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Virtual Worlds, Real Politics: A Cross-National Comparative Study of Metaverse Policy Approaches

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Abstract

While market sentiment toward the metaverse has cooled, states continue to promulgate metaverse policies with notable urgency—a paradox that signals the technology's ascendance as a critical theater of geo-technological rivalry in the emergent Web 3.0 landscape. Drawing upon a systematic content analysis of 34 policy documents issued across major economies and regions between 2021 and 2024, this study interrogates the strategic orientations underpinning these initiatives and traces the structural determinants shaping divergent national trajectories. Our analysis reveals that while metaverse policies across jurisdictions converge on three core imperatives (advancing foundational technologies, catalyzing sectoral applications, and establishing regulatory guardrails), national priorities diverge markedly in emphasis and strategic intent. To fully capture these distinctions, we developed a four-fold typology: techno-economic vanguards, industrial innovators, transformative opportunists, and regulatory vigilants. This study reveals that metaverse policy architectures are fundamentally conditioned by strategic positioning, technological endowments, and industrial composition. While leading powers such as China and the United States primarily wield the metaverse to consolidate technological hegemony and economic preeminence, middle powers with vibrant cultural industries, particularly Japan, South Korea, and France, tend to seize upon the metaverse as an instrument for amplifying cultural influence and sustaining competitive advantage in the global attention economy. Resource-rich economies perceive it as a transformative engine for economic diversification, embracing expansive, forward-leaning strategies that anticipate structural shifts in global production. The European Union, by contrast, maintains its characteristic regulatory posture, extending its precautionary governance framework to this novel domain with deliberate circumspection. This inquiry contributes to the emerging scholarship on metaverse governance while enriching comparative analyses of techno-political regimes, demonstrating how political-economic structures and geopolitical imperatives fundamentally configure state responses to transformative technologies.

Keywords
artificial intelligence; comparative policy analysis; metaverse; technology governance

1. Introduction

In October 2021, Facebook's rebranding as Meta did more than signal a corporate pivot—it epitomized the tech industry's tendency to mythologize the metaverse as the next frontier of digital life. Mark Zuckerberg's vision of "an embodied internet" (Meta, 2021) served less as a concrete roadmap and more as a grand narrative that fuelled investor and public hype. Giants such as Nvidia, Microsoft, and Roblox rushed to claim their stake in this nebulous virtual realm, projecting an image of seamless convergence between physical and virtual worlds. Yet, this speculative bubble quickly revealed cracks and, by early 2022, Google Trends already indicated waning public interest, exposing a stark disjunction between utopian promises and the harsh realities of immature technology and underdeveloped infrastructure. As Vidal-Tomás (2023) critically observes, the metaverse is trapped in a recurring "hype-disillusion cycle" that threatens its purported economic and social viability.

Despite its frequent portrayal as a cohesive digital future, the metaverse remains an unstable and contested signifier. Rather than treating it as a unified or coherent technological object, this study understands the metaverse as a discursive placeholder—a floating signifier that aggregates diverse aspirations and anxieties across virtual reality, Web 3.0 infrastructures, AI-driven simulations, and digital twin technologies. In this view, the metaverse is not a fixed endpoint but a techno-political imaginary shaped by narratives of innovation, crisis, and control (Mosco, 2023). This ambiguity is particularly visible amid market contraction and strategic rebranding, as illustrated by Meta's pivot toward AI and the decline of major metaverse ventures. It is further reinforced by decentralized Web 3.0 developments (Calzada, 2024), which significantly shape digital governance and raise unresolved questions for national frameworks regarding asset ownership, interoperability, and digital sovereignty.

More troubling are the ethical and security dilemmas embedded in the metaverse's design—its immersive, anonymous, and often unregulated spaces have become fertile ground for fraud, cyberbullying, surveillance, and data manipulation. These phenomena intensify pressing questions about digital sovereignty and governance, yet remain insufficiently addressed by both corporations and states (Chen et al., 2025; Shin & Park, 2025). In this context, the persistent push by states to develop metaverse strategies cannot be reduced to naive economic optimism. Instead, it must be understood as a calculated geopolitical maneuver, wherein the metaverse becomes a new arena for techno-political control and strategic rivalry.

