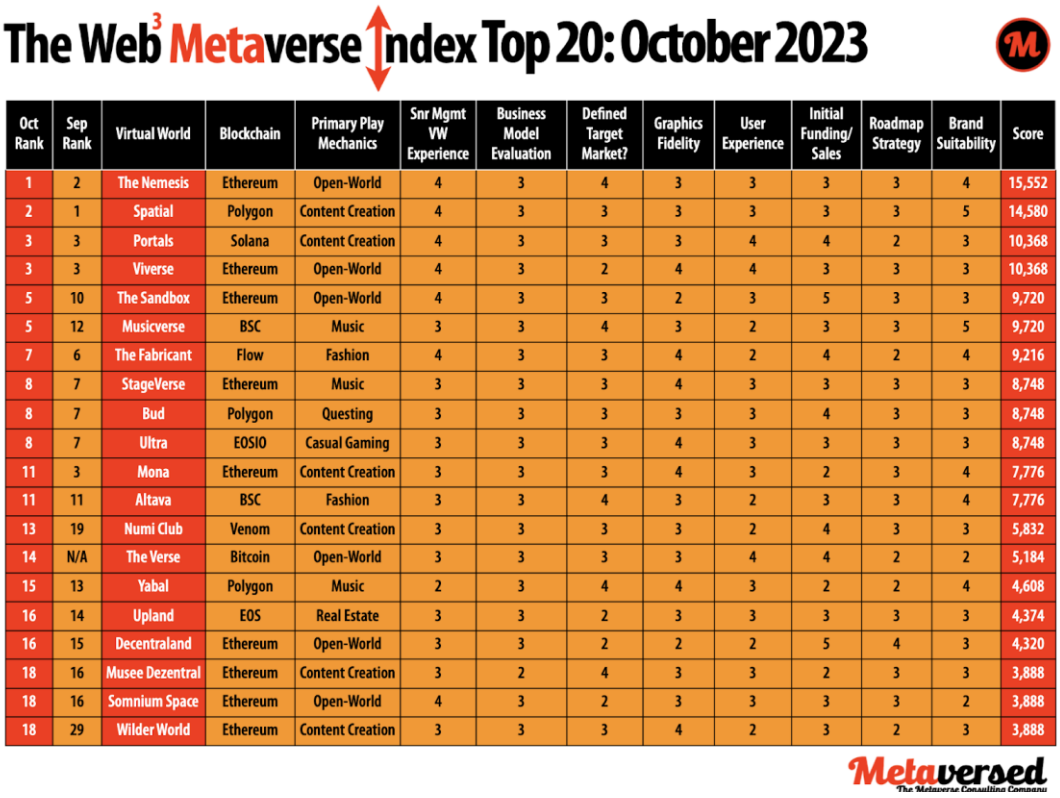
- **Web3 and Internet Decentralization:** Despite corporate efforts to dominate the metaverse, Web3 and blockchain technologies are anticipated to establish a more decentralized internet providing users with greater control and ownership.

- **Metaverse Marketing:** The metaverse is revolutionizing marketing strategies by enabling companies to engage their audiences in storytelling experiences within these worlds.

These trends do not reflect changes in the gaming sector. Also redefine digital interactions, branding, and ownership, within the vast digital landscape.

3.4 Review Current Metaverse Platforms and Their UX Challenges

The metaverse has evolved from a speculative idea to a concrete realm where users can deeply engage with immersive experiences, socialize, and conduct business. These emerging platforms, once the realm of science fiction, present complex challenges in user engagement and interaction design. This review investigates the current landscape of the metaverse, uncovering how various platforms actualize the concept into tangible experiences. It scrutinizes the obstacles designers face in crafting engaging VR and AR interactions and highlights the metaverse’s potential to revolutionize our digital lives.



The Web3 Metaverse Index Top 20: October 2023

Oct Rank	Sep Rank	Virtual World	Blockchain	Primary Play Mechanics	Snr Mgmt VW Experience	Business Model Evaluation	Defined Target Market?	Graphics Fidelity	User Experience	Initial Funding/ Sales	Roadmap Strategy	Brand Suitability	Score
1	2	The Nemesis	Ethereum	Open-World	4	3	4	3	3	3	3	4	15,552
2	1	Spatial	Polygon	Content Creation	4	3	3	3	3	3	3	5	14,580
3	3	Portals	Solana	Content Creation	4	3	3	3	4	4	2	3	10,368
3	3	Viverse	Ethereum	Open-World	4	3	2	4	4	3	3	3	10,368
5	10	The Sandbox	Ethereum	Open-World	4	3	3	2	3	5	3	3	9,720
5	12	Musicverse	BSC	Music	3	3	4	3	2	3	3	5	9,720
7	6	The Fabricant	Flow	Fashion	4	3	3	4	2	4	2	4	9,216
8	7	StageVerse	Ethereum	Music	3	3	3	4	3	3	3	3	8,748
8	7	Bud	Polygon	Questing	3	3	3	3	3	4	3	3	8,748
8	7	Ultra	EOSIO	Casual Gaming	3	3	3	4	3	3	3	3	8,748
11	3	Mona	Ethereum	Content Creation	3	3	3	4	3	2	3	4	7,776
11	11	Altava	BSC	Fashion	3	3	4	3	2	3	3	4	7,776
13	19	Numi Club	Venom	Content Creation	3	3	3	3	2	4	3	3	5,832
14	N/A	The Verse	Bitcoin	Open-World	3	3	3	3	4	4	2	2	5,184
15	13	Yabal	Polygon	Music	2	3	4	4	3	2	2	4	4,608
16	14	Upland	EOS	Real Estate	3	3	2	3	3	3	3	3	4,374
16	15	Decentraland	Ethereum	Open-World	3	3	2	2	2	5	4	3	4,320
18	16	Musee Dezentral	Ethereum	Content Creation	3	2	4	3	3	2	3	3	3,888
18	16	Somnium Space	Ethereum	Open-World	4	3	2	3	3	3	3	2	3,888
18	29	Wilder World	Ethereum	Content Creation	3	3	3	4	2	3	2	3	3,888

Metaversed
The Metaverse Consulting Company

Figure 10. The Web3 metaverse index top20: October 2023 (Metaverse Consulting 2023)

Figure 10 maps out the competitive terrain of the Web3 metaverse for October 2023. It offers insights into the major players, shedding light on projects and trends in the ecosystem. The Nemesis has soared to the top rank, leveraging partnerships with global brands like Skoda to widen its active user base. Spatial is hot on its heels, having engineered a successful BMW Motorrad campaign. Tied positions by Viverse and Portals indicate a highly competitive environment, as these platforms carve out their niche in the digital frontier.

3.5 The Key UX Challenges in Immersive Virtual Environments

For UX professionals, designing within the ever-evolving sphere of immersive environments is rife with challenges. They must anticipate the uncertain future of the medium and rising user expectations. The diversity of devices - VR headsets, AR glasses, smartphones - each brings unique capabilities and constraints, complicating the design process. UX designers' endeavour to forge

virtual spaces where users experience unrestricted movement and interaction, an echo of their physical freedom. Crafting a true sense of presence and immersion requires an intricate blend of striking visuals and sensory detail. Ensuring consistent, seamless experiences across various devices further compounds the challenge, demanding uniformity in design. These factors highlight the complexities UX professionals navigate in this advancing field.

The pressing need for comprehensive UX knowledge is clear, inviting a debate: should one build upon existing gaming frameworks or innovate anew? This consideration sparks critical analysis and a diversity of approaches to surmount present limitations and fully leverage UX's potential within the dynamic interplay of design and technology.

3.6 5 Common UX Design Approaches That Can Be Used Under XR and Game Industries.

The field of UX design for XR experiences differs significantly from a traditional UX design extending beyond screen boundaries and requiring attention to 3D spaces, user safety, and physical comfort. Although standardized guidelines for XR design are not yet established, proposed frameworks aim to provide a foundation for UX designers. A study from the University of Cagliari by Vi (2022) introduces key principles, including spatial environment organization, creation of flexible interactions, prioritization of user comfort, avoidance of overwhelming users, design alignment with hardware capabilities, utilization of cues for user guidance, and the development of a compelling XR experience, all grounded in real-world knowledge. These principles serve as considerations for selecting common UX design approaches. The following details outline five common UX design approaches applicable in both the XR and game industries.

3.6.1 10 Usability Heuristics Applied to Video Games

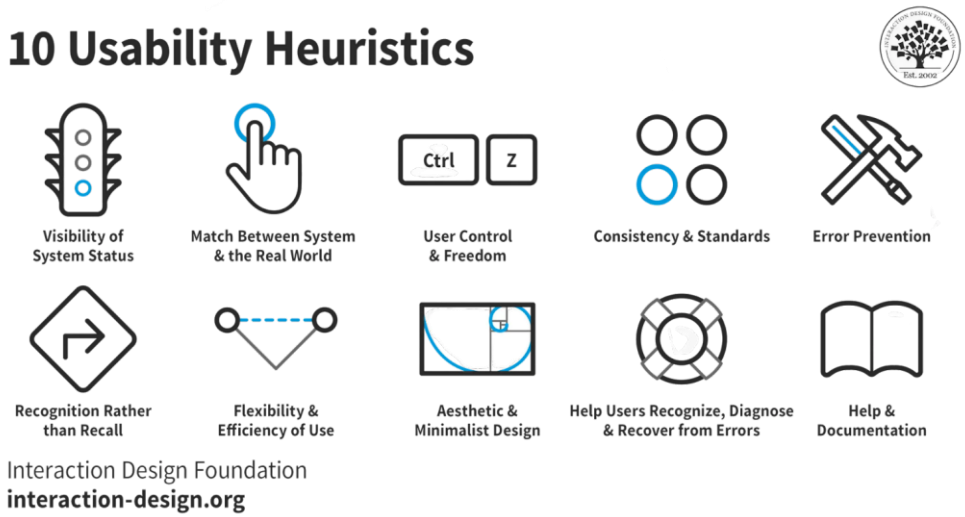


Figure 11. 10 Usability heuristics (Interaction Design 2023)

Figure 11 outlines the 10 Usability Heuristics as identified by Nielsen in 2020, which are foundational to user interface design and evaluation, as seen in the work by the Interaction Design Foundation for 2023. These guidelines are the brainchild of usability experts Jakob Nielsen and Rolf Molich. Alongside these, Joyce's adaptation in 2019 specifically applies these principles to video games, tailoring them to the unique demands of game design, where player engagement, motivation, and narrative are paramount.

Here’s an encapsulated view of each heuristic:

1. **Visibility of System Status:** It’s essential to keep users promptly informed about what’s happening through timely feedback.

2. **Match Between System and the Real World:** Use language and symbols familiar to the user, mirroring real-world conventions to make information more intuitive.

3. **User Control and Freedom:** Users should have the freedom to undo actions easily, offering an 'emergency exit' to rectify mistakes without hassle.

4. **Consistency and Standards:** Ensure that different terms, situations, or actions are presented uniformly across similar platforms, adhering to recognizable conventions.

5. **Error Prevention:** Proactively prevent issues by either removing error-prone conditions or confirming user actions to mitigate potential errors.

6. **Recognition Rather Than Recall:** Design interfaces that make information readily available, obviating the need for users to remember information from one interaction to the next.

7. **Flexibility and Efficiency of Use:** Incorporate accelerators - unseen by novices - that enable experts to operate faster, making the system cater to both new and experienced users.

8. **Aesthetic and Minimalist Design:** Avoid clutter by stripping irrelevant or rarely needed information, focusing attention solely on necessary data.

9. **Help Users Recognize, Diagnose, and Recover from Errors:** Communicate errors in plain language, identify issues precisely, and provide constructive guidance for recovery.

10. **Help and Documentation:** Ideally, systems should be intuitive. But, when necessary, accessible documentation should be available to guide users through completing various tasks.

This succinct enumeration conveys the essence of each heuristic while demonstrating their broad applicability, from traditional UI/UX design to the specialized context of video games.

3.6.2 User-Centred Design (UCD)

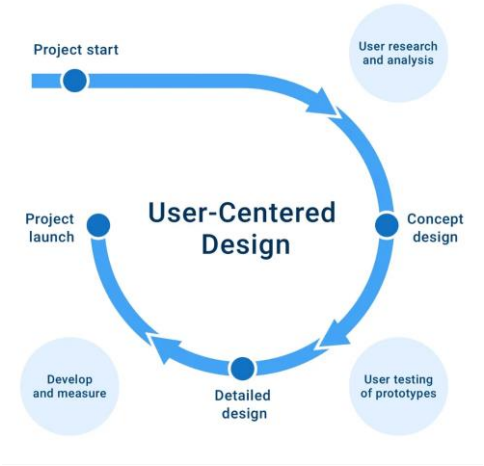


Figure 12. User-centred design (Yekini 2023)

User-Centred Design (UCD) represents an approach to design that places a priority on the needs and preferences of end users throughout the design process. The methodology involves gaining a comprehensive understanding of users, their goals, and tasks, utilizing this knowledge to craft designs that are effective, efficient, and enjoyable to use. The UCD process encompasses several key stages:

- User research: Gather insights into user behaviours, needs, and motivations using methods such as interviews, surveys, focus groups, user observation, and tests.

- User analysis: Examine data collected from user research to identify patterns and insights crucial for informing the design process. This includes creating user personas, mapping out user journeys, and exploring user scenarios.

- Design ideation: Ideas for the design project are nurtured using techniques like brainstorming sessions, sketching out concepts on paper or digitally, utilizing mind maps to organize thoughts, and applying other design thinking approaches.

- Prototyping: Both low and high-fidelity prototypes of the design are created for testing with users. This includes building wireframes (structures), mock-ups (representations), and interactive prototypes that mimic the final product's functionality.

- User testing: Tests with users are conducted to gather feedback on the prototypes and identify areas for improvement. Various testing methods can be employed such as usability testing (checking how easy it is for users to interact with the design), A/B testing (comparing two versions of a design), or other relevant techniques.

- Iteration: The design is refined by incorporating feedback from user testing. This process is repeated iteratively until it aligns perfectly with the needs of the users.

3.6.3 Object-Oriented UX methodology (OOUX)

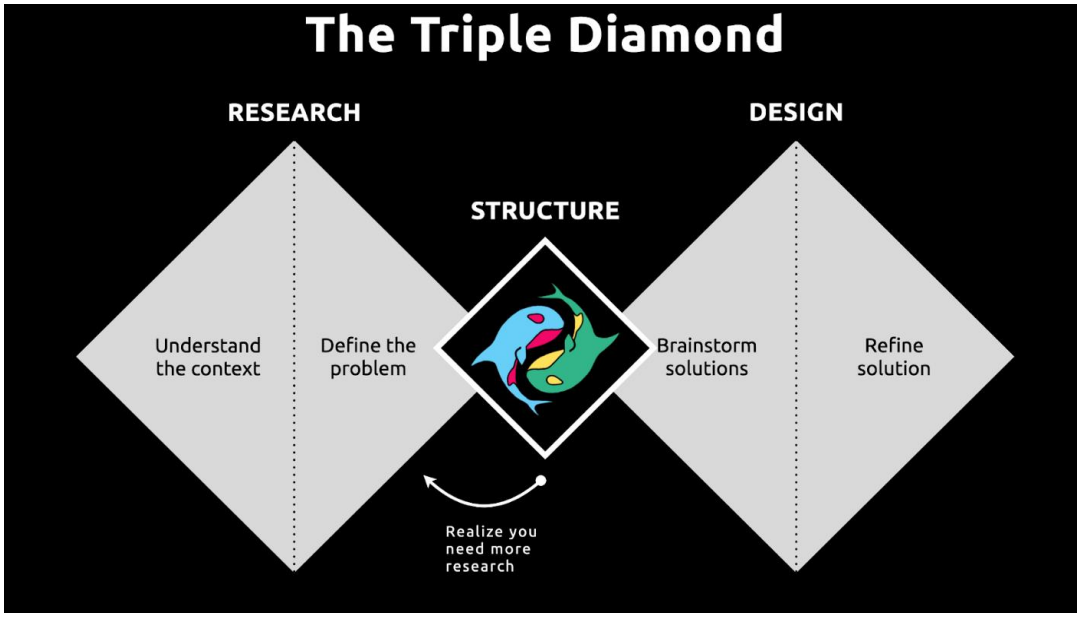


Figure 13. OOUX as a triple diamond (Yekini 2023)

The book UX for XR by Hillmann (2021) underscores the efficacy of the Object-Oriented UX methodology (OOUX), developed by Sophia Voychehovski Prater

in 2015, depicted in Figure 13 in addressing design challenges within the XR domain. Unlike traditional UX processes that commence with user research and flow, OOUX takes a distinctive approach by initially simplifying design problems through the identification and definition of core content or objects. The methodology then focuses on establishing relationships between these objects and prioritizing them. In practical application, OOUX utilizes coloured Post-it notes to enhance clarity in the organizational process, involving four key phases:

1. **Discovering objects:** Utilize research findings to identify the items intended for inclusion in the product.

2. **Describing objects:** Assign attributes and metadata to the objects, specifying their desired qualities.

3. **Establishing object connections:** Define relationships between objects by considering the roles assigned to each.

4. **Prioritizing objects:** Simplify complexity by focusing on essential features, eliminating extraneous elements, and emphasizing crucial aspects.

Widely adopted in the design of websites and mobile applications, OOUX excels in quickly generating low-fidelity wireframes, facilitating iterative processes. Its abstract nature makes it adaptable to various platforms and devices including XR. In the XR realm, OOUX objects seamlessly transition into prototypes that reference objects and their intended functionalities.

3.6.4 Game UX Framework

Figure 14. Game UX framework (ironSource LevelUp 2020)

Figure 14 showcases Celia Hodent's Game UX Framework from "The Gamer's Brain" (2018), integrating neuroscience and UX principles into video game design, an essential process for deep player engagement in the metaverse.

The framework includes 7 usability heuristics:

1. **Signs & Feedback:** Providing clear visual, audio, and haptic cues to guide player interaction.

2. **Clarity:** Ensuring all game elements are easily understandable to prevent player confusion.

3. **Form Follows Function:** Designing items and environments in a way that players instinctively know how to interact with them.

4. **Consistency:** Keeping game elements uniform to offer a seamless and predictable experience.

5. **Minimum Workload:** Designing games to minimize cognitive and physical strain on players.

6. **Error Prevention & Recovery:** Allowing players to easily rectify mistakes encourages exploration and learning.

7. **Flexibility & Accessibility:** Offering customization options to accommodate a wide range of player needs and abilities.

The three pillars of engage-ability are:

1. **Motivation:** Harnessing players' inner drive through goals and rewards that promote competence, autonomy, and relatedness.

2. **Emotion:** Creating a game feel with responsive controls, immersive storytelling, and dynamic interactions that evoke player emotions.

3. **Game Flow:** Managing difficulty and pacing to keep players engaged without causing frustration or boredom.

This thesis employed Hodent’s framework to enhance the understanding of user engagement within the metaverse, blending usability with engage-ability to craft experiences that not only meet but exceed player expectations.

3.6.5 UX Guidelines for VR

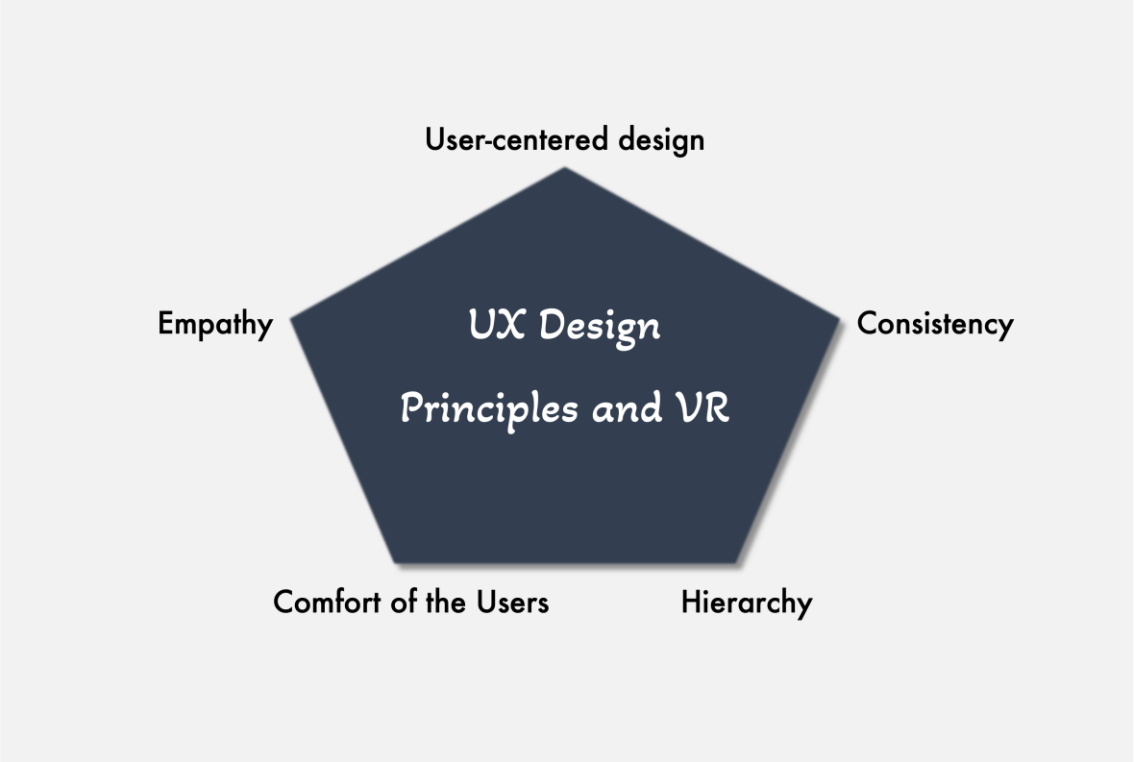


Figure 15. UX design principles and VR (Ramotion 2023)

Figure 15 showcases essential UX design principles for VR, highlighting the unique considerations required to create compelling virtual experiences. It stresses the significance of context comprehension and environment differentiation in VR.

Key principles include:

- **User Understanding:** Deep dive into user research and market analysis to grasp the distinct needs of your VR audience.

- **Learning-Oriented Design:** Craft VR experiences that educate without overwhelming, facilitating a seamless introduction to virtual environments.

- **Guided Autonomy:** Navigate users with resources and mini tutorials that support without dominating the experience.

- **Comfort First:** Prioritize comfort to foster a relaxing, non-intimidating interaction with VR, mitigating potential discomfort.

- **Steady Transitions:** Eschew jarring changes that could induce discomfort or motion sickness in users.

- **Intuitive Interaction:** Design hand actions in VR that mimic real-life movements, enhancing the natural feel of the environment.

- **Conciseness:** Use visual cues and structured hierarchies to maintain immersion, minimizing reliance on text.

- **Sensory Detailing:** Pay equal attention to visual and auditory elements to construct a convincing, absorbing VR world.

- **Aesthetic Engagement:** Employ visually and aurally pleasing elements, including colour choices, sound design, and smooth transitions, to elevate user engagement and pleasure.

These principles aim to refine the VR design process, enhancing the user experience by aligning with human-centric design practices.

Table 1. A comparison of UX methodology for analysing metaverse platforms and video Gaming (e.g., Fortnite).

Methodology	**Focus**	**Applicability to Metaverse and Video Gaming (e.g., Fortnite)**
10 Usability Heuristics	General usability principles	Provides a broad understanding of usability but may lack specificity for immersive and gamified environments.
User-Centred Design (UCD)	User needs and feedback	Excellent for understanding user needs, preferences, and behaviours. Relevant for metaverse and video game UX.
Object-Oriented UX (OOUX)	Information architecture and user experience	Emphasizes structured information architecture, beneficial for complex metaverse platforms with varied content.
Game UX Framework	User engagement and gamification	Tailored for gaming environments, suitable for analysing user engagement and gamified elements in metaverse UX.
UX guidelines for VR and AR	Guidelines specifically designed for virtual and augmented reality.	Addresses the unique challenges of spatial and immersive interfaces, while it may lack coverage for specific aspects of video gaming like gamification.

Table 1 offers a comparison of UX methodologies applicable to metaverse platforms and video gaming, particularly Fortnite. The Game UX Framework stands out in its relevance, as it zooms in on user engagement and the gamified nuances crucial to gaming. Nonetheless, there is wisdom in weaving together components from other approaches. For example, the 10 Usability Heuristics provide a broader understanding of usability that, although not exclusive to

gaming, can improve the overall user experience. UCD is also instrumental in its deep dive into user needs, preferences, and behaviour.

Further, OOUX offers a structured approach to information architecture, which is particularly beneficial for complex and content-rich metaverse environments. Meanwhile, UX guidelines for VR and AR shed light on the spatial and immersive elements of these platforms, though they may not fully encompass the gamified elements of video gaming.

Thus, I propose that an integrated approach combining the insights-driven Game UX Framework with the user-focused UCD could be highly effective. This hybrid strategy is designed to thoroughly address both the compelling gamification aspects and the detailed needs of users. Applying this combined methodology typically involves iterative design processes that weave user feedback into game development and heuristic evaluations that measure game elements against recognized usability principles. These application methods are fundamental to user-centric game design and will be elaborated upon in the next section.

4 Research Methodology

In this section, the exploration of art and design is underpinned by the research frameworks, as referenced by Frayling (1994). This exploration commences with a review of diverse research methodologies, including an in-depth look at theoretical constructs such as the Game UX Framework and various principles and theories of gamification. As the methodology unfolds, it reveals findings from a competitive analysis, delves into user observations and feedback, garners insights from experts via 1:1 interview, and engages in detailed case study research. The thesis spotlights Fortnite as an exemplary case study, carefully chosen based on specific criteria that inform the selection of experts, maps, players, and the meticulous process of data collection. The nuances of these methods and criteria are thoroughly detailed in the sections that follow.

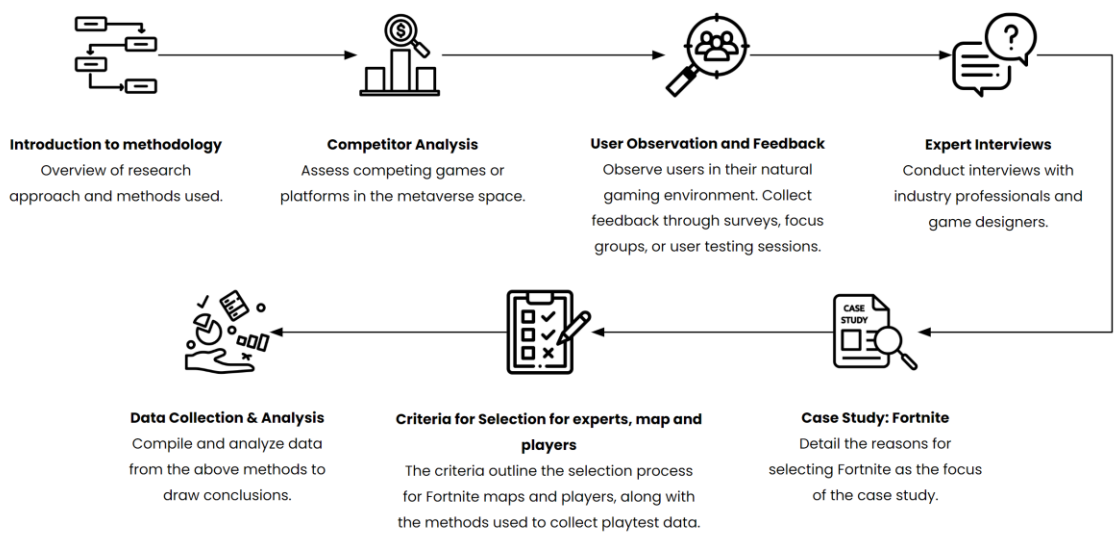


Figure 16. Thesis Research Roadmap

Figure 16 presents a structured outline of a Thesis Research Roadmap, succinctly summarizing the methodology from project initiation through data collection, set to be detailed in the chapters that follow.

4.1 Competitive Analysis

To analyse the competition, it is important to study the products, services, and experiences offered by competitors to understand the market landscape, identify trends, and discover opportunities for differentiation within the gaming platform and metaverse domain.

In this study, Jacob Nielsen's 10 Usability Heuristics for Video Games, as discussed in Chapter 3.6.1, will be employed. The chosen usability heuristics for qualitative evaluations include flexibility and efficiency of use, visibility of system status, user control and freedom, aesthetic and minimalist design, recognition rather than recall, helping users recognize, diagnose, and recover from errors, and consistency and standards (Nielsen, 2020).

The focus of this analysis was on gaming platforms featuring UGC, exemplified by Fortnite, as well as immersive multiplayer 3D metaverse platforms like

Spatial. Additionally, consideration was given to Web3 land-based platforms such as Decentraland and MaaS platforms like Odyssey. The assessment studied aspects like engagement, user motivation, and elements of UX, incorporating both qualitative and quantitative data assessments. The insights gained from competitor analysis informed the evaluation of the user experience and usability of the researched platforms, aiding in the identification of best practices, areas for improvement, and potential innovations within the competitive landscape.

4.2 User Observation and Feedback

During the playtest, an observational analysis was conducted, closely observing, and documenting specific gamification elements within the selected map. The playtest session lasted approximately 30 - 45 minutes, followed by a 20-minute feedback period. Participants engaged in the game while actively observed and interacted with to explore its features. Visible gamification elements, including achievements, rewards, challenges, and progression systems, were noted. For participants unfamiliar with Fortnite, the playtest served as an opportunity to become acquainted with the game's gamified elements and mechanics. Video recordings were made during the sessions to facilitate data collection and create comprehensive documentation. The primary goals of the playtest were to:

- Gain insights into how users experienced, interacted with, and engaged in Fortnite.

- Understand what aspects of the game contributed to user enjoyment and motivation.

- Evaluate how elements such as challenges, rewards, and progression systems impacted the overall UX.

To complement the observational and theoretical analyses, direct feedback was gathered from participants after the playtest on their experience, covering

preferences, expectations, and any usability challenges encountered. The set of feedback questions explored the alignment of the game with design. The theoretical knowledge of gamification principles and theories was then applied to analyse the overall design of the selected map under examination during the playtest. This playtest aimed to provide valuable user-centred perspectives, contributing to a thorough analysis of Fortnite's gamification elements and their impact on user engagement.

4.3 Expert Interview

The in-depth interview played a role in gathering insights and guidance from acknowledged experts in UX in the gaming and XR industries. These interviews aimed to gather data that supported decision-making, deepened the understanding of the subject matter, and helped establish practices. The one-on-one discussions lasted between 45 minutes - 1 hour. The interviews had a semi-structured format that allowed both planned and unplanned open-ended questions. They served as a means of collecting data, including recommendations, industry trends, and insights that contributed to a more comprehensive understanding of the field while guiding us toward potential solutions for identified challenges. Video recordings were made during the interview to assist in analysing the data and creating documentation afterward.

4.4 Case Study Rationale: Choosing Fortnite

Fortnite, an online multiplayer survival game developed by Epic Games, has garnered popularity since its launch in 2017. According to the Astreelab website (2023), it boasts 25 million users with a significant portion (62.7%) falling within the age range of 18 - 24 years. Notably, the player base is predominantly male, comprising 90%. With an average playing time of 6 - 10 hours per week, Fortnite has firmly established itself as a prominent presence in the gaming industry. This chapter explored the rationale behind selecting Fortnite as the subject of study, delving into its journey, unique qualities, target audience, and its significance from both a business and metaverse standpoint.

- **The journey of Fortnite:** The success of Fortnite can be attributed not only to its engaging gameplay but also to the developer's ability to consistently maintain player interest through regular updates. With over 350 million players, Fortnite has become a phenomenon, particularly during the uncertainties brought about by COVID-19, serving as a source of connection and entertainment for players across the globe. What sets this game apart is its capacity to foster a sense of community among players by providing them with a platform for meeting and interacting with others even when physical distancing is enforced.

- **The unique qualities of Fortnite:** One key factor that contributes to Fortnite's success is its free-to-play model, ensuring accessibility across multiple platforms without any additional fees. The game's ability to seamlessly connect players and its easy initiation process have led to adoption, appealing to both novice and experienced players, transcending skill levels.

- **Target group:** Fortnite strategically aligns itself with tech generations such as Generation Z and Generation Alpha. Recognizing their affinity for technology, Fortnite acts as a bridge by engaging these audiences through experiences, social interactions, and gaming. Brands leverage Fortnite as a platform to establish a presence, anticipating long-term brand loyalty as these generations grow up.

- **Fortnite from a business perspective:** Beyond being a game, Fortnite has transformed into an entertainment ecosystem. Brands increasingly realize the potential of Fortnite as a space for events, social interactions, and transactions. From hosting concerts and movie premieres to offering experiences, Fortnite goes beyond gaming. Its creative features allow users to shape their gaming experiences while actively contributing to the Fortnite community.