Why do states keep issuing metaverse policies despite market decline? This persistence reflects the institutional logic of anticipatory governance and symbolic policymaking. Rather than focusing on immediate implementation, many national strategies function as tools for shaping long-term industrial positioning, preserving technological credibility, and securing bureaucratic legitimacy. Even amid commercial stagnation or technological setbacks, digital policy agendas endure, sustained by sunk costs, policy path dependencies, and the imperative to signal future readiness. This durability is further reinforced by consultancies, think tanks, and long-established digital ministries that benefit from keeping the metaverse on the policy agenda. For example, jurisdictions such as South Korea, China, and Dubai have unveiled ambitious national or regional metaverse strategies, signaling a desire to shape—and potentially dominate—emergent digital

ecosystems. As Gong (2024) notes, such efforts are often driven by dual objectives: promoting digital economic growth and aligning next-generation technologies with national power projections. In contrast, the United States and the European Union have adopted a more cautious stance—focusing less on industrial promotion and more on regulating extended reality technologies to manage emerging risks. These divergent approaches illustrate how the metaverse has become a contested arena where techno-industrial ambitions, geopolitical interests, and symbolic power converge, often masking deeper structural asymmetries and ideological alignments with digital market structures.

This study responds to these tensions by systematically analyzing 34 metaverse policy documents issued by 13 national and regional jurisdictions between 2021 and 2024. Through content analysis, it poses two questions: (a) What political, economic, and strategic factors drive the formulation of national metaverse policies? (b) How does the metaverse, as a nascent digital ecosystem, reconfigure geopolitical power dynamics? To answer these questions, this article proposes a typology of four national approaches: Techno-economic vanguards, industrial innovators, transformative opportunists, and regulatory vigilants, which link policy variations to underlying political-economic and geopolitical structures. By doing so, it challenges the prevailing techno-optimism and contributes to a more critical understanding of how states engage with immersive digital technologies amid broader struggles over global digital governance.

2. Literature Review

2.1. Mapping the Terrain of Digital Governance

Digital governance comprises the frameworks, policies, and institutional mechanisms that guide the development, deployment, and societal integration of digital technologies, including algorithms, blockchain, extended reality, virtual reality, AI, and broader Web 3.0 ecosystem (Erkut, 2020). It spans a spectrum of policy tools, from innovation incentives to ethical and legal regulations, requiring multi-stakeholder coordination to align technologies with societal values (Van Dijck, 2021). Meanwhile, the concept of digital sovereignty—focusing on state control over digital infrastructures and data—has become central to governance debates (Moerel & Timmers, 2021). These dynamics highlight the intersection of innovation, rights protection, and geopolitical considerations in rapidly evolving technological landscapes. To explore their practical application, this study focuses on three key domains: steering technological innovation, promoting industrial diffusion, and establishing ethical and legal safeguards.

- *Steering Innovation to advance cutting-edge technologies*: Governments play a crucial role in fostering technological advancement by implementing national research agendas, funding programs, and creating institutional frameworks that align with national priorities such as economic competitiveness and societal resilience. In China, digital governance has significantly enhanced government capabilities, particularly in areas like dispute resolution and stability maintenance in the digital era (Hu & Zhang, 2023). Simultaneously, emerging technologies are reshaping governance by enhancing service delivery and decision-making processes. Algorithmic technologies, for instance, enable automated systems that improve control and coordination while fostering trust (Hanisch et al., 2023), while blockchain supports decentralized decision-making, promoting greater transparency and efficiency (Kassen, 2025). Ultimately, as Milakovich (2021) highlights, these innovations aim to enhance both governmental operations and public service delivery.