Figure 17. House on the water experience on Fortnite. (Exclusible 2023)

Companies like Exclusible and Polycount seamlessly integrate global brands into Web3 and popular gaming titles like Roblox, Fortnite, and Minecraft, creating impactful and immersive experiences through gamification and innovative design, resonating deeply with the audience. Exclusible and Polycount implemented the House on the Water as shown in Figure 17, virtual experience in Fortnite, Roblox, and Spatial to build immersive and engaging experiences that resonate with GenZ and Alpha consumers and help elevate the brand's presence, as well as create a lasting impact in the virtual and physical world.

- **Financial success:** From a financial perspective, Fortnite's revenue of $5.1 billion in 2020 written by Paulose in Coinscapture (2022), generated exclusively through in-game cosmetic items, underscores its business acumen. The absence of pay-to-win elements emphasizes a commitment to maintaining a level playing field, enhancing the gaming experience without compromising fairness.

- **Fortnite as a metaverse:** Fortnite's evolution aligns with the concept of a metaverse - an online collaborative and 3D virtual environment. With features such as avatars, virtual reality, and augmented reality overlays, Fortnite creates a social experience akin to a Metaverse. The seamless

integration of gaming and non-gaming components within the same virtual 3D environment positions Fortnite as an illustrative example of the evolving concept of a metaverse.

While the debate continues about whether Fortnite qualifies as a metaverse, an examination of immersive multiplayer 3D metaverse platforms like Spatial, Mona, Horizon Worlds, Mozilla Hubs, alongside UGC gaming platforms like Fortnite, Roblox, and Decentraland, uncovers common characteristics. This reinforces why Fortnite is a compelling subject for further exploration, positioning it as an exemplary metaverse model. Drawing insights from my competitive analysis of metaverse platforms, focusing on high-fidelity open worlds during my time at the XR Museum project and involvement with the Metaverse Competence Cluster by YLE Metaverse Research group and Helsinki XR Centre, provided a comprehensive understanding of gaming metaverses. Additionally, my introduction to the development planning phase of the Fortnite Experience in Virtual Helsinki at Zoan has offered valuable insights into Fortnite UX, content creation strategies, and engagement methods. With its photorealistic visuals, broad audience appeal, and successful collaborations with renowned brands such as Marvel, NBA, Stranger Things, Lego, Fortnite emerges as a promising metaverse model, featuring an array of gamified elements such as quests, seasonal updates, a season pass, badges, and a rewarding system.

4.5 The Selection Criteria and Process of Data Gathering

The criteria for selecting experts, maps, players, and the process of data gathering were methodically outlined in this chapter. A comprehensive explanation was provided on how these criteria were used to select UX professionals, choose Fortnite maps, recruit playtest participants, and collect data during the playtest.

4.5.1 Expert Selection

The goal was to find professionals specializing in UX for XR design, game UX and UI design, and game user research within gaming and XR industries. Specifically, the focus was on UX experts with hands-on experience in products like Fortnite, metaverse platforms, UGC gaming platforms, and MMO games.

To start the selection process, thorough research was conducted on UX articles related to Fortnite and similar games to understand the methodologies used and common patterns among authors. After that, outreach was made to these authors through LinkedIn, explaining the project scope and interview expectations. During discussions, their willingness to participate was assessed. Once they confirmed their interest, interviews were scheduled using platforms like Zoom or Google Meet, considering the time zone differences of each expert to ensure the discussion happened at a convenient time for everyone involved. Furthermore, it was essential to select experts who not only understood UX principles but also had insights into Fortnite and other relevant metaverse products. The interviews were carefully planned to cover topics such as their experiences with these products, emerging trends in the industry, challenges they faced, and potential advancements in metaverse and gaming UX.

4.5.2 Map Selection

When selecting a game that was time-efficient and helped achieve goals, preference was given to those that were mini-games or had simple controls. They had features, challenges, and unique elements to observe how players behaved and what motivated them during and after playtesting. Consideration was given to using a racing game like Mario Kart because of its simplicity. If any issues arose with the game map, there might be a switch to a different type of game that is common for many participants, like a shooter.

The established criteria for game selection in the user playtest were as follows:

- The game should support both player and multiplayer modes.

- It should provide a user experience for both returning players.
- The learning curve or onboarding process should be minimal.
- The objectives or missions within the game should be clear and easy to understand.
- The game should be quick, allowing users to complete it within a short timeframe.
- The game should be set in a private match.

4.5.3 Player Selection

The main goal of this playtest was to observe people who enjoy gaming and gather insights about what they found enjoyable, what motivated them, and how gamified elements impacted their experience. To achieve this, 3 - 5 players with different levels of gaming experience and playstyles were selected. Focus was on their proficiency in one of the following gaming genres: 3D gaming, UGC gaming, or MMO. To make it convenient for players, the playtest was conducted online so they could use their own devices in their familiar environments. It was important to ensure that the playtest was accessible across devices for an optimal experience.

4.5.4 Playtest Data Collection

Before the playtest began, an introduction was provided, explaining expectations and hypotheses about how Fortnite aligns with the metaverse landscape. Participants were encouraged to share insights on gamified elements that kept them engaged, such as season updates, quests, or tournaments. Evaluation of user experiences involved gathering feedback on both negative and positive aspects. The initial testing phase included a mini game to familiarize users with mechanics and the user interface. Subsequently, participants interacted and played together in shared scenes, allowing for

observations of their gaming experiences. Video recordings from each participant's device were used to ensure thorough observation. Additionally, playtest feedback was collected through tailored questions designed for this specific playtesting experience.

Process:

- Consent forms were distributed to all participants before the playtest began.
- A 15-minute overview was provided to all players to ensure clarity on expectations during and after the test.
- Devices were set up, and microphone and camera tests were conducted.
- In Fortnite, players went through account setup, created avatars, and customized menus if needed.
- As this playtest operated in private mode for observation and user privacy, players sent friend requests to each other.
- The host invited all team members to a designated map, with both participants and the researcher starting screen recording.
- All players indicated they were Ready, triggering scene download.
- Upon arrival at the map (which may have included an onboarding area), instructions on what to do and expect were provided.
- Players explored the map, engaged in gameplay, collected items, and progressed through levels.

- Game dynamics changed over time with increased challenges. Players adapted, attempted to overcome obstacles, respawned if needed, and continued playing.

After approximately 30 - 45 minutes of gameplay, players felt more familiar and at ease with the game. At this stage, a break was suggested for a discussion. The session concluded with feedback gathered from the group, and the playtest was formally ended. Signed consent forms were also collected after the feedback session.

5 Data Analysis

5.1 Metaverse platform comparison

In the evolving world of the metaverse, the UX and functionality of platforms played a crucial role in determining the success and appeal of environments. This comprehensive overview explored factors that needed consideration when assessing and improving platforms. Some criteria were based on ten usability principles relevant for analysing competitors in the metaverse, while others were added to ensure support for the ecosystem and the future of Web3 integration. From gameplay mechanics to community support and security measures, each aspect contributed to a user-centred experience. This section delved into details about platform compatibility, subscription models, avatar design, communication tools, collaboration features, integration toolkits, as well as governance and decentralization aspects. Understanding these aspects was crucial for developers, users, and creators navigating the interconnected realms of the metaverse. The explanation below outlined the criteria selection process and provided a table comparing features and functionalities across Fortnite, Decentraland, Spatial, and Odyssey.

- **Primary play:** The elements or systems that shape a user’s experience, such as exploring a world environment or engaging in casual gaming while also creating their content. This criterion is linked to flexibility and

efficiency of use ensuring that a platform's primary gameplay mechanics are easily accessible and efficient for users.

- **Platform compatibility:** How a software application works on operating systems, such as desktops, mobile devices, PlayStation consoles, or VR headsets. This is important for visibility of system status emphasizing the need for users to know if their devices are compatible with the platform.

- **Subscriptions:** Subscription services, including plans, premium offerings, enterprise solutions, or customized packages. This is relevant to user control and freedom which focuses on giving users control over their subscriptions and making it easy for them to manage.

- **Avatars and skins:** Digital representations that users can use to navigate and interact within environments. This relates to aesthetic and minimalist design aiming to provide an interface without clutter while enhancing user engagement.

- **Real-time communication tools:** Voice chat, text, and messaging features enable users to interact and collaborate seamlessly. Prioritizing recognition over recall when designing these tools involves making them easily recognizable with icons, labels, and intuitive interfaces so that users do not have to remember procedures.

- **Community and customer support:** Having dedicated support teams available to assist and address any customer questions or concerns is essential for customer loyalty and satisfaction. To help users recognize, diagnose, and recover from errors effectively, it is important to provide explanations and offer support when issues arise.

- **Collaboration tools:** Features like time messaging capabilities, group chat options, file or screen sharing functionality, and shared control systems for project coordination purposes are invaluable for facilitating group or design collaboration. Additionally, the inclusion of voice and

video streaming allows for both 1:1 conversations and group communication opportunities. Consistency and adherence are factors in ensuring that the platform delivers a user experience by following the interface and interaction patterns provided for utilizing collaboration features.

- **Security and privacy:** User data should be the priority for any platform. Platforms that prioritize security measures, data handling practices, and offer users control and consent options are often preferred.

- **Integration tools:** Platforms that provide integration tools, inclusive APIs, and developer-friendly ecosystems empower creators to enhance the experience while ensuring smooth transitions for users and assets across various platforms.

- **Governance structure and decentralization approach:** Platforms that emphasize community engagement, democratic decision-making processes, and fair distribution of resources are often perceived as more appealing. It significantly impacts long-term sustainability and fairness.

Table 2. Comparison of Features and Functionalities in Fortnite, Decentraland, Spatial, and Odyssey.

Features and functionalities	FORTNITE	Decentraland	Spatial	odyssey
Primary Play	Casual gaming	Open world	Content Creation	Content Creation
Platform compatibility	Desktop app, PS, Nintendo, Xbox One, Android	Desktop, browser, mobile devices, VR	Browser, mobile devices, VR	Browser, mobile devices
Subscription	Free, Fortnite crew - $11.99, in-game purchase	Free as a guest, play using wallet (Ethereum)	Free, Spatial Plus - $25, for brands – Contact more	Sandbox – free, Pro – $99, Business - $249, Enterprise - $799, pixel streaming on demand
Avatars and skins	Default, paid skins, customization	Default, paid and customizable wearables	Default from selfie, Ready Player Me, custom avatars	Default, Ready Player Me
Communication	Chat, voice, emoji, dance	Chat, voice, emoji, dance	Chat, voice, video, emoji, dance	Chat, voice, video, huddle, emoji, dance
Community and customer support	On platform, Discord, Epic support	On platform, Discord, Forum, email	On platform, Discord	Discord

Features and functionalities	FORTNITE	Decentraland	Spatial	odyssey
Collaboration tools	UEFN revision-control system for multiple creators in one project	Decentraland Cast (world owners and authorized individuals), In-World Builder, Open-Source Community Modules	Shared screen, 3D spatial voice, sticky notes, 3D pen	Spatial communication, shared controls, streaming
Security and privacy	Account security, age restrictions, in-game communication, updates and patches, community guidelines	Blockchain, user identity and data, content ownership, transaction security, DAO, smart contract audits	Data encryption, user authentication and authorization, access controls (host tools), privacy settings, secure Spatial data handling, updates and patches, user education	Data encryption, user authentication and authorization, access controls (host tools), privacy policy, documentation
Integration tools	Unreal Editor for Fortnite (UEFN), Epic game store SDK, Epic online service SDK	Decentraland Builder, SDK, APIs, marketplace API, Unity 3D integration, Blockchain integration, MetaMask wallet integration	Spatial Creator Toolkit (SDK), APIs, Unity integration, 3D content creation	UE and Odyssey Bridge
Governance and decentralization	Centralized governance structure, with the company making key decisions	Decentralized governance system, allowing users to influence decision-making	Centralized governance structure, with the company making key decisions	Centralized governance structure, with the flexibility to transition to a decentralized model in some extent.

The comparison of features and functionalities across Fortnite, Decentraland, Spatial, and Odyssey, as shown in Table 2, reveals diverse strengths and offerings in the metaverse landscape. The information in Table 2 representing this comparison was collected during May - December 2023. Fortnite stands out with its emphasis on casual gaming and a wide range of platform compatibility. Decentraland, functioning as an open-world platform, leverages blockchain for security and decentralized governance. Spatial and Odyssey both prioritize content creation, with Spatial offering innovative collaboration and integration tools, while Odyssey provides a unique UX and Odyssey Bridge integration. Each platform addresses community engagement through communication tools, avatars, and skins, while also considering security, privacy, and integration tools tailored to their respective ecosystems. Governance structures vary, with Decentraland adopting a decentralized model, contrasting with the centralized approaches of Fortnite, Spatial, and Odyssey.

5.2 Interview and Discussion of Experts' Opinions

Table 3. A summary of expert insights: common themes and patterns on metaverse landscape in user engagement, gamification, usability, and user experience.

Themes and patterns	**Experts' insights**
Platform design focus	- FOMO and balancing gamification - Constraints in user-generated content - Goal-oriented design and user experience - Defining platform purpose for user engagement - Communication and chat experience - Creating a safe, non-toxic environment.
UX Principles	- Consistency in UI/UX, onboarding, and feedback - Interface accessibility for a diverse audience - FTUE and intuitive interfaces - Simplicity and personalization

Themes and patterns	**Experts' insights**
	- Balancing immersion and usability - Fun, inclusivity, clear and timely error messaging - Prioritizing features based on impact.
Gamification in metaverse	- Unique items, and currency in user-generated areas - Onboarding experiences and progression - Biological and psychological aspects of gamification e.g. challenges, quests, rewards, and progression systems - FTUE and intuitive interfaces - User-generated content for retention - Encouraging exploration in metaverse platforms.
Usability and feedback	- Observing players, checking feedback, usability testing, A/B testing and heuristic evaluations - Human-computer interaction heuristics - Accessibility considerations, tracking user data, and analytics - Applying the Rose, Thorn, Bud method - Neuroscience in social interactions - The importance of personas, user research and user-centred design workflow.
Challenges and considerations	- Balancing game goals with user experience - Fostering non-toxic communities - Creating interfaces for diverse audiences - Finite resources and prioritizing features - Newness of UX in gaming and metaverse - Corporate-focused environments less compelling - Challenges in projects without user research - Identifying engaging goals beyond social interaction.
Learning and resources	- Celia Hodent's book, The Gamer's Brain - Playtesting methodologies. - Mix of traditional UX frameworks and gaming UX - Nielsen Norman group and user-centric design

Themes and patterns	Experts' insights
	- Ongoing efforts for healthy digital environments and learning from existing communication systems - Quantitative analysis from user tracking - Positive feedback on existing features - Real-world example of product failure.

The summary in Table 3 presents key themes and patterns crucial for user engagement, gamification, and usability. Design considerations encompass the platform focus on fear of missing out (FOMO), balancing gamification, and defining a clear purpose for user engagement. UX principles emphasize consistency, accessibility, and the importance of first-time user experience (FTUE), while gamification strategies revolve around unique items, progression, and UGC. Usability and feedback involve comprehensive methods such as player observation, A/B testing, and heuristic evaluations. Addressing challenges like fostering non-toxic communities and balancing game goals, the insights stress the significance of learning resources, including The Gamer's Brain book, playtesting methodologies, and user-centric design principles for creating compelling and user-friendly metaverse environments.

5.3 Playtest Session

5.3.1 Map

Issues emerged during the playtest of the initial map due to limited player support. Despite attempts to add more players, difficulties arose, causing confusion about how to proceed to the next round. This led to a shift to the shooting game, Zombieland, known for its clear objectives and influenced by players' familiarity with shooting games and Zombie-related gameplay dynamics.

Figure 18. Mario Kart GBA Sky Garden. (Dropnite 2023)

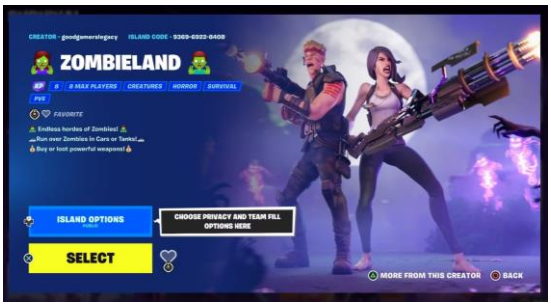


Figure 19. Zombieland. (n4g 2023)

I initially chose the Sky Garden map from Mario Kart GBA for the circuit game, as depicted in Figure 18 (map code: 5032-8540-7995 by oanleninja-fr). However, during gameplay, it became evident that the game only supported two players. Even after the first round concluded, participants encountered difficulty adding more players. They found themselves stuck in the lobby, unable to locate the Call to Action (CTA) button or any means for all players to confirm their readiness and proceed to the next round. This lack of clarity caused users to lose motivation, prompting them to opt for a different game.