- *Industrial and economic policies to promote the diffusion and adoption of digital technologies*: These policies include infrastructure investments, startup ecosystem development, and workforce training to achieve platform sovereignty and strategic autonomy in digital markets (Pohle & Santaniello, 2024). In the Web 3.0 era, nations—particularly latecomer economies—prioritize the creation of interoperable platforms and virtual economies to secure leadership in the global digital economy (Foster & Azmeh, 2020). In contrast, the European Union focuses on regulatory measures to counteract the market dominance of global tech giants (Martini, 2025), while the United States emphasizes market-driven approaches. Bradford (2023) categorizes digital governance into three regulatory models—market-driven, state-driven, and rights-driven—highlighting the interplay between economic ambitions and geopolitical strategies in shaping governance systems.
- *Legal and ethical frameworks that manage the societal impacts of digital technologies*: These frameworks address various risks, including power imbalances, privacy and security concerns, the digital divide, disinformation, and cybersecurity threats (Erkut, 2020; Hanisch et al., 2023). Legal and regulatory instruments, such as the EU's GDPR or sector-specific extended reality standards, aim to ensure accountability and build trust in digital ecosystems, especially as data flows and user interactions become increasingly pervasive (Hine et al., 2024). At the same time, ethical governance emphasizes key principles, including autonomy and consent, fairness and non-discrimination, transparency and trust, as well as sustainability and security (Eke & Stahl, 2024), as advocated by the Council of Europe's guidelines on digital human rights (Yeung, 2018). These legal and ethical mechanisms are essential for aligning with democratic values and sustaining public trust in governance.

2.2. Approaching Metaverse Governance: "Metaverse as Industry" vs. "Metaverse+"

The metaverse, a fusion of virtual and physical realms, is a key driving force behind Web 3.0. It fundamentally reshapes digital interactions and labor dynamics (Wang et al., 2025), while also raising concerns about privacy, security, and data governance (Eltanbouly et al., 2025). As the metaverse continues to expand, governance frameworks have evolved through the joint efforts of governments, civil society, and industry stakeholders, with particular emphasis on four central issues: privacy protection, safety and inclusion, fair competition, and the regulation of commercialization (Egliston et al., 2025). In this rapidly changing landscape, states are at the forefront of metaverse governance, focusing on the technological infrastructure, platform functions, and governance models (Mosco, 2023). To bridge the gap between visionary goals and real-world implementation, states have introduced precautionary regulations (Martini, 2025), reinforced oversight mechanisms (Kshetri et al., 2024), and are actively competing to set global standards (Yang, 2023).

The governance of the metaverse requires analytical clarity regarding its ontological status. The first perspective views the metaverse as a self-contained industry, emerging within the digital economy as a distinct sector characterized by new forms of economic activity and market competition. As a newly emerging sector within the digital economy, the metaverse serves as a hub for financial innovation that attracts international investment and drives competitive development (Vidal-Tomás, 2023). Major technology companies such as Meta, Microsoft, and NVIDIA have made significant investments in this domain, exploring novel business models and immersive virtual experiences (Dolata & Schwabe, 2023).

However, with the initial hype surrounding the metaverse subsiding, its significance as a standalone industry has notably declined (Martini, 2025). A more enduring and policy-relevant interpretation conceptualizes the

metaverse as an intermediary infrastructure—what may be termed "Metaverse+"—that connects users, services, data, and devices across both virtual and physical spaces, thereby activating and empowering the development of other sectors through technological innovation (Parcu et al., 2023). The Metaverse+ perspective not only links immersive technologies to traditional sectors but also intersects with Web 3.0 governance issues, including decentralized identity, tokenized assets, cross-platform interoperability, and data flows. By situating the metaverse within a Web 3.0 ecosystem, this approach explores how decentralized protocols, smart contracts, and DAO-based governance shape the management of digital assets, user identities, and platform rules across virtual environments (Hanneke et al., 2025). This shift in perspective helps explain why many governments continue to invest in metaverse-related initiatives: not for its industrial value alone, but for its potential to catalyze innovation, connectivity, and transformation across other strategic domains. In this framework, governance practices can be categorized into several domains:

- *Commercial applications*: Technologies such as non-fungible tokens (NFTs) and blockchain underpin secure virtual transactions and asset tokenization. Luxury brands such as Gucci and Louis Vuitton have embraced immersive virtual stores and NFT experiences (Sayem, 2022), enriching consumer engagement and transforming retail dynamics. These innovations are reshaping consumer experience and driving transformation across retail value chains (Russo et al., 2023).
- *Urban governance and public services*: Smart city initiatives utilize metaverse environments for urban planning, data simulation, and participatory governance. Digitizing cultural heritage and developing virtual government platforms further expand public service accessibility and enhance civic participation (Buragohain et al., 2024). Importantly, the metaverse offers a new channel to engage younger generations in public affairs and foster greater democratic transparency (Kshetri et al., 2024).
- *Diplomacy and military innovation*: The metaverse's geopolitical implications are evident, as Barbados became the first country to establish a diplomatic embassy within this virtual space (Grincheva, 2023). On the military front, applications include cognitive warfare simulations and AI-integrated training systems, exemplified by the US Department of Defense's adoption of the Project Maven Smart System (Vold, 2024).

To compare these two models, the Metaverse as Industry model focuses on its economic potential, with governments viewing it as a new sector for investment and competition. In contrast, the Metaverse+ model treats the metaverse as an intermediary infrastructure that facilitates and enhances the development of other sectors through technological innovation. Following the Metaverse+ framework, China integrates the metaverse in a way comparable to the "Internet+" national strategy (Jing & Li, 2019). This integration aligns the metaverse with China's technological ambitions, cultural policies, and governance strategies (Negro & Savina, 2025). Similarly, South Korea—with its capital Seoul—strives to become the world's first fully metaverse city, leveraging the metaverse to enhance its global presence (De Almeida, 2023). As Gray and Tang (2025) highlight, the metaverse is not only a technological system but also a geopolitical arena, driving nations to invest in it for both economic development and geopolitical influence.

2.3. Why States Invest in Metaverse Governance?

Traditional international relations theories provide ample explanations for why states invest in technological governance. These theories attribute the motivations behind states' investments in emerging technologies to factors across political, economic, and cultural dimensions. The motivations behind states' investments

in emerging technologies, as well as the formulation of industrial policies and regulatory measures, can be summarized into three key factors: hegemonic maintenance or aspiration, economic-industrial advantage, and cultural-institutional factors.

For great powers, investing in the governance of the metaverse is primarily aimed at securing a strategic advantage, driven by geopolitical interests and the pursuit of dominance in the emerging digital economy. Classical realists, such as Morgenthau (1985, pp. 124–141), assert that technology constitutes the material foundation of national power, influencing both defense capabilities and global posture through technological superiority. Building on this, Gilpin (1981, p. 175) contends that hegemonic states must maintain technological leadership to sustain dominance, while rising powers use innovation and diffusion to challenge the existing order. This theoretical framework informs the ongoing US–China rivalry, where the competition for control over foundational digital technologies—such as those enabling the metaverse—has become central to shaping the future of global production and embedding strategic interests within digital infrastructure frameworks. By controlling standard-setting, cybersecurity regimes, and data sovereignty frameworks, the US and China are institutionalizing their visions of digital governance through a technologically designated metaverse (Gong, 2024), ensuring long-term influence and reinforcing their geopolitical dominance.

For middle powers, investment in metaverse governance centers on boosting economic competitiveness and promoting sustainable growth. Rather than pursuing global dominance, middle powers aim to secure regional leadership and reinforce sectoral competitive advantages through governance frameworks (Porter, 1990, p. 172). This is because middle powers often concentrate their governance resources in areas of historical strength—such as petroleum, pharmaceuticals, and precision engineering—where they possess regulatory capacity and credibility (Samuels, 1994, p. 58). Countries like Germany and Japan, through their automotive, electronics, and telecommunications sectors, establish de facto standards and extend industrial influence across borders (Kahler, 2017). In the metaverse, Germany leverages its traditional manufacturing strength, while Japan focuses on cultural industries. In cases where economies rely heavily on a single industry—such as oil-dependent ones like Saudi Arabia—the metaverse acts as a catalyst for transformation, facilitating a shift from traditional sectors, such as petroleum, towards diversified technology-driven industries and promoting sustainable economic growth.

States also invest in digital governance to institutionalize normative values that reflect their domestic cultural contexts. Grounded in historical, legal, and societal frameworks, this approach prioritizes governance preferences rooted in national identity rather than power or market forces. As Keohane and Nye (1977) argue, governance in the modern world increasingly occurs through institutional networks. This aligns with Jasanoff's (2015) notion of "sociotechnical imaginaries," where governance is shaped by cultural contexts. The EU exemplifies this with its "normative power Europe" thesis, promoting values like human rights and privacy through standards (Manners, 2002). The GDPR, described as "a key element of European identity" (Schimmelfennig, 2001), demonstrates how privacy is used to project normative power globally. This global phenomenon is termed the "Brussels Effect" (Bradford, 2020), where EU regulatory frameworks gain traction via market access rather than force. Countries like Finland and Norway, though not tech leaders, exert significant normative influence through privacy laws and telecom regulations, extending their governance reach. Based on this governance culture, the EU adopts a precautionary approach to technological governance (Newman & Posner, 2015), with the metaverse being no exception (Martini, 2025).