As an alternative, I opted for the shooting game Zombieland featured in Figure 19 (map code: 9369-6922-8408 by goodgamerslegacy). This choice proved successful due to its objective and players' familiarity with shooting games and Zombie-related gameplay dynamics. Some team members were already acquainted with this map, assisting others by revealing shortcuts and secret areas, particularly in finding potent weapons. The game proceeded smoothly for 45 minutes, during which everyone advanced through levels, built team camaraderie, and gained a solid understanding of the game rules and mechanics.

Zombieland is a classic hit in Fortnite's Creative mode, evolving with consistent updates to enhance the gaming experience. In Zombieland, players team up with friends to survive waves of enemies, upgrade weapons, acquire cars or tanks to combat zombies, and earn experience points (XP) while progressing through the game. This map accommodates solo play or up to 8 players.

5.3.2 Players

Fortnite Experience Level: High
Fortnite game: Zombieland, Battle Royale, Team Rumble
Fortnite playtime: 4 years
Device usage: PS5
Other games: Fall guys, Quake 3, Apex Legends
Notes: Favourite game mode is no-build and Lego mode

Positive Impact
- Enjoyment of community and teamwork.
- Positive community experiences and memorable moments.
- Flexibility for solo and group play.
- Exciting missions and rewards.
- User-friendly character customization.
- Integration of pop culture elements and creative game modes.

Fortnite Experience Level: Medium
Fortnite game: Zombieland, Team Rumble
Fortnite playtime: 3.5 years
Device usage: PS4
Other games: Mario Kart, Super Mario
Notes: Favourite game mode is no -build.

Negative Impact
- Frustration with poorly built map areas.
- Exploitation by experienced players.
- Toxicity in the regular game affecting the core experience.
- Usability issues on PC, especially with menus and settings.
- Frustration with confusing dynamics in past seasons.
- Negative experiences with toxicity impacting overall satisfaction.

Fortnite Experience Level: Low
Fortnite game: Battle Royale
Fortnite playtime: less than 1 week
Device usage: PC and controller
Other games: Apex Legends, Skyrim, Cyberpunk 2077
Notes: Paused Fortnite - might return if it becomes interesting or if there are friends to play with.

Figure 20. Players' background and impact of game elements on users' engagement from users' feedback.

The Figure 20 above shows players' backgrounds on Fortnite and insights into players' experiences with Fortnite and other similar types of gaming experiences. User feedback has emphasized the importance of community, teamwork, and various frustrations or positive aspects related to game elements. Players value customization options, seasonal changes, and social features, but some express concerns about toxicity and usability issues.

5.4 Gamification Element Analysis

Primarily adopting the Game UX Framework with a focus on clarity in communication, usability, and addressing extrinsic motivators, insights into player behaviours, motivations, engagement, and retention were explored through gamification analysis. Principles and theories from gamification, including self-determination theory (SDT), achievement theory, progression systems, social learning theory (SLT), and reward systems, complemented the Game UX framework providing a balanced perspective. This integrated

approach formed the foundation for analysing user motivation, engagement, and retention in specific Fortnite maps, merging insights from both frameworks. It had the potential to generate valuable insights for developing metaverse products that users enjoyed repeatedly. The following details outline the theoretical frameworks of the Game UX Framework and gamification principles and theories.

5.4.1 Gamification principles and theory

- **Self-Determination Theory (SDT)**

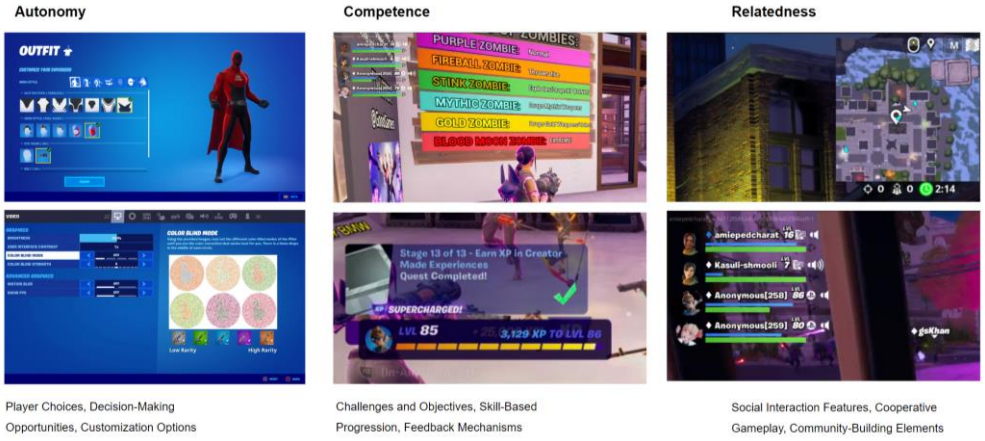


Figure 21. Fortnite gamification elements identified by self-determination theory.

Self-Determination Theory focuses on inherent psychological needs, including autonomy (reflected in elements like player choices such as avatar personalization and customization settings), competence (seen in challenges, game objectives, and progression), and relatedness (manifested in social interaction, cooperative gameplay, and community-building elements). These aspects significantly influence motivation and well-being in the gaming experience.

- **Social Learning Theory (SLT)**

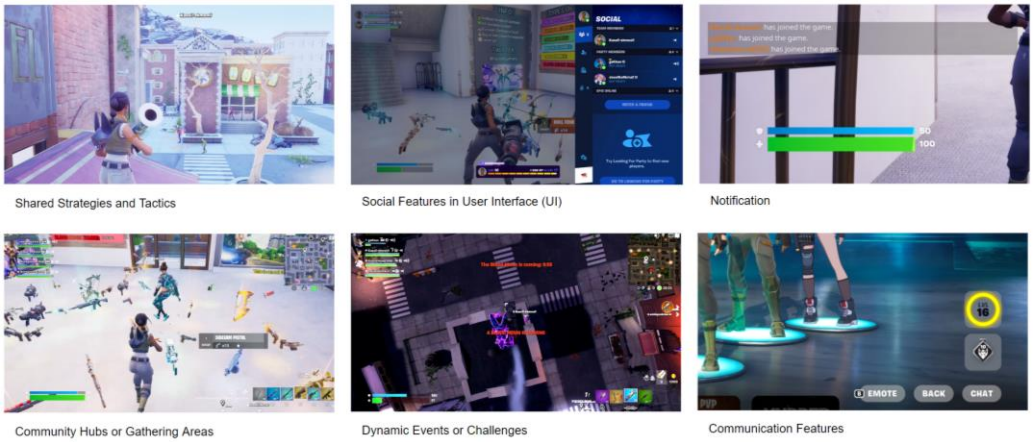


Figure 22. Fortnite gamification elements identified by social learning theory.

Social Leaning Theory emphasizes the learning process through observation and imitation, specifically in understanding collaborative behaviours and social interactions within gaming. It involves elements such as shared strategies and tactics, social interactions, communication features, player notifications, gathering areas, and dynamic group events or challenges.

- **Reward, Progression Systems, and Achievement Theory**

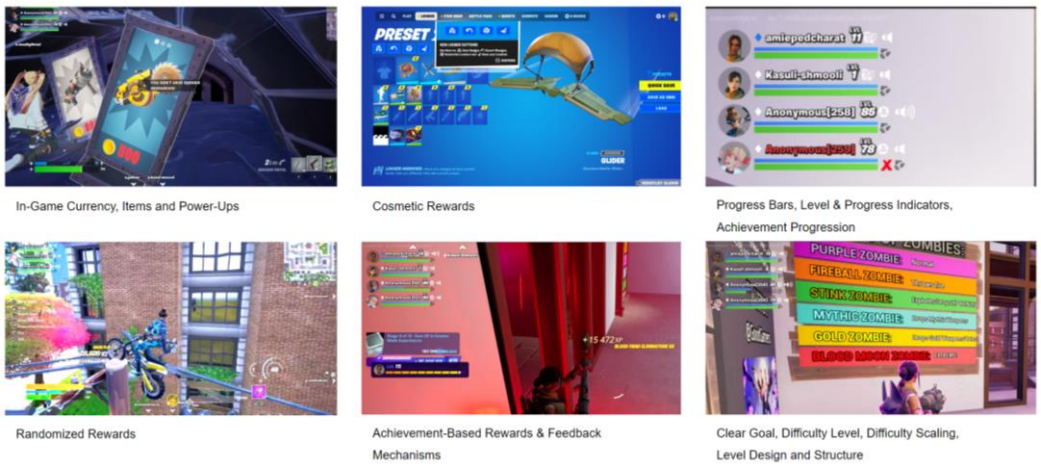


Figure 23. Fortnite gamification elements identified by reward, progression systems, and achievement theory.

The category of reward, progression systems, and achievement theory encompasses theories related to how rewards, progression systems, and achievements impact player motivation and engagement. It involves understanding how game elements such as in-game items, rewards, achievement progression, difficulty level, and goals influence player behaviour. Achievements provide a sense of accomplishment, progression systems maintain engagement through a sense of advancement, and rewards serve as incentives, collectively shaping the gaming experience.

Table 4. Zombieland player journey map

(Self-Determination)

(Social Learning and Rewards)

(Progression Systems and Achievement)

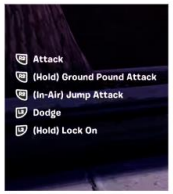
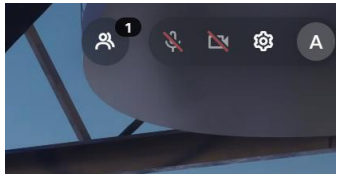
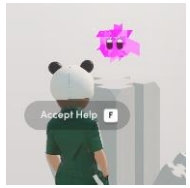
Phase	Game Setup	Onboarding	Playing Game	Progression
Goal	Sense of ownership & control, personalizing skins, join the community, prepare to play	Enjoyable introduction, quickly understand how to play, grasp the game mechanics, feel motivated to continue playing	Engage in an activity for enjoyment & fun, stress relief, social interaction, narrative exploration	Skills development, sense of accomplishment, community belonging, strategic Decision-Making, engagement & motivation, maintain interest & retention
Experience, Thoughts & Feelings	  - PC version is difficult - confusing menu & setting - a lot of UI learning curve User-friendly skins customization!	  still getting used to navigation on PC I switched to controller	  - let me show you how to get free weapons! - I can ride the motorbike! - cool weapons on the higher floor	  - the blood moon is crazy! - try shooting them from the roof - shooting multiple of them with rocket, earning fast XP
Key Learnings	Simple & better UX/ UI especially on menu, setting, landing page	Trial session or onboard as it goes would be nice. PC controller, PS or Nintendo are better for playing.	Some instruction or hint for challenging areas.	Learn some tips from experienced players. Keep players updated when there are quests, seasonal change & challenges
Internal Process	Touchscreen, typing	Touchscreen, game	Touchscreen	Touchscreen
Customer Process	Customize the settings, add friends, host invites members, select games	Game loads, wait, chat with members, arrival at lobby, look for instruction, navigate the UI & game world, learning game systems	Explore the map, explore weapons/ in-game objects/ zombies, combat, earn XP	Game dynamic changes, complete in-game challenges, team collaboration, survival strategies, level up, collect unique items

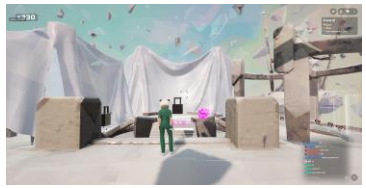
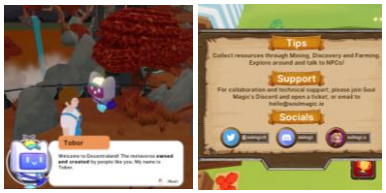
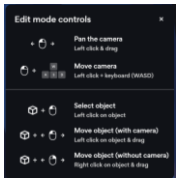
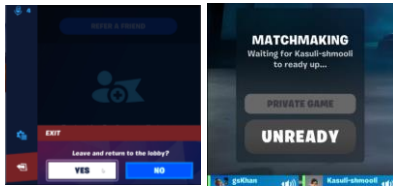
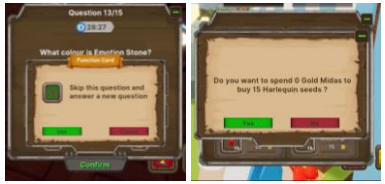
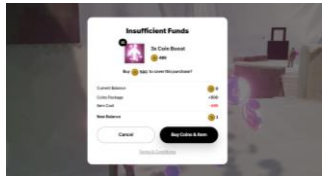
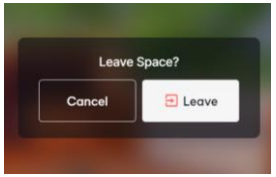
Table 4 above illustrates the journey of three players on the Fortnite Zombieland map across four distinct phases: game setup, onboarding, gameplay, and progression. Following self-determination principles, players commenced with the game setup, customized settings, personalized avatars, added members, and selected games. During the onboarding phase, players learnt game systems, and as they progressed, social learning took place with rewards earned through map exploration, combat, and XP gain. Progression was marked by overcoming challenges, developing survival strategies, and achieving goals, especially during dynamic game changes or team collaboration. Some players faced challenges initially, such as difficulty with the user interface and device usage, leading to a switch from PC navigation to a controller. However, as players became familiar with the UI, game objectives, and mechanics, their engagement, fun experience, and a sense of community, task progression, and accomplishment developed.

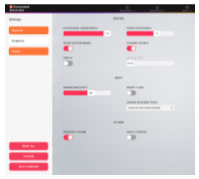
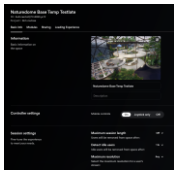
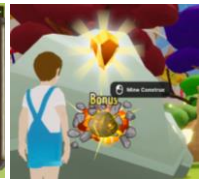
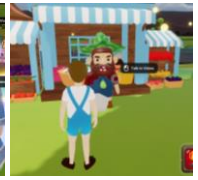
5.4.2 Comparison of Fortnite, Decentraland, Spatial, and Odyssey.

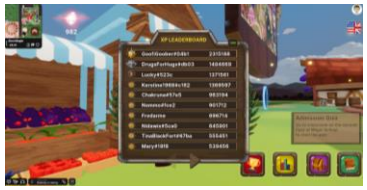
Continuing the discussion on platform comparison from Chapter 4.1, this section focuses on four platforms: Fortnite, Decentraland, Spatial, and Odyssey, following the information in Table 2. I selected one environment from each platform that aligns with Fortnite Zombieland's game mechanics to explore their UGC nature. Decentraland featured Soul Magic, a role-playing game with a theme that allowed players to earn in-game resources, items, and NFTs through engaging gameplay. Spatial.io represented Shooty-Shooty, a cooperative video game (co-op) third-person shooter survival game set on an alien planet. Players faced the challenge of navigating through hordes of diabolic skulls, destroying a heart, and strategically upgrading their abilities to survive waves of demonic spirits alongside friends. Odyssey functioned as a MaaS platform, standing apart by focusing on providing environment templates for specific purposes such as gatherings, business meetings, and learning. For this study, I chose the Nature Dome Base environment offered by Odyssey. The table below provides a comparison of the usability and engagement features for these four platforms.

Table 5. Comparison of Fortnite, Decentraland, Spatial, and Odyssey.