3. Analytical Framework: Towards a Typology of Metaverse Governance

3.1. The Analytical Dimensions of Metaverse Governance

To conceptualize state approaches to metaverse governance, this study employs an analytical framework derived from an inductive content analysis of national policy documents, informed by the principles of grounded theory (Sebeelo, 2022). As shown in Table 1, this framework categorizes governance strategies across five dimensions—policy scale, policy issue, strategic orientation, platform dependency and governance approach—thereby offering insights into the diverse priorities and strategies states adopt to navigate the complexities of the metaverse.

Table 1. Dimensions of state approaches to metaverse governance.

Dimension	Description
Policy scale	The scope of policy adoption: comprehensive, sectoral, and vision-centric.
Policy issue	The dominant thematic focus: economic, political, cultural, security, and R&D.
Strategic orientation	The aims of strategy: consolidate capacities, enforce existing strengths, drive economic transformation, and prevent potential risks.
Platform dependency	The degree of reliance on global technology infrastructure, supply chains, and standards: high, medium, and low.
Governance approach	The preferred governance logic: centralized, collaborative, innovation-driven, and ethics-based.

First, the policy scale dimension evaluates the scope of national metaverse policies, distinguishing among comprehensive, sectoral, and vision-centric strategies. Drawing on Candel and Biesbroek's (2016) analysis of policy integration, this dimension contrasts cross-sectoral and sector-specific approaches, helping to assess whether states pursue broad, overarching strategies or focus on specific sectors. Given the metaverse's future-oriented nature (Floridi, 2022), vision-centric policies are particularly relevant as they reflect long-term aspirations, aiming to position the state as a global leader in metaverse technology and shape the future trajectory of digital governance.

Second, the policy issue dimension examines the thematic focus of national metaverse policies, covering economic, political, cultural, security, and R&D domains. This framework is informed by Kurbalija's (2016) internet governance taxonomy, which categorizes policy themes into economic, security, and socio-cultural domains, thereby aligning closely with the priorities of metaverse governance. Furthermore, the inclusion of R&D highlights the critical role of developing responsible standards in the metaverse (Hemphill, 2023), which are essential for addressing the evolving challenges and opportunities it presents.

Third, the strategic orientation dimension categorizes metaverse policies into five key objectives: capacity consolidation, regulatory enforcement, economic transformation, platform dependency, and risk prevention. This framework is grounded in Peters' (2018) work on strategic governance, which explores capacity building and regulatory adaptation. It also draws on Borrás and Edquist's (2013) analysis of innovation policy instruments aimed at economic transformation. Additionally, Hood and Margetts (2007) offer a framework for risk management in digital policy, reinforcing the importance of risk prevention within the metaverse.

Fourth, the platform dependency dimension analyzes the reliance of the state on global technology infrastructure, supply chains, and standards. States with low platform dependency possess robust domestic infrastructure and standard-setting authority. Those with medium dependency balance domestic and foreign platforms, achieving partial autonomy within external constraints. States with high dependency heavily rely on foreign platforms, exhibiting a structural tension between nominal sovereignty and material reliance in governance. Analysis of platform dependencies thus reveals how states assert discursive governance autonomy (Gorwa, 2019), yet remain materially constrained by asymmetric global technological infrastructures.

Fifth, the governance approach dimension analyzes the underlying logic of metaverse policies, distinguishing between centralized, collaborative, innovation-driven, and ethics-based models. Rhodes' (1997) distinction between hierarchical and network-based governance informs the centralized and collaborative models, while Ansell and Gash (2008) further develop the concept of collaborative governance through multi-stakeholder partnerships. Hartley et al. (2013) offer insights into innovation-driven governance, and Jasanoff's (2015) concept of sociotechnical imaginaries supports ethics-based approaches by emphasizing the role of cultural and ethical influences on technology policy.