Usability + Engage-ability	FORTNITE	Decentraland	Spatial	odyssey
Signs and feedback	  Levelling, Special attacks execute, Health/ Special attack bar	  Levelling, Notification	  Bullet empty notification, Hit combo counter	 Space information
Clarity	  Respawning, Powering up indication	  Interactive element, Quiz	 Respawning/ Game over	 Clear function and UI
Form follows function	  Motorbike, Chest	  Raised bed, Chest	  NPC/ interactive element, Arrow sign	  Staircase, Armchair

Usability + Engage-ability	FORTNITE	Decentraland	Spatial	odyssey
Consistency	 Green colour for readiness, Background audio, Sound effect	 Interface design/ Artwork, Background audio, Sound effect	 Spatial design, Artwork, Background audio, Sound effect	 Overall spatial design environment
Minimum workload	 Onboarding, Enemy profile	 Guidance, Tips/ Support	 Mini tutorial, Guidance, Character movement response, Enemy profile	 Control guide
Error prevention and error recovery	 Exit double confirmation, Ready status confirmation	 Double confirmation for using function card and purchasing seeds	 Checkout confirmation	 Exit double confirmation

Usability + Engage-ability	FORTNITE	Decentraland	Spatial	odyssey
Flexibility	  Video setting for colour blind mode, Controller customization	  Language setup, Setting menu	  Level difficulty option	 Setting menu
Motivation	  Earning resources/ Rewards, Ranking up	  Task completion, Earning resources/ Rewards	  Ranking up, Increasing difficulty level	-
Emotion	  Camera angel, Colour change, Character/ Animation, Storytelling, Sound effect	  Storytelling, Impactful music, Attention to detail, Responsive AI engaging	 Sound effect, Responsive AI engaging	-

Usability + Engage-ability	FORTNITE	Decentraland	Spatial	odyssey
Game flow	 Challenge character (yellow fiend zombie), Game dynamic or difficulty progression (blood moon)	 Quiz/ Mission, Lack of onboarding, Pacing with game and progression	 Challenge level, Difficulty progression, Device usage	-

The analysis presented in Table 5 provided insights into the strengths and weaknesses of platform usability and engagement when incorporating elements and techniques. In Fortnite, Zombieland stood out for its range of elements such as health/ special attack indicators, power-up signals, enemy profiles, and double confirmations, making the game easy to understand and navigate. Decentraland's Soul Magic incorporated elements like feedback notifications, quizzes, interactive features, audio/sound effects, tips, and double confirmations, ensuring communication, engaging storytelling, and responsive AI. On Spatial, Shooty-Shooty, a mini-game, adopted a simpler approach but still included gamified elements like hit combo counters, interactive features, arrow signs, consistent environments/ effects, mini-tutorials, a ranking-up system, and challenges to keep players motivated and engaged with the option to choose difficulty levels. In contrast, Odyssey's Nature Dome Base, designed for gatherings, featured a more photorealistic environment with fewer gamified elements, such as avatars, personalization options,

navigation mode (walk or fly), and a clear user interface. It focused on functions like texting, audio conversations, video calls, and sharing content, while offering customization options for adjusting settings, user roles, time limits, controller preferences, and display resolution.

Fortnite exhibited a diverse range of gamification elements in both usability and engagement, followed by Decentraland and Spatial.io. However, the MaaS platform, Odyssey, designed for specific purposes, required additional gamification elements for enhanced engagement and usability. This detailed comparison provides information to improve user experiences, engagement levels, and overall retention in the broader metaverse environment.

6 Discussion and recommendations

In the analysis of metaverse platforms, adapting Fortnite's dynamic gamification model to specialized environments - such as those for business or industry - presented unique challenges. The need for gamification elements tailored to the distinct functions of these platforms emerged as a critical factor. The question of appropriateness arose: Which gamification elements best fit platforms designed for specific activities like business, retail, or social engagement? The influx of new entrants to the metaverse underscored the importance of dedicated research hubs for continuous testing and the refinement of best practices. The term "metaverse," often used broadly, pointed to the need for a more precise vocabulary that accurately captures the varied functionalities of these platforms. Although new UX methodologies tailored for the metaverse proved beneficial, the integration of tried-and-true UX frameworks, enriched by extensive user research and a combination of quantitative and qualitative analysis, remained indispensable. As familiarity with metaverse technologies grew, so too did the potential for user empowerment through increased education and awareness, mirroring the internet's own evolution.

Fortnite set a benchmark with its broad spectrum of gamification elements and a commitment to user-centred design. However, the transposition of its

gamification models to niche platforms often called for additional elements to ensure an effective balance between user engagement and the platform's intended use. Following a comprehensive review of various platforms, including Fortnite, Decentraland, Spatial, and Odyssey, several actionable recommendations were distilled to elevate user experience and engagement within the metaverse. These suggestions covered a range of considerations from gameplay fundamentals to security and privacy, providing developers and designers with insights to forge immersive experiences that resonate with the diverse needs and preferences of their user base.

Key recommendations included streamlined onboarding processes, enhanced accessibility features, regular content updates to maintain user interest, thoughtful monetization strategies, cross-platform progression capabilities, and the adoption of emerging technologies like AR and VR. Additionally, fostering a vibrant community of content creators and implementing robust feedback mechanisms were highlighted as essential strategies for continual improvement and user satisfaction. Collectively, these insights contribute to a comprehensive framework for building engaging and sustainable metaverse platforms.

7 Conclusion and Reflection

In reflecting upon this thesis, it became evident that while it has explored user experience and engagement within the metaverse landscape, particularly through the lens of Fortnite, the journey has only scratched the surface of this expansive digital frontier. The thesis illuminated the metaverse's evolution, highlighting its transition from a literary concept to a vibrant digital ecosystem, marked by the seamless blend of gaming, social interactions, and economic transactions. However, the metaverse remains a complex multifaceted entity, characterized by its diverse platforms serving various user needs from socialization and entertainment to business and education.

The vagueness of the metaverse's definition and the ongoing debate around its terminology, evidenced by European Commission (2023) regarding the EU

strategy to lead on “Web4.0” and “Virtual Worlds”, and Apple's mandate for "Spatial Computing", underscore the dynamic and evolving nature of this space. This thesis acknowledged that the metaverse and spatial computing, while conceptually overlapping, operate within distinct realms, with the former encapsulating digital experiences and the latter bridging digital interactions with physical spaces.

This exploration has highlighted that experiences within the metaverse are currently siloed, lacking interoperability and persistence across platforms, a challenge that ventures like Everyrealm strive to overcome. Yet, technological limitations, alongside the absence of universal standards, and regulations, and the need for a thorough overhaul of IP and copyright laws, pose significant hurdles. Furthermore, considerations of safety, privacy, and ethics loom large, demanding greater attention as the metaverse continues to develop.

The differentiation between consumer, enterprise, industrial, and governmental metaverse uses indicates that a one-size-fits-all approach to UX design or gamification may not be universally effective. Engagement strategies need to be tailored to the specific contexts and objectives of each metaverse segment, recognizing that user motivations for entering the metaverse vary widely.

Upon reflection, this thesis has initiated a critical examination of user experience and engagement within the metaverse, yet there remains ample scope for deeper inquiry. Given more resources and time, a focused study on a singular aspect of the metaverse - such as consumer experiences within a specific platform - employing a mix of UX frameworks, user research, and both qualitative and quantitative analyses, could yield more nuanced insights. Such an approach would pave the way for developing targeted solutions, including concept designs and testable prototypes, further underscoring the necessity for innovative UX methodologies tailored to the unique demands of the metaverse.

In conclusion, the metaverse stands not as a solution but as a burgeoning idea and tool, brimming with potential yet fraught with challenges. Its successful

implementation hinges on a nuanced understanding of its technologies, a commitment to adaptable UX strategies, and a willingness to navigate its complexities through ongoing research and collaborative effort. This thesis marked but the beginning of a longer journey toward unravelling the metaverse's full potential, inviting further exploration and innovation in the pursuit of truly immersive digital worlds.

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Appendices

Participant Information Sheet – Expert Interview

Research Title: Gaming the Metaverse: User Experience Analysis and Insights from Fortnite

Location of the study: Bachelor’s Programme in Design - XR Design, Metropolia University of Applied Sciences, Helsinki, Finland.

Researcher: Pedcharat Cheremnykh

Supervisor: Tania Chumaira

Introduction: You have been invited to participate in an expert interview for the research study titled "Gaming the Metaverse: User Experience Analysis and Insights from Fortnite." I appreciate your willingness to contribute to this study. Below, you will find an overview of the interview session, interview questions, the use of video screen recording, and the purpose of the interview.

Purpose: This research aims to explore various UX approaches, underscore the significance of UX in metaverse design, and address the challenges related to the lack of engagement and motivation in current metaverse platforms. This study seeks to understand how UGC (user-generated content) gaming platforms like Fortnite can offer more in terms of enhancing user experiences and motivation. Your insights will play a crucial role in advancing our understanding of these topics.

Interview Session: The interview session is expected to take approximately 30-45 minutes. During this session, we will discuss various aspects of user experience in metaverse environments and gaming platforms like Fortnite. The interview will be conducted in a one-on-one format and will be video recorded.

Appendix 2

Interview Questions: The interview will revolve around topics related to user experience, design principles, and gamification elements in metaverse platforms. The questions will cover the following areas, as mentioned in the previous version of this document.

Confidentiality: Your participation and the information shared during the interview will be kept confidential. Your identity and personal details will not be disclosed in the research report. The video recording will be used for research documentation and research purposes only.

Participation is Voluntary: Your participation in this interview is entirely voluntary. You may choose to withdraw from the study at any time without providing a reason. Your decision to participate or not will not have any impact on your relationship with the research team.

Contact Information: If you have any questions or concerns about your participation in this study, please do not hesitate to contact pedcharc@metropolia.fi.

Thank you for your participation in my research study. Your insights and experiences will be invaluable in furthering our understanding of user experiences within gaming and metaverse platforms.

Participant Consent Form – Expert Interview

I, (name of participant), have been invited to participate in the expert interview for the above research study. The purpose of the research is to gather insights and expertise on user experience in metaverse and UGC gaming platforms, with a specific focus on Fortnite. These interviews aim to explore various UX approaches, emphasize the importance of UX in metaverse design, and address the challenges related to user engagement and motivation in current metaverse platforms while investigating the potential enhancements that UGC gaming platforms like Fortnite can offer.

I have read and understood the written participant information sheet. The information sheet has provided me with sufficient information about the above study, the purpose, and execution of the study, my rights as well as about the benefits and risks involved in it. I have had the opportunity to ask questions about the study and have had these answered satisfactorily.

I have had sufficient information on the collection, processing, and transfer/disclosure of my data during the study and the Privacy Notice has been available.

I voluntarily consent to participate in this study. I have not been pressured or persuaded into participation.

I have had enough time to consider my participation in the study.

I understand that my participation is entirely voluntary and that I am free to withdraw my consent at any time, without giving any reason. I am aware that if I withdraw from the study or withdraw my consent, any data collected from me before my withdrawal can be included as part of the research data.

Appendix 2

By signing this form, I confirm that I voluntarily consent to participate in this study.

If the legal basis of processing personal data within this study is a consent granted by the data subject, by signing I grant the consent to process my data. I have the right to withdraw the consent regarding the processing of personal data as described in the Privacy Notice.

Date: d.m.year

_____

Signature of Participant

The original consent signed by the participant and a copy of the participant information sheet will be kept in the records of the researcher. Participant information sheet, privacy notice, and a copy of the signed consent will be given to the participant.

Appendix 2

Experts' Interview Transcripts

Expert 1

1. Could you provide an introduction about your professional background and your level of involvement or experience with Fortnite and metaverse platforms?

   I teach people how to design for XR and I create content around that for UX best practices for XR. I do a lot of gaming and I study gaming to create better XR experiences. It's kind of similar in that regard. As for the metaverse, I have used multiple social VR platforms like RecRoom, AltSpace, VRChat, and Spatial. On the gaming side, I play Final Fantasy XIV. I also tried Guild Wars 2. I have tried Fortnite, but I did not like it.

2. What are the key components of a positive user experience in metaverse environments or UGC (user-generated content) gaming platforms (e.g. Fortnite, Roblox, Decentraland, or Sandbox) in your opinion?

   Specifically, around UGC platforms, I have messed around AltSpace and RecRoom, Spatial, and Fortnite I have not made it there far. There is something in Final Fantasy and GenShin Impact, but I guess it's limited in all of them. But that is a good point, which is that you need to have some kind of constraints in place, otherwise, it will be overwhelming. And that makes sense on both the development side and the user side. Simplified interaction as well. You don't want to have a developer level of creation on the user side, because it's incredibly difficult. A simplified way of adding objects and giving them a limited number of objects but then it is up to their creativity to make whatever they want. The Legend of Zelda, Tears of the Kingdoms, and Breath of the Wilds are similar, in the regard that it is up to your creativity to basic objects you must create whatever. Giving you freedom but within constraints. Make sure that the

way that you place objects and interact with them to build things is as simplified as possible and still gives some freedom.

3. Can you describe the design principles and considerations specific to creating user-friendly metaverse platforms like Fortnite?

   Normally how I create or how I work whenever I'm the one who designs things, I'd look at how people would have done it, to see how they've solved that problem. And if I've time and budget, I'll observe other people playing that thing, just do some observation or usability testing on other platforms and see how they've done it or an expert review on my own. To see what the gaps are, what is working and what is not working, competitive landscape basically. Also, I'll be looking at Celia Hodent's book, The Gamer's Brain, which goes in-depth into Heuristic on gaming specifically. And how it uses psychology and neuroscience for that. Review that again to remind me about her pillars of gaming UX. To make sure that I've got all the stuff to freshen my mind while I'm creating. And I'd take that inquiry to our project, whatever that'd be. So multiple considerations, you want strengths, and reduce complexity if it does not go against the rules or the goal of the game. Depending on the actual goal of the game you're trying to create. Not too complex. Consistency. Good Feedback. Make sure that you give the users control to customize wherever possible for flexibility reasons; font sizes, colours, contrast, colour blindness, or changing font sizes, in case you have difficulty reading and so forth. Also make sure that your errors, and messaging/ feedback are clear and timely throughout the whole thing.

4. How can gamification elements be effectively integrated into a metaverse platform without compromising the user experience?

In Genshin Impact, they have a teapot world, a magic teapot where you can create your home. They have gamification in there as you build the environment, it'll level up, then you will get more space you can build on, and you can get more options for things you can add in there. They add in gamification as in leveling up the environment but also giving you options for new things you can access or purchase that you cannot purchase anywhere else in there as you level up. As you build up the world, it gives you the currency that is generated based on how much stuff you have in there. You can use it to buy stuff that you cannot get anywhere else. Those levels of gamification are positive for encouraging people to build in the world and be able to customize the music that they are listening to but make it their own. But all of that, they also have constraints for performance reasons. On the negative side, I've been playing different Gacha games, the older one called Honkai Impact 3rd. Depending on how you design it, there is a feeling of FOMO you are getting if you don't play which can become not fun anymore. You must balance that. People would miss logging in one day and miss the object, they would've got it otherwise. That's worse than going overboard.

5. Can you describe the role of gamification elements, such as challenges, rewards, or progression systems, in enhancing user motivation and engagement in metaverse or gaming platforms?

   Things like you cannot get anywhere else by generating currency within that user-generated area. There is also the element of being able to bring your friends to that area so that they can also experience it and enjoy it. It's fun to be able to share your creation with other people. On the downside, like in Final Fantasy XIV for the housing that you have there, you can set up vendors within your housing that you can use but other people cannot. It would be nice to allow other people to be able to use

vendors in your home. I think Genshin Impact does allow you, but I have not visited the other teapot to see it. Being able to share with your friends would be nice.

6. What design choices/ suggestions would you suggest to Fortnite's UI or UX to ensure a seamless and enjoyable user experience?

   I tried Fortnite a long time ago on PS4 because Celia Hodent's book talks about the onboarding experience there. But when I went to try it, it was not there. I was thrown in directly to play with other people. I don't even know what button to push, I don't know what I am doing, so I'm out. Then I was trying to see if there is any other version, did I grab the wrong version of Fortnite? But I did not have any options, first, add the onboarding, why did they take it out? And I want it to be onboard as I play, learn as you go. If I do the onboarding separately, I will forget stuff. And it's more effective when onboarding someone into the experiences to let them learn as they go instead of throwing them into. And level up jointly with other people, I don't know if they have the leveling. But do not put me in an area with a person at a level of 90th, it's going to kill me immediately because I don't know what I'm doing. That is how Final Fantasy XIV, you have an onboarding experience when you play the game, you are learning the story as you learn the interaction. And you are not put into the world with other people until you have gone through that portion. And when you are in the best portion, now you are in the world with other people. That is more comfortable but different people have different preferences. But my preference is, do not throw me into the fire, I don't know what I'll be doing. I did do a different one where there was a world where you could choose which things you were into. Even though I don't know what I am doing, it is not explaining to me what these different things are and why I'd want to use them. At least from what I remember, there was one building world and then the other one. I

don’t remember but I don’t know why to choose and which? There was no explanation.

7. What challenges do UX designers face when working on metaverse or UGC gaming platforms, and how do they overcome these challenges?