These five dimensions—policy scale, policy issue, strategic orientation, platform dependency, and governance approach—form a comprehensive framework for analyzing state responses to the metaverse. By integrating discursive elements (policy priorities and strategic narratives) with material factors (technological capacities and infrastructure dependencies), the framework clarifies what states are doing and why they adopt particular approaches. This approach not only categorizes state actions but also illuminates the interaction between autonomous governance ambitions and structural constraints within the asymmetric global digital order, thereby strengthening the framework's explanatory power for understanding Web 3.0 governance.

3.2. Data Collection and Analysis

This study analyzes state approaches to metaverse governance through a qualitative content analysis of 34 metaverse policy documents issued between 2021 and 2024 by 13 jurisdictions, as summarized in Table 2. The selection of these countries reflects a range of distinct roles within the global digital governance framework, encompassing dominant technological and economic powers (e.g., the United States and China), influential regional and cultural hubs (e.g., Japan, South Korea, and France), key regulatory actors (e.g., the European Union), and resource-driven economies (e.g., Saudi Arabia and the UAE), which offers a diversity basis for cross-national and cross-regional comparison.

These policy documents comprise three main categories: (a) dedicated national or local metaverse strategies (e.g., China's strategic development plans; Dubai's Metaverse Strategy); (b) broader digital and AI policies that explicitly reference the metaverse (e.g., the US Executive Order on AI; EU Digital Services Act); and (c) government-commissioned research reports (e.g., France's Exploratory Mission on the Metaverse). Notably, governance documents authored solely by private platform companies (e.g., Roblox and Meta) were excluded due to their commercial nature and lack of direct reflection of state policy intentions. This study focuses on finalized government strategies, national plans, and research reports that explicitly express political intentions (Colebatch, 2018)—features that make them suitable for qualitative content analysis.

Table 2. Number of metaverse-related policy documents issued by country/region.

Types	Policy actor	Number of strategies
Supranational entity	European Union	6
Great power	China	4
	United States	3
Major power	United Kingdom	4
	France	1
	Germany	1
Middle power	Japan	5
	South Korea	4
	UAE	2
	Saudi Arabia	1
Small power	Norway	1
	Finland	1
	Switzerland	1
Total		34

We first identified and collected relevant documents through an initial keyword-based search, using terms such as strategy, interests, sovereignty, governance, policy, regulation, technology, innovation, economy, industry, investment, infrastructure, security, privacy, risk, and management. This approach, commonly used in policy analysis (Weiss & Jankauskas, 2019), helped locate key sections describing policy goals, governance mechanisms, and strategic narratives. Recognizing that relevant content is often dispersed across introductions, objectives, and implementation measures, we conducted full-text contextual readings to ensure comprehensive coverage, following best practices in qualitative policy research (Falleti & Lynch, 2009).

Drawing on grounded theory in comparative policy studies (Sebeelo, 2022), the analysis began with open coding to identify patterns and concepts within the data. This process revealed five analytical dimensions—policy scale, policy issue, strategic orientation, platform dependency, and governance approach. Through axial coding, these concepts were then developed into more coherent categories, drawing insights from established theoretical frameworks. The categorization process was informed by scholarly work on policy integration (Candel & Biesbroek, 2016), strategic governance (Peters, 2018), and innovation policy (Borrás & Edquist, 2013), while also incorporating perspectives from the emerging literature on platform governance (Gorwa, 2019; Mueller & Farhat, 2022) and broader governance models (Jasanoff, 2015; Rhodes, 1997). This approach allowed the analysis to remain grounded in the empirical material while engaging with relevant theoretical debates, ultimately capturing both the material and discursive dimensions of how metaverse governance is emerging.

Building on this foundation, we adopted a critical political economy lens to examine how metaverse policies operate within the broader structures of digital capitalism and geopolitical competition. This analytical approach revealed how policy discourse functions not merely as technical coordination but as a form of anticipatory governance that positions states within emerging technological hierarchies. By interrogating the institutional interests and ideological assumptions embedded in policy texts, we uncovered how metaverse strategies serve multiple functions: signaling technological sovereignty, attracting investment flows, and establishing regulatory precedents that may shape future digital governance architectures.