   You need to be able to balance the goal with the user experience because you don’t want the user experience to get in the goal. When we are coming in from people like UX designers who are used to creating normal apps that are not games. We need to make the restrictions as much as possible, with no difficulty, and no upsetting the players. Make sure that it’s as easy as possible but that might be against the game. The one I talk about a lot is the controller that is for the certain boss mechanic in Final Fantasy XIV where you can get confused by the boss. You would expect whenever you use the controller when you use the joystick. Forward means you go forward, but with this confused mechanic it goes completely opposite and that is against UX but it’s not against the goal. So, you must know how to weigh the goal against the user experience. Know when to break the rules and how to break them that is still user-friendly without hurting the goal of the game. That’s a big challenge and a different challenge in how we approach it because, with the regular apps, we do usability testing, interviews, and observation while gaming is much more complex. So, you must do a small flow prototype for playtesting which you were taught not to do with a general testing focus group. Something not to do with the traditional user experience design because they feed off each other and implement each other instead of speaking for themselves. And the challenge of learning how to apply that as supposed traditional UX. With the metaverse platform, you must do that with traditional UX as well, but with games. Sometimes you do need to break those rules for the goal in the game but how do you do it gracefully that is the challenge. Ensure that it is still fun but still user-

friendly. Because you can make something so user-friendly but there is no fun, it is not a challenge anymore. That's the difficulty for the UX designers I would say.

8. What UX methodologies or heuristics do you find most relevant when evaluating user experience in a metaverse platform like Fortnite?

   I would study The Gamer's Brain, Celia Hodent's book. I would like to observe people playing. Games like Fortnite, you'd have to choose the length of time to observe people playing. I would check feedback, Reddit, and YouTube, to see what people are saying to evaluate what experience people are having with this thing. YouTube or Twitch probably have a ton, I'd watch people there playing or streaming or find the video of people's first impression of things like that. But if I were doing playtesting, we would have to pick an amount of time. You can also do a diary as they play if it's a longer game. Weighing them against The Gamer's Brain book. I've got some books that I have not been reading yet, one is Playful Production Process and the other one is Game User Research which shows you how other people have done it.

9. Can you share examples of user-centred design practices you've applied in the context of metaverse platforms?

   Some other examples, whenever I stream the game, I use the method called Rose, Thorn, Bud method of analysis where I talk about what is working, what is not working, what would I do if it was my project, and how would I apply that to XR or if it's not an XR. But I always keep in mind Celia Hodent's gaming UX and my own knowledge of UX from my own experiences of traditional UX best practices. As for the metaverse platforms, I think it should be used as a mix of both traditional and game

UX. There are going to be some new best practices that come about especially for the metaverse and social platforms. Because there are new best practices just from Social VR and I think for UGC specifically in a social atmosphere. There are going to be additional references. There is some neuroscience behind the social interaction that needs to be considered around body language and behaviour. For example, in social settings, you need to be able to see people's hands. So, when they're creating something, you are not just seeing hands moving in weird ways without knowing what they are doing or not being able to see your hands at all. You need to be able to see what they are doing to improve the trust because in the back of their mind, if you cannot see the hands, you are wondering what their hands are doing. And if you cannot see their hands, you cannot see what they are doing. There are different levels of distrust and it's going to still be there on the back of your brain. There are some neurosciences that need to be considered with metaverse and different ones for user-generated ones. There are already ethics and stuff because users can get… if you don't put enough constraints on something. For example, what age has access to this?

10. Final thoughts: What would make you want to go back into space?

I know that in this VRChat there is this one world where you could play a kind of Battle Royale type of shooter. I can bring my friends into the world, so we can find guns in the world or steal guns from each other and play. And they have added animation, so when you die it was fun. It's not trauma-inducing, it's fun to play even though you snipe each other. I don't like those games in 2D, but it was fun to play with friends in 3D. The element of being able to play with friends, the elements of how they have set up that I could find weapons in the world and use them, and I can find hiding places in that world and achieve my objective of sniping people and keeping myself from being shot. The humour of when

someone dies. Things like that make me want to go back into space. What makes me not want to go back to space is that either I’m not compelled because it was not fun, or it was just a meeting place. At least for Spatial.io at first, it was created for cooperates, so why would you go back if you don’t have a meeting? But the avatar was not fun, I was not able to customize the avatar, how much I could make it mine, and how much I could personalize it. That would compel me more, versus the corporate mindset that you must have this corporate avatar is boring, it’s made for corporate meetings, so we must act professional and all that is just not fun.

Expert 2

1. Could you provide an introduction about your professional background and your level of involvement or experience with Fortnite and metaverse platforms?

   I've been a UX UI designer for almost like 3 years now, but I have a background in architecture and urban planning. In architecture, my focus was in 3d modelling, so it was like my favourite. What was my first contact with gaming was using the Unreal Engine for architecture projects. I don't have direct experience in Fortnite, only as a player but I have some case studies where for example one that I've done for like a second screen companion for Fortnite. So, I guess it was like the first time when I looked in Fortnite without the look of a player, but really trying to understand the concept of Fortnite and how it works and why it works the way it works. But basically, I have experience in UX and UI in a very broad range of projects. So, I've worked for a UX agency, also for an ED tech. And now I'm working in a company which is a consultancy that focuses on e-commerce. So, this part of gaming UX, I do kind of like a side job. So, I don't have professional experience, but I've been

studying a lot in this area. In the past months I had a freelance job for a metaverse platform. It's a platform like OnCyber. But we were focusing on basically the UI of that platform. For me it was kind of strange because I didn't understand that much about the goal of a platform like that. But I started working at that also because of my experience with Fortnite. So, it was kind of fun.

2. What are the key components of a positive user experience in metaverse environments or UGC (user-generated content) gaming platforms (eg. Fortnite, Roblox, Decentraland, or Sandbox) in your opinion?

   I think that like the most important thing for me, it would be the reason for that platform to exist, something like engaging the user. Also, accessibility and inclusivity, it would be something important as well. Because I think that sometimes they don't take good consideration in those aspects. Now it's kind of changing, right? These kinds of things like in gaming, for example, I've seen that, for example, PlayStation released a controller that is accessible for people who have some kind of impairments that cannot use the controllers that we generally use. Having intuitive navigation is also something that I think is quite important. For example, when we start playing or using this platform, we know exactly what we need to do. Like to move around or what we can do, for example. But On Cyber we can upload some images and some other stuff. But I think that it needs to be intuitive. So, if I'm a new user, I need to know how to do all those things. It's also a part to have an onboarding process that is very straightforward. Personalization, I think it's also important that we can create our own app orders and our own work sometimes. So, I think it's important to have this kind of personalization. So, we can create our own experiences while playing that. As I said, social interaction, I guess it's probably the main reason for that. I remember that when people started talking about the metaverse,

they used to think for example like we were during the pandemic, so they were thinking about like having meetings in the metaverse or like getting together with the people that you're like only working like remotely so social interaction is also very important and I guess performance is important as well. I don't think On Cyber has a really good performance. I changed my computer recently and even though my computer runs some games from nowadays like Call of Duty and it runs mostly but with On Cyber it doesn't work very well. I think that we need to use design in a way that 's immersive. For example, that's something that generally we can see in games, that all the icons and everything in the HUD, it's related to the game that we are playing. So, we have some consistency that makes the game more immersive. So, I think that's also important. For example, when we play God of War, if we play these new games from nowadays, like the one from 2018 and Ragnarök, we see that they use a lot of elements from the Vikings and that culture. And the old God of War, they used to use those other ones from Greek culture. So, they use these kinds of elements to make the game more immersive. So, I think it's pretty good when you have something like that.

3. Can you describe the design principles and considerations specific to creating user-friendly metaverse platforms like Fortnite?

   I think something that Fortnite has been doing since the beginning quite well, it's that the game is scalable, and we have some kind of modular design that we can see. When they change from one season to another, they change some stuff in the map, and they add some new features as well. So, I think it's pretty good that, I think it works like not, when you're talking about UX, that's not just for gaming, but like for products in general, that we make something small and that thing it's going to grow. So, I think that Fortnite has done that quite well. I remember that when I started playing, it was in the, during that early access. And it changed the

game a lot. So that's something that I like. As I mentioned before, consistency in UI and UX, it's important as well. I think that it gives some extra immersiveness in the game. User onboarding is also important. I played Fortnite for a while, so I don't remember if they have at least in the battle royale, I don't remember if they have something for the onboarding process, like teaching the main components of the game. I remember that when they added a feature of parkour and no build mode. They added that as something from the main story, as if it was like a mission, that something was happening and like that people couldn't build anymore in the isle. And then they added that feature, it was kind of like an onboarding process as a mission. So, I think that was good. And feedback and iteration, I think it's also important, we need to gather feedback, right? Using research to see what the players are thinking. Sometimes the designers and the developers, they have an idea because they're so passionate about what they're building, and they don't see what is important or what it's like bothering the players that will actually use that game. So, I think it's important to research together to get the feedback and then to improve the game. And I think that Fortnite has done that well. As I mentioned, like for example, something that made me stop playing Fortnite for a while was because I wasn't good at building, so it was like I couldn't play that much and very well because of the building system. And I guess many other players used to complain about that. I remember anytime that Fortnite on Instagram or any other social platform, they posted anything, there were a lot of players commenting that it's hard to play because of the building. There are some people that give them only one shot and then they build a whole castle in seconds. And they took that in consideration and then they came with the no build mode, which is amazing for people who don't like that system. So, I think that considering the players, it's important and Fortnite has done that quite well. About the UI in Fortnite, I think it's all perfect. I wouldn't change anything because there's something that I've

seen from a video from Celia Holden about Fortnite and one aspect that they use, and they use this in a lot of games right now. I made an analysis in Battlefield, as well, and they use that. For example, everything that we see on the screen, we have some stuff that shows, for example, which button we need to click to do this or to do that. If we need to do an action, when we go to a chest, we see the button that we need to press to open the chest. Or we know, like in the HUD, we know which button we need to click to change the weapons or to change to that crafting tool. So, I think the UI is pretty good. And what I've seen is that I don't know if they recently changed the UI a bit in the menu. It seems like it's getting a bit more serious. I guess they changed the font in the menu. They changed some other stuff like the lines are getting straighter, before it was more playful, and I think they're changing that.

4. How can gamification elements be effectively integrated into a metaverse platform without compromising the user experience?

   I think that gamification is a really important element for this kind of thing. And not only for games or for metaverse platforms, but also for apps. Because I think it helps us engage with the product, right? For example, I use Duolingo to learn some languages. And they also have this gamification that makes us use the app every day. Because it engages and we have some quests, some missions that we do like daily. And the same for Fortnite, the one thing that I like doing the most, because of this kind of game like Battle Royale. It's kind of repetitive because you just go there and need to survive and kill. But this gamification system with the quest, the rewards, the battle pass, I think it's the one thing that makes me want to play every week. I generally play with my wife and it's the one thing that we like doing the most. Every time that we go to the island, we want to see what quests we can make. And how that's going to work with

our progression, like to level up in the game, to get new skins, those dances and all these kinds of things. So, gamification for me, it's the best element, not only for games, but also for apps, for websites and this kind of thing. I love doing quests and progressing in the game.

5. Can you describe the role of gamification elements, such as challenges, rewards, or progression systems, in enhancing user motivation and engagement in metaverse or gaming platforms?

   I don't know exactly how to approach that. But I've read a book recently. And people in the past, they were thinking that gamification was only about making things fun to use. For example, when you're talking about gamification in apps, if you have an educational app. So studying is fun and like a game, but it's not exactly like that. It's basically about engagement. So, they can significantly enhance user motivation and engagement by providing some clear goals, the feedback, and a sense of achievement. So, you know that you are progressing because you're doing those quests so that's pretty good. The challenges, the rewards, and the progression system, they create this kind of accomplishment. I remember when I was studying development and there was an app as well that also has this kind of gamification. When we finished the courses and we got some badges, we could have those badges in our certificate. So, it was pretty good. And in games like Fortnite, they also have a role that makes us explore and interact with different things in the game. I think that's probably the coolest thing in Fortnite. And probably it's something that they use as a goal for the gamification as well. When you have some different quests, sometimes you need to go to all the island, right? Because when I play, I generally have some favourite points for me to go down to the island first. But then we have some missions to help us progress, that we need to go somewhere else and to interact with other parts of the island. So, I think that sometimes that could be like the

role of gamification, like exploring everything that it's possible in that place. For example, in a metaverse, we could have a quest that we could ask the user to build, to add different elements to the world that they're building. For example, On Cyber, you can add 3D assets, images, embed websites and these kinds of things. We could have an onboarding process whenever they add these kinds of elements, so they will explore everything that it's possible in that platform and they will get some points because of that. Instead of just adding the same elements over and over again, you can use these gamifications for the user to explore the platform more.

6. What design choices/ suggestions would you suggest to Fortnite’s UI or UX to ensure a seamless and enjoyable user experience?

   One thing that I would like to have in Fortnite right now, it would probably be that companion app. Because I think it would be easier for me because one thing that I love doing is doing the quests. So for me it would help a lot to see all the quests that I need to make in an app instead of having to open the quests like why you're playing because that may distract sometimes because when we open we need to open the map which covers the whole screen so we don't see if there's any enemy coming and this kind of thing so the companion app would be perfect. I remember the first experience that I had with a companion app in a game was with Battlefield 4 and it was great because I could see the map on the second screen. And also, the missions that I could make there. That would be the only thing because all the other suggestions that I had in mind when I started playing Fortnite, they are kind of like working on that. For example, as I mentioned, the no build mode, it's something that I would like to see if there wasn't in the game already. Avatar customization. They had that before. Some seasons before we had like some skins that you could change the colour of the head, the arms, etc.

or change the shape of these elements as well. And I think that's coming back in the season that starts tomorrow. As I've seen some leaks, it seems that there will be some skins that you can change the colour as well. I remember that there was a season with the Mandalorian, where you could also make some quests to get new things for his armour. So, it was pretty nice, this kind of customization. The in-game tutorials that I mentioned, sometimes they do that when they introduce a very different feature. As I mentioned, when they started with the no build and the parkour, they made it in a way that was fun. Because when they started with this no build, it was I guess, one or two days that we couldn't play the build mode, it was like something related to the story. And this context that they're giving to the game, it's nice, like creating a lore and a story behind. Each season they have a different story, so that works a lot for this game. Because it gives a reason to play instead of just killing and surviving. We see that there's something happening and it's also there's always something different in the game.

One thing that I like a lot that I would suggest if they weren't doing already, it's like the regular updates, but they do that at least I guess every three months. They change a lot of things like the map, sometimes change completely, that's good. I think that one thing that would be nice is if we had a place where we could give feedback, instead of flooding their social media with comments. I guess it would be nice to have somewhere that we could give some feedback. I heard that some UX researchers generally go to Reddit to look for and to see what the players are talking about, but I don't know if they have a specific place to do that. And I think that would be nice, like when the game has a beta version that we can play and then we can give feedback. There's one problem that I think sometimes they take a long time to fix some bugs. I know that they have a panel, but I don't remember the name of that platform. It's a platform with some boards that people use for some

archival methodology, where they put or say things like what bugs that the community reported, what bugs they're working on, and what were fixed. I remember like two or three seasons ago, I played with my wife in split screen, and there was like a few seasons ago where one of the players opened the map, the screen of the other player turned into black so we couldn't see anything. And it was like the whole season with this bug. In that panel where they talked about what bugs were reported, It was talking about this bug there, but they took like one season or almost two seasons to fix this bug. So, it was bad.

7. What challenges do UX designers face when working on metaverse or UGC gaming platforms, and how do they overcome these challenges?

   Some challenges that people would have; I think probably mainly in the metaverse would be like some technical limitations that could have. Because sometimes I see that on some platforms, they want to do everything at once, but sometimes they can't do everything. Because it could be very bad for performance and this kind of thing. So technical limitations would be bad. There should be a balance between immersion and usability. And, as I mentioned, for me the problem with this kind of metaverse is that sometimes there's not the goal of just social interaction. It's not something that engages the users that much. I think that the goal is very challenging to decide what's going to be the goal, like to be engaging. Because just social interaction, I don't know if it engages the users very much. Because when I was working with that metaverse platform, basically it was focusing on showing art. It's a place for artists to create their space to show their NFTs. So, I don't think that's a very interesting goal that would engage other users, just to go there to visit a place. It's not very realistic. Because it's like some games from 10 or 15 years ago. The graphics are not very impressive. If the graphics are not impressive, it's not like something that you see as if it was like a second

world. The biggest problem and the biggest challenge are to come with an objective and a goal that makes the users be engaged with that solution. Maybe adding more features, more things related to gaming instead of just like a place for people to chat and show the pictures that they have.

8. What UX methodologies or heuristics do you find most relevant when evaluating user experience in a metaverse platform like Fortnite?

   I think it's important to use some UX methodologies and heuristics for that. I think for any product that we create; we can use that. And not only a digital product, but also physical products as well. For example, usability testing, it's important for anything that we are building to see if it's something that the user wants to use, right? There are a few founders and CEOs in some companies that think that they are some kind of genius that they know everything that the user wants, and they don't care about usability testing because they think they are 100% sure that they know that the user needs that. Together with feedback from observation and sometimes in a controlled environment, you can see the user is using that, giving some talking about their thoughts. Analytics is also important, it's a part of UX methodologies, because you can see from data what the users are doing in that environment. When I was analysing Battlefield 2042, I saw that there were some analytics on the weapons usage from the users. For example, the analytics showed that there was a gun in the scene, it was a pistol that the users were using a lot. One of the developers wanted to keep that gun there because the players were using it. But they were using it because the weapon was kind of broken, because it was too powerful than it should be. So, it's good to see this kind of analytics. For example, in Fortnite, you could see if the quests are being made, so if the users are really engaging with the quests. If the users are visiting everywhere in the island, you could see all of this from

analytics, and you could change the game properly. If you see that there is a kind of quest that people are not doing, it's not engaging the users, then the next time you can change that kind of quest to some other that it's more engaging. Sometimes A/B testing also could work well, mainly for some UI changes. I see that thing for when they came with the No Build mode as an A/B testing, it worked. So, it was good. And some heuristics evaluations also showed it could work. You can apply accessibility heuristics to see that. Maybe for UI as well. So, I think it works not only for games, but for all kinds of products.

9. Can you share examples of user-centred design practices you've applied in the context of metaverse platforms?

   I used it, but it was basically about heuristics. I didn't conduct user research or these kinds of things. Because as I mentioned, I worked with that freelance job. The clients sometimes have some specific needs that we can go further. Basically, one thing that I've done was going with the heuristics, like following some stuff that it's already established. For example, using icons that the user can relate to, using labels in the icons as well to be more accessible. But I think it would be great to use user research to understand if there are user needs or user wants, to understand their big point and these kinds of things. Having a persona would also help to design. Also getting feedback not only from the manager in the case of this project that I was working on, like I was getting only feedback from the client, but I should get feedback from the actual users. That would be important, but I didn't have the chance of doing that. I think user-centred design is something that we need to use anytime, anywhere. Before starting, and after starting, during the process, after we finish, we need to do that in every aspect. Even before starting, I think sometimes it's even more important because we may start doing something, using some effort, spending some money on

something that nobody wants to have, and maybe it's not relevant. I've worked in a company, at the time I wasn't a UX designer, I was a web designer, and they had a product there, like the two founders of the company, they decided to create that, but we didn't have a UX designer in the company at the time. It was like a package of some solutions that the company wanted to serve to the clients. And they were passionate about that. They spent quite some time doing that, we made our website, and we made a lot of marketing around that. But it didn't work the way they were expecting, because probably nobody wanted that. And they didn't have proper research at the beginning. He was talking to the client, and the client said that it would be good to have that. But I don't think it works. It's the same thing as if you ask somebody if you would buy a product that in two years would have four times the value? Okay, I would. But then it's just in the imagination, it's not something that it's going to happen. Then they took that as something that would work. They develop this service or the package. When I left the company, it was like two months after they released that product and I guess they didn't sell anything to anybody. Because they didn't have this user-centred approach at the beginning. Maybe they had them after, but you can see two months that they had it passed, and they didn't get their money back. They didn't have the money that they invested in that.

10. Final thoughts: Will there be a need for a UX framework for metaverse?

I guess even in gaming, UX is something new. I didn't know it was like UX designers work in games. Last year on YouTube, I just searched for UX designing games and then I found a video from Celia Holden. That's the one time where I learned that I could also work with Game UX. So, I think it's also something new also for gaming for the metaverse for API and this kind of thing. But I think it's important to have a UX approach for different kinds of products.

Expert 3

1. Could you provide an introduction about your professional background and your level of involvement or experience with Fortnite and metaverse platforms?

   I'm a lead UX designer and I'm currently working on my first massively MMO, Pax Dei, which is just launching into its alpha phase. My experience with the metaverse, from a professional standpoint, there were games like Second Life, which are supposed to be the metaverses, which is a game from 15 maybe years ago that features a huge open world where people can come, and they have their own storefronts. And back then there were also companies from real life representing there you can buy, acres of land and all these things that we think about how the metaverse could look. I'm familiar with Fortnite. I haven't actively played it. I also have my own understanding of the metaverse. I feel like no one really knows what it really is. There are a lot of different descriptions. It goes a little bit like UX. But there are just so many differences, in a way, at least coming from a gaming background. Second Life is so different from Fortnite. However, of course, Epic Games, the company behind Fortnite has done interesting things that haven't really happened in games before. Like concerts have happened, but the scale that they did them and how successful they were in a video game that hasn't happened before. And I just wonder, is it right to call Fortnite a metaverse? Also again, from my gaming background, what I know about Fortnite, I think the main reason it was called that was also because the players have used Fortnite in different ways than the developers anticipated. For example, one of the reasons that is set by, and it has gotten so popular besides, of course, the visuals and the gameplay is that a lot of young people used it like a chat room, for example. So, is that what made it then into a metaverse? I'm not sure, I

don't feel like, honestly, that I personally really understand what is a metaverse and everyone has their own conclusion. Because I think when you look at Wikipedia, what it says is this one open world, which Fortnite isn't, it's an instance world, for example, which is where maybe the MMOs and something like Second Life are lending itself more to be metaverses. So, in a way, I think metaverse is an umbrella term that should be broken down into the different genres of metaverse because I think there should be genres or stages of metaverse features, applications, and that's kind of what I think about that.

2. What are the key components of a positive user experience in metaverse environments or UGC (user-generated content) gaming platforms (e.g., Fortnite, Roblox, Decentraland, or Sandbox) in your opinion?

   Well, coming from the gaming sector and working mostly, before I now work on a AAA MMO, I worked 6 years on mobile games, which are mostly about cooperative gameplay and as well as asynchronous gameplay, which means you don't see anyone really live, like in my game that I work on. Now you have a 3D avatar, I go play the game, I see you in the game. But the games I worked on before, they were still multiplayer games, but so -called asynchronous, where I do my little thing in my little village just by myself, but I might be in a guild, and we might acquire points together. So, to come back to the question, what are the key components to a good UX experience. So, in these games, and this is the one thing what I already touched on earlier, it's the chat experience, because this is something, no matter what game I play, I always worked on multiplayer games, which is where my heart is at, I want to connect people. So, the way that people can interact with each other, mostly due to typing to each other, or be it then voice chat. So having well-working communication lines where people can protect themselves, they are kept safe. Where they can mute players that are

harassing them, or they can report to them. So being able to get out of toxic situations, that is, I mean, we see it everywhere in the world, we see it in the news, we see it in politics, that that is the main struggle of humanity. And games and metaverse are just another mirror of our overall problems. So, but this is also where the power of games and metaverse maybe then comes, we can, we can put other systems in the digital world to talk to each other. And especially games have done it well in many ways, where or like the chat apps, you can make private rooms, talk with people you're interested in. Again, thinking metaverse, I think that clubhouse is that a metaverse? I mean, I don't reuse it, but I've seen friends, and I've tried it, I join rooms, people are discussing, it's almost like there's this online community where people talk about all kinds of things. It's been huge groups together. And there are many ways because Clubhouse also works is the way the communication, because it's all about talking to each other, the way that they do the feature set, someone talks, the others listen, you can raise your hand like in the Google meeting. So, good ways, giving everyone time to talk, protect themselves from toxicity and find a community where they can thrive. And I think those are the key components for any online space if communication is given in that way. So, you can chat, talk to each other. And that is because I work in games and the games I work on multiplayer games. They live on connecting people and we connect through language mostly. So, and we know from games how difficult it is to make non-toxic communities. It's one of the biggest struggles, especially in games that are competitive because being competitive and fighting each other makes people more likely to behave badly in that. And that is why, why just I know from it's, it's just simply in my job that we need to be careful with that. And because it can, because this is a business decision, it can drive players away if they are not safe, if they don't feel good in their environment due to what other people say. And then the other thing is, my goal is to connect people so that they are more likely to

stay in the product and have fun playing. If they meet like people that they can talk to in a good way and create groups within guilds. So, this is a very much why I know about it is this is the business of games, mostly at least multiplayer games.

3. Can you describe the design principles and considerations specific to creating user-friendly metaverse platforms like Fortnite?

   Luckily, and this is the thing with the chat systems, we have things like that. That space is very developed e.g., WhatsApp, Telegram, Clubhouse, Google Meet, Discord. Because this is a huge, already like genre of products exists where I just go and lend because I am not an expert in communication systems. So where do I look? I look at the ones whose business is that. So, messengers, but even on Facebook or Instagram, how do I connect with others? How and what can I write? Like, but specifically these messengers, how do I protect myself or other games? Do they have good ideas? So, this for me makes my job easy. I just look where do I play? And again, as a UX designer, you look what products your audience is familiar with? So, I lend from that. Because a lot of others have done this already very well. This is also just in a general thing. If you're not an expert in a feature that you make, you just copy. You must. And what we call whenever I copy features, you go for a state of the art. What is the best there is? And then again, you always need to see, OK, this is the resources I have, the time I must make it. What are the key components, especially like what we said for communication? We want a safe chat experience. What are the key components? You can mute players. You might report them. Those are usually the basics and games for a poor example. That would be my answer to that.

4. How can gamification elements be effectively integrated into a metaverse platform without compromising the user experience?

   I think gamification is the key to make the meta game the metaverse. And that's interesting. Metagames, of course, are giving to the metaverse work because, you know, and this is where it gets philosophical. I mean, all of life is play. You go to work, you earn a salary, you go to sport for maintenance or to achieve things. There is a lot of gamifications in life that motivates us as a biological being. We have biological motivators. So gaming is just an expression of our biology and gamification is the broken-down thing that now everyone feels like, oh yeah, people feel good. If numbers go up and a progress bar fills up, we feel like we achieve something. Apps like Duolingo have, for example, worked a lot with gamification to improve their experience. So, the metaverse as well, I mean it will be all about gamification, games, all kinds of things. So, I think gamification in general, it is just a design philosophy where we tap into human motivation. So, and we are learning like gaming is the core to gaming. And it's the same for what we do when we're younger. We learn through play. That is why it is also so pleasurable. And yeah, so it's a basic. Is it the basic human need? OK, questionable, but it is something that is deeply ingrained that we love to engage with things that are playful and that motivate us in these different ways through beautiful, fun interactions with animations, through getting points while doing something. You know, there are so many ways to use it. So, it will be a core component, I think, to make simply any engaging digital space, I feel like.

5. Can you describe the role of gamification elements, such as challenges, rewards, or progression systems, in enhancing user motivation and engagement in metaverse or gaming platforms?

Yeah, kind of like what I said before, it's also biological, it's a proven thing because then this is why games work so well, right? They have all these health bars, they go down and then your experience levels, they go up. It is the same thing that works with getting money in your bank account. It's the same thing that I think where this comes from. We feel that we are improving and gaining things. It's again, it's this biological thing. We prefer gaining more than losing stuff because it's simple, that is what survival is tied to. And that is maybe also why so many people in the world gather so many resources. We are wired that we feel good, the more things we get often so that we are more likely to survive. And losing things is very painful and might cause us to struggle. Or it's this basic biological system. So, this is the basic thing. Why games already, this is what most games work on. Like let's say 80%, 90% of games work with some kind of numerical systems, stats that go up, hitting enemies. So, it's just a proven system of gamification that works with human motivation. So, they work pretty much anywhere. That's how all gamification works in all the apps. And they can be, you know, there are of course those that are used in like fast combat situations. But then you can use them for something in the basic farming game where it's really relaxed. So, the application of these systems is very wide. Or like I said in Duolingo, you get experience. Every day you log in, you get this thing, or you finish a course. And I think they are good systems. They are just motivated. They have ways to motivate us to do things and to feel good about ourselves and to feel a sense of progress in life. Because, you know, we all probably sometimes wish we had this kind of progress bar for our job, right? Or other parts of life, which is where I see the metaverse. That is, you know, how to make it healthy is one thing. But there is a movie I would like to recommend to you. It's called Summer Wars. It's an anime. And I think this is my favourite depiction of the metaverse and something I thought that this would be so fun to have. It's like it is a true one big, like more like second world. Second life, everyone also has their little, your

real job in your real life, you kind of let your avatar looks like that and everyone can be cooperating in this digital space. It's just a beautiful movie, also a little gaming in there of how the metaverse could look. But yeah, this is the thing. Everywhere where many people come together, we are challenged with all the problems that humanity and being human brings with it too. So that is why I'm again coming back to why it's so important how to keep people safe and metaverses will be a key to having a good communal digital space and it's the key to any good digital space where many people come together.

6. What design choices/ suggestions would you suggest to Fortnite’s UI or UX to ensure a seamless and enjoyable user experience?

   So UX is all about and this is for any product again, the basic principle or the core problem UX tries to solve. How do I get these people that I make this product for to engage with it? And easily if that is usually how to get them, how do I get them easily to whatever I try them to do within this product? So, for us all about usability, like do you understand the product interface? I mean, we are talking all digital. So, this is all about is it easy to sign this whole it's called in games. We call it FTUE (First Time User Experience) and probably in other products as well. So, this flow of first-time hearing about your product, finding a way to sign up to it or download it or interacting with its client, making an account, logging in, being able to engage with others or this level design or whatever there is. So, this is the basic thing of UX is how do I get, and especially for the metaverse. And this is where Apple already showed how to do all those things. I mean, that is why they were, for me at least, so got so successful. They created interfaces as well as hardware that is quite accessible to a big part of humanity, that is intuitive for at least the ones of us that already now grow up with tech. But also, you know, a lot of people who didn't were able maybe to understand the interface of with

the big buttons of apps on iPhone. So that will be the main challenge and usually is in UX that how can I make sure that now again, because for Metaverse, we are talking every human should be able to interact and participate. So, this is the big thing. You have many different audiences, many different disabilities you need to cater to people with bad vision with motor dysfunction, maybe even cognitive. So, this is also where accessibility is helping. How do we invite everyone to the party? Right? That's the big thing in UX. How do we not gatekeep? How can everyone participate?

7. What challenges do UX designers face when working on metaverse or UGC gaming platforms, and how do they overcome these challenges?

   I think it's simple and there's no matter where you were. You have a finite set of resources, depending on what company, of course, is doing. But you see it now. There has been a lot of layoffs. There is just always a finite set of resources to make features. And, for me, this is part of being a designer as well. And because in the end, this is a business. So, you work for a business, or you have your own company or you work there, you need to always think, is this feature that I'm working on, how much will it cost? And will it give, will it have enough impact for the people that are in this product? And all because all of us, and that is sometimes especially in gaming, there are people who just, ah, we do things like I want to do this fun thing. Well, it's not about just doing what you think is fun. It's about doing the right things for the people with the resources that you have. And this is something that is especially getting more mature in your work, this is what I think. And is it a struggle? I mean, this is the thing in life. It's the same with life, what we need to decide what to do in life. We only have so much time. It's a finite experience. And that is the thing with everything. What do you do with the time and the resources you have to have the biggest impact? So, and again, for us also in UX,

getting resources for accessibility can be hard. You first need to prove that when you make a metaverse, you first need to prove if everything else is working and then you can keep building to invite sometimes more or make it more accessible to others. So, yeah, I would say it's basic and maybe reflective in many other industries as well.

8. What UX methodologies or heuristics do you find most relevant when evaluating user experience in a metaverse platform like Fortnite?

   Many different tools in games. We use a lot of qualitative and quantitative analytics. So, we track a lot of data in the product and that is for everyone, every digital product, there you track click-through rates and all the like what I told you about this FTUE, the funnel, where do people drop off? But of course, in my work I also use heuristics like human computer interaction rules, all the Nielsen Norman and this is for our work the most important. There are many different heuristic and rule sets that we frequently apply to all kinds of stuff while making it and while testing everything. So yeah, it's many different tools and then all of that is aided by the analytics and that's how we validate if what we created is having the impact we wanted or if there's bugs or maybe a button is not as prominent as it should be. So many ways we try to make sure what we create is good. Starting with if I have an idea I make a mock-up, a click dummy, I put it on paper and I give it to my colleagues and let them test it, so it starts very small but then of course you know it's just a big funnel also of validation. So yeah, I can really recommend any UX designers probably familiar with it. Nielsen Norman group, it's these two famous guys, one of them called the term use experience, he was the first use experience artist architect at Apple, his name is Don Norman. Yeah. And yeah, they have these human computer interaction heuristics on him and his friend. They define these as basic heuristics all UX and follow like the system should always be clear what is happening, you

know, even if there is an error, there are many of these heuristics that should be considered.