The coding process was conducted manually by two researchers. Inter-coder reliability was ensured through comparison and reconciliation of results. The codebook was revised as new patterns emerged—such as vision-centric strategies emphasizing soft power or global leadership—especially in countries like the UAE and South Korea. The final codebook covers the five dimensions mentioned previously, each with multiple specific codes (see Table B in the Supplementary File). By combining inductive content analysis with theoretical grounding and comparative document analysis, this method provides a systematic, transparent, and replicable examination of how states articulate their priorities, objectives, and governance logics for the metaverse.

3.3. Constructing a Typology of Metaverse Governance

To analyze the diverse state responses to the metaverse, this study develops a typology grounded in the preceding qualitative content analysis. The typology emerged inductively from patterns observed across the coded policy materials. It offers an empirically grounded yet theoretically informed structure for capturing the diversity of national governance logics.

The countries selected represent a broad spectrum of global positions in digital governance, ranging from technological and economic powers to regulatory actors and resource-dependent economies. The analysis was guided by the five key dimensions, enabling a nuanced understanding of the various approaches states adopt in managing the metaverse. Informed by these dimensions, the typology categorizes states into four distinct governance archetypes presented in Table 3: techno-economic vanguards, industrial innovators, transformative opportunists, and regulatory vigilants. These types reflect the varying strategic priorities and governance rationalities that influence policy design and implementation, offering a comparative framework for understanding how different states address metaverse governance challenges.

Table 3. A typology of metaverse governance.

Type	Techno-economic vanguards	Industrial innovators	Transformative opportunists	Regulatory vigilants
Policy scale	Comprehensive	Sectoral	Vision-centric	Comprehensive/ Vision-centric
Policy issue	Economic/R&D	Economic	Economic/Cultural	Security/Politics
Strategic orientation	Consolidating	Enforcing	Transformative	Preventative
Platform dependency	Low	Medium	High	Medium
Governance approach	Innovation-driven	Collaborative	Centralized	Ethics-based

This study identifies four main types:

- *Techno-economic vanguards*: This archetype is defined by a comprehensive policy scope, focusing on economic and R&D priorities within a capacity-consolidating strategic orientation. With low platform dependency, these states can exercise greater autonomy in governance and standard-setting. They invest in infrastructure, international standards, and frameworks that align the metaverse with broader

geopolitical ambitions. They adopt an innovation-driven governance approach, positioning the metaverse as a key enabler of technological sovereignty and long-term competitiveness, thereby asserting structural power over emergent digital ecosystems.

- *Industrial innovators*: Characterized by a sectoral policy scope, these nations emphasize economic development within niche sectors such as manufacturing, telecommunications, electronics, and the entertainment industry. Their specialization in these industries drives a sustained enforcement-oriented strategic orientation. This also explains their medium platform dependency: while they hold advantages in specific industrial domains, they still need to coordinate with foreign technology providers to maintain partial autonomy. Consequently, governance follows a collaborative model in which public–private partnerships play a central role in shaping industrial metaverse applications and enhancing sectoral competitiveness.
- *Transformative opportunists*: Defined by a vision-centric policy scope, these nations show strong enthusiasm for emerging technologies—including the metaverse—and regard them as opportunities to diversify their economies, particularly in post-resource or tourism-driven contexts. To pursue these transformative goals, governance is highly centralized, with strong state coordination and top-down policy implementation. However, because these states often lack sufficient technological and industrial foundations, they exhibit high platform dependency, which in turn limits their autonomy. Consequently, compared to other archetypes, their engagement with the metaverse remains largely a symbolic performance—centered on soft power projection through cultural narratives and nation-branding—rather than being grounded in sector-specific development or actual policy execution.
- *Regulatory vigilants*: This archetype is defined by a comprehensive or vision-centric policy scope, with a strong emphasis on security, risk management, and democratic accountability. Although these states exhibit partial reliance on foreign platforms, their advantages in setting technological governance standards reduce their overall dependency to a medium level. This partial reliance contributes to their adoption of a preventative strategic orientation, which shapes an ethics-based governance approach that prioritizes digital rights, privacy, and normative safeguards. Consequently, regulatory frameworks aim to extend democratic values into immersive environments, asserting moral and normative influence in global digital governance.