9. Can you share examples of user-centred design practices you've applied in the context of metaverse platforms?

   Yeah, I work with a user-centric design workflow all the time. So, user-centric design is usually these five steps, right? You empathize with the audience, you define the problem, you prototype, you test for me at least that is user-centric design workflow and that is how we all I always work on all digital products I ever work. There is always this pretty, you know, maybe I'm lucky in that way because of course it depends on the company culture, but mostly nowadays it's understood that no one gets to make a call on what works or not. You must measure it. You must test, which is really the most important part of the user-centric design, understanding the audience when you make something for them, you test it. And then with the data you have, like what I said, we measure, you go back to the drawing board if there needs to be iteration or updates. So yeah, that is how we work.

10. Final thoughts: What would be the main struggle or the main problem that makes users not come back to the platform or what would make users want to go back into space? Do you see also that because it's user -generated content that is not made by the game studio or the designers, does that also become the problem?

    That's an interesting part. So, what for me, user -generated content is like in Fortnite, you have this play mode that you play against others. The other, every other player is the content for this game. It wouldn't work otherwise. That's why in games like League of Legends, which is a highly competitive game, you can play the game with just a bot. I don't know if

it's possible in Fortnite. So, if there are no players or you want to just trade, you can do it. Probably it should be possible for Fortnite too. So, this is the issue with games and for the game I work on. It's our game is not like World of Warcraft and World of Warcraft. Even if there is, would be no one you have all these non-player characters there is a story they tell you to go here get me this thing so there is quests with quest givers we don't even have that our game is a so-called sandbox without NPCs so if there is no one else it's really just you by yourself in a big forest doing things. So, this is often where a lot of games have died on not having the players to fill the game with content because they were reliant on that. But why players do not come back? So yeah, when there are not enough players, it's just emptier, less things to do. But you know, I mean, for all of us, sometimes also, it's the newness of a thing, it's just not as interesting anymore, maybe after you played a couple months or half a year. So that is why nowadays a lot of games are live games, there are events to keep people engaged to retain the player, to draw them back in. So, there is a lot in business, how games have changed to mitigate that, to keep things fresh, basically. That has been, I think, the biggest thing for these kinds of games that are driven by having players there and being also part of the content of the game, which is a natural thing. Like, we all sometimes we start things and then we're like, ah, there's new hobbies, and then we fade out of them because they're maybe just not engaged enough. So, I think it's just natural and that should also be thought about. But yeah, from a business perspective, how do I, like in Fortnite, you all these huge live events with the concerts and changing game modes. And they did one of the few games that made your changes to how the game works to quite unprecedented. So they are trying to keep things fresh, to keep people coming back, and to check out the new thing. And that is, again, it's so deep in our biology, it's why this Facebook and Instagram, why they work or what, getting notifications, we learned, oh, there's something new, I should check it, or why these

endless scrolling works for us. There's always something new to look at. right? So, I guess in a way, and that is again, it's just, it's a human thing. We want the exciting new stuff sometimes, I think it's also, and I don't know that I'm just theory crafting, it's a form of learning and surviving, seeing new things, will it enable us to do something new and experience something new is just the brain likes that, it feels good, right? So again, working and thinking about biology, but also being. When I make games, I make these things, I also think about how to be respectful of people's time and their life, right? Because in the end, it's not about making people spend too much time on something because it will make them feel bad, and it will have an impact on their life. So, it’s also coming back to this, what are the big things, you know, not only people keeping people secure, but how to create healthy digital environments, right? This is our job also, like we said, how do we keep people safe, we keep measuring, but then also there can be very good medical applications and also in our the game that I work on, because you are in the forest most of the time, it serves, it makes you more calm because it's called biophilia and it's like when you look at trees, it calms you and it's scientifically proven, it works digitally as well. So, there are a lot of benefits that we can use to make people also feel better. But yeah, it is a lot of work. And there will be mistakes and bad things will happen. And that's what we just need to be honest about it and communicate and find ways to mitigate that. But this is the thing with everything. I mean, Pokémon Go, which is for me, you know, is that metaverse people come together even in real life with it, though. But also, this game, imagine you work on that people died playing Pokémon Go because they walk in front of a car. And you know, this is the thing, there is no security in life. But we need to think about the products we make, how can we keep people safe to the best of our abilities? But yeah, people will get hurt in the process of living that is unfortunately. So how can we be but why do we need to be very careful with what we make and always think of? How can

this be used to hurt people? But we shouldn't demonize because like you said, some people think it's bad. There are people, they're like black and white. Did you really, we should, we should interact with the thing. Okay, what is bad and what, where is it good? Like you said, there are different applications. There is no, it is again, everything is a mirror of ourselves. There is no person just good and bad. We are unfortunately all the things and that is sometimes very difficult. There is a lot of, yeah, all the things that I said about thinking about people's biology. A lot of people don't want to think about us humans as something that is guided by its biology because we don't want to, we think we are better than maybe an animal. So, there are a lot of things that might get in the way of where people are, this is just bad or like, you know, I am just good. Well, it's not that simple. So, there is a lot and it's the same in UX, like it's a lot of teaching. Why UX often is like, why is this important? And it's the same with those things. I think there is just, it's a great opportunity for us to learn about ourselves and create new places.

Participant Information Sheet - User Playtest and Feedback

Research Title: Gaming the Metaverse: User Experience Analysis and Insights from Fortnite

Location of the study: Bachelor’s Programme in Design - XR Design, Metropolia University of Applied Sciences, Helsinki, Finland.

Researcher: Pedcharat Cheremnykh

Supervisor: Tania Chumaira

Introduction: You have been invited to participate in a playtest for our research study titled "Gaming the Metaverse: User Experience Analysis and Insights from Fortnite." I appreciate your willingness to contribute to this study. Below, you will find important information about the playtest and what to expect during your participation.

Purpose: The purpose of this playtest is to collect valuable insights on user experiences in both metaverse and video gaming environments, with a specific focus on the Zombieland map (9369-6922-8408) on the Fortnite platform. I am particularly interested in the experiences of participants with varying levels of familiarity with these games and platforms. This study seeks to gain a comprehensive understanding of how users interact with elements in both metaverse and in-game contexts, with the ultimate goal of enhancing the user experience, engagement, and motivation within virtual environments.

Process:

1. Gameplay: You will be asked to participate in a playtest session involving Mario Kart on the GBA Sky Garden map on the Fortnite platform. These playtest sessions will be conducted on different devices.

2. Video Recording: Please be aware that during the playtest sessions, video screen recordings will be made while you play. These recordings are for research purposes and will be used to better understand your interactions with the games.

3. Feedback Session: Following the gameplay sessions, there will be a feedback session where we will discuss your thoughts, insights, and experiences regarding the gaming platforms.

Confidentiality: All information collected during the playtest, including your feedback, will be kept confidential and used solely for research purposes. Your identity will remain anonymous in any research findings or reports.

Contact Information: If you have any questions or concerns about your participation in this study, please do not hesitate to contact pedcharc@metropolia.fi.

Thank you for your participation in my research study. Your insights and experiences will be invaluable in furthering our understanding of user experiences within gaming and metaverse platforms.

Participant Consent Form

I, (name of participant) have been invited to participate in the Fortnite playtest for the above research study. The purpose of the research is to gather valuable insights regarding user experiences within both metaverse and video game settings, with a particular emphasis on Fortnite, involving participants with diverse levels of experience.

I have read and understood the written participant information sheet. The information sheet has provided me with sufficient information about the above study, the purpose, and execution of the study, my rights as well as about the benefits and risks involved in it. I have had the opportunity to ask questions about the study and have had these answered satisfactorily.

I have had sufficient information on the collection, processing, and transfer/disclosure of my personal data during the study and the Privacy Notice has been available.

I voluntarily consent to participate in this study. I have not been pressured or persuaded into participation.

I have had enough time to consider my participation in the study.

I understand that my participation is entirely voluntary and that I am free to withdraw my consent at any time, without giving any reason. I am aware that if I withdraw from the study or withdraw my consent, any data collected from me before my withdrawal can be included as part of the research data.

By signing this form, I confirm that I voluntarily consent to participate in this study.

If the legal basis of processing personal data within this study is a consent granted by the data subject, by signing I grant the consent to process my personal data. I have the right to withdraw the consent regarding the processing of personal data as described in the Privacy Notice

Date: d.m.year

_____

Signature of Participant

The original consent signed by the participant and a copy of the participant information sheet will be kept in the records of the researcher. Participant information sheet, privacy notice, and a copy of the signed consent will be given to the participant.

User Feedback's Transcripts

Participant 1

1. What aspects of Fortnite or similar gaming platforms contribute to your enjoyment and motivation to play?

   The community plays a big role, even though I tend to play with the same people on the team most of the time I do enjoy when strangers come together to achieve a mission or just help each other. And I'm not competitive against other people as I am with myself, so I want to do as much as I like to do on each season, challenge myself to get all the possible customizations.

2. How do gamification elements, like challenges, rewards, or progression systems, impact your gaming experience in Fortnite?

   The characters and the dances play a big role for me, I have been getting the season pass every season since I started playing, years now, because I want to get new characters, new dances, or just anything that makes me laugh. I tend to get them without doing all the missions because I don't like to play certain maps or play solo, I like the team element. I hate when they offer something I want but only if I play a map or do a solo mission. I've to say that most of the time I find a way around to try to get it or just don't get it at all, instead of doing that 1 mission I don't like. I like to optimize my time playing, as it's not that much, a couple of hours per night Mondays to Thursdays, outside of pro-player game hours, so having to do a long mission solo to achieve 1 thing versus doing multiple missions as a team member is more important to me. The battle pass progress is nice, how I get started and then go and buy a full page of stuff, makes me feel I'm doing great.

3. Can you describe any usability issues or design aspects in Fortnite that you find particularly user-friendly or challenging?

   Some parts of the maps are not well built, and players who spend a lot of time in the game tend to identify those and take advantage of them, one of the reasons I avoid playing during pro-player's time; taking advantage of game errors is not something I consider fair, and one of the things I like about the game is that we are all the same no matter what character we use, only the skill should matter, not knowing cheats. Besides that, I enjoy navigating the game menu, the maps created by Epic, and some users' maps, when it's about making an experience and not just forcing battle 1v1 is very enjoyable. A couple of seasons back they did release a horrible season with lots of confusing dynamics even to make the most common daily mission, that season i stopped playing after a while and didn't play until the new season arrived I, didn't matter to me I got the battle pass and lost it, because it wasn't enjoyable and that's the whole point of playing the game. Over a month and a few more weeks if I remember correctly, didn't play the game at all. Angry at them.

4. What are your preferences and expectations as a player towards the user experience design principles in gaming platforms?

   The team element of Fortnite combined with some events or Festival where we all are just there to have fun, mini-games, some fun missions to do just for laughs, and some well-known characters like Avengers or Dragon Ball, these experiences will be so much better if we could be there and enjoy them first-person, hanging around with strangers in a safe virtual environment watching DJs, and concerts, that's not specifically made to make money nor to make us face each other, but to bring a sense of community will love to be able to participate on that with a first-person view.

5. What are the most memorable or frustrating aspects of your Fortnite experience, and why?

   Frustrating is easy, playing during pro-player hours, the level of bullying one can get is unbelievable; players just keep coming at you to keep making your experience bad, just to make you feel bad; does not make sense. Even sometimes team members steal items from you, for no reason, and some even make fun of that; completely different from the sense of community I'm looking for here. The most memorable experience, was one time I needed to make a mission with a team to get a skin and I was late for that, it has been around for a while, and I got paired with 3 strangers, every young player, kids, as soon as they saw I made to the landing area close to the place where that mission is done they just started talking about helping me to achieve it, and they helped me get the character. Never played with them before and never played with them again (that I know) 3 strangers just helped me achieve something just because loved that moment.

Participant 2

1. What aspects of Fortnite or similar gaming platforms contribute to your enjoyment and motivation to play?

   I really enjoy playing Fortnite because it's so flexible. For instance, sometimes I like to jump into the game all by myself. It's a great way to chill out and relieve some stress. But then again, there are days when I invite my friends to play together, and we have a blast. Except for those times when we encounter a bunch of bullies in the game. When that happens, it can be frustrating. The good thing is, even if things get tough, I can simply exit the game and start a new one or switch to a different game mode. That helps a lot.

2. How do gamification elements, like challenges, rewards, or progression systems, impact your gaming experience in Fortnite?

   The missions and prizes in Fortnite are a mixed bag for me. On the one hand, they make the game much more exciting. I mean, who doesn't like completing missions and earning cool rewards, right? But to be honest, some of these missions can be tricky. They can take a lot of time and effort to finish. So, it's important for the game to find the right balance there.

3. Can you describe any usability issues or design aspects in Fortnite that you find particularly user-friendly or challenging?

   Customizing my character in Fortnite is a breeze. I love that I can make my character look exactly how I want. From tattoos and hair colours to eye shapes and skin tones, it's all there. Even things like different costumes and accessories—there are plenty of choices to pick from. On the flip side, when they change the map every season, it can be a bit confusing. You must relearn where to find the stuff you need, like weapons, potions, cars, and animals. It'd be great if these changes were smoother and easier to adapt to.

4. What are your preferences and expectations as a player towards the user experience design principles in gaming platforms?

   I really like the way Fortnite lets me personalize my character and enjoy special events. Like, I'm a huge Marvel fan, and I can get cool Marvel characters, dances, and gestures in the game. Plus, they even host concerts with my favourite artists, and I can dance to their music with my friends or other players. It's so much fun. And there are game festivals too, like the one based on Dragon Ball. The different creative game modes keep things interesting. So, in that sense, Fortnite fits well with

my idea of what a game in the metaverse should be - customizable and full of social events.

5. What are the most memorable or frustrating aspects of your Fortnite experience, and why?

   One of the things that will always stick with me is how Fortnite keeps evolving. Every season brings new maps, themes, characters, and dances. It's like a breath of fresh air every time. But, on the flip side, running into mean players can be a real downer. It can spoil the fun, no doubt. But you have the option to start a new game or switch modes when things get rough, and that can really help.

Participant 3

1. What aspects of Fortnite or similar gaming platforms contribute to your enjoyment and motivation to play?

   I like the teamwork and the community of playing together but I think what I kept coming back to repeatedly with almost every question is it gets quite toxic sometimes and that toxicity in the regular game is a super turn-off.

2. How do gamification elements, like challenges, rewards, or progression systems, impact your gaming experience in Fortnite?

   The rewards were the incentives. They're fun to strive to get those rewards. But if the core game isn't fun or if that is a toxic community, toxic play, or difficulty. Sometimes they put you in groups where there are people that can kill everyone in one shot and then there's a bunch of other people that are like so many levels below them that always even if it's not actual levels. It's real-world experience and that curve makes it

really unfun. I mentioned to you the story about back in my world of Warcraft days when it was new. A group of my friends were playing and then this higher-level character. I think he started attacking us when it started, but then there were like 3 or 4 of us and we chased him across the whole map. And ended up doing crazy things like jumping off the bridge to fall into the water to get away from the sky and not to get killed because he clearly was killing people lower than him. In the end, we got him. It was like this magical memory I have of a video game that that memory is 20 years old.

3. Can you describe any usability issues or design aspects in Fortnite that you find particularly user-friendly or challenging?

   The usability on PC finding menus, even starting sort of menu to open or setting was hard to find. Using this menu was stupid because your mouse was jumping from the bottom left to the upper right of your screen. To me the UI on Fortnite was terrible. But I do also have an issue with UI also in other games. For example, Apex Legends UI was alright and is never great.

4. What are your preferences and expectations as a player towards the user experience design principles in gaming platforms?

   I would say a sense of community and teamwork in the metaverse, which Fortnite has answered. However, the issues related to toxicity and usability design negatively impacted my experience.

5. What are the most memorable or frustrating aspects of your Fortnite experience, and why?

   What frustrates me is when you play a game. Your game ends, you cycle out and you're in the waiting room to play again the button that says

“ready”. To set yourself as ready is red and after you say you're ready it's still red. So, it's hard to visually look at the screen and be like did I click ready? And so many times that I or my friends thought that I clicked ready, and the game told me like “No, you have not”. Then you see it and you got nothing. I did it because the button looks the same. So generally, all these games have a UI issue for sure. And I think they don't develop them because they just have this fan base, but honestly, it could get so much better with some basic stuff. I think Fortnite did that where that button changed colours when you said you were ready. Anyway, to me generally the UI was hard to follow. I just happened to accidentally be scrolled down below the lobby at one point. I couldn't figure out how to get back for like. what felt like forever and then I just scrolled up and I was still in the lobby.