These four archetypes and their cross-national distribution are mapped in Figure 1. This distribution, while capturing dominant patterns in metaverse governance, also reveals certain boundaries and blind spots. In certain cases, such as France or Japan, they may prioritize culturally oriented innovation over digital sovereignty, reflecting political-economic constraints or socio-technical legacies rather than purely strategic choices. Moreover, states are not static: they can display fluidity and hybridity, moving across categories or combining multiple governance logics. For example, South Korea demonstrates both technological leadership and cultural diplomacy, blurring the line between industrial innovators and transformative opportunists. These four archetypes thus serve as ideal types rather than fixed empirical categories, allowing for flexibility as policy objectives and technological capacities evolve. At the same time, this typology reveals how states adopt an adaptive posture within an asymmetric digital order, where autonomy is shaped by technological capacities and socio-economic conditions. Specifically, in Web 3.0 governance, state autonomy remains fundamentally constrained by the structural tension between discursive sovereignty and infrastructural control: states may assert independent leadership, yet their reliance on US (or Chinese) controlled infrastructure, cloud services, and standard-setting bodies reveals the limits of such claims (Mueller & Farhat, 2022).

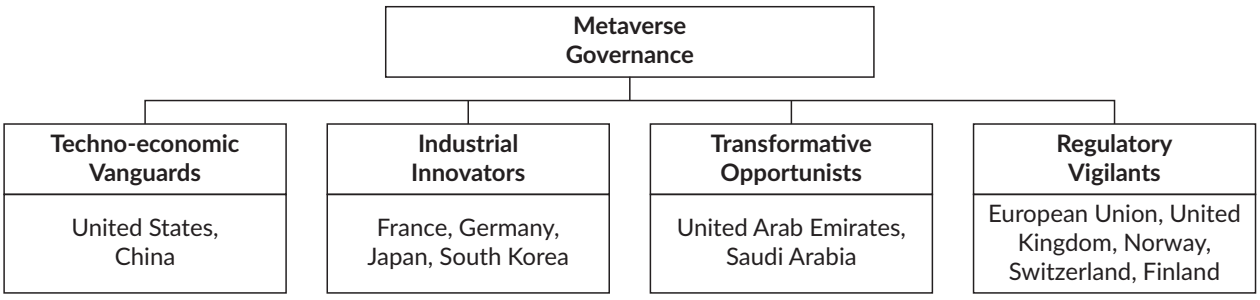

Figure 1. Cross-national distribution of metaverse governance dimensions.

This global asymmetry underscores the need to distinguish between governance execution and policy signaling. Governance execution emphasizes practical implementation, industrial development, and technological consolidation, whereas policy signaling highlights cultural narratives and expressions of international leadership. This distinction helps explain why, in the context of metaverse governance, some states continue to prioritize decentralization narratives or nation-branding in Web 3.0, even when their actual control over infrastructure remains limited. By framing the typology as a diagnostic tool, it integrates these structural constraints and hybrid strategies, providing a lens to understand how states navigate asymmetric dependencies, balance discursive sovereignty with material limitations, and design governance adaptive policies within the metaverse.

4. Comparative Metaverse Governance: National Strategies and Practices

To compare national approaches to metaverse governance, this study employs three interrelated criteria. First, it identifies each country's stated policy goals within broader strategies of digital governance and technological development, clarifying how states frame their ambitions in the metaverse. Second, it maps discursive sovereignty against material infrastructure control to expose structural contradictions, showing how narratives of decentralization or regulatory leadership often coexist with reliance on foreign-controlled chips, cloud services, and platforms. Third, it adopts a performance versus execution lens to distinguish symbolic signaling and nation-branding from the practical capacities of implementation, industrial consolidation, and technological integration. Together, these criteria provide a coherent framework for comparative analysis that links governance archetypes with the concrete strategies states adopt to manage asymmetric digital dependencies.

4.1. Techno-Economic Vanguards

The United States and China, as leading techno-economic powers, pursue ambitious strategies to advance technology and Web 3.0 development, supported by strong technological foundations, talent, and national policy frameworks. However, comparative analysis of policy documents reveals distinct approaches: China adopts a state-centric strategy aimed at industrializing the metaverse and fostering domestic digital growth, whereas the United States emphasizes a market-oriented path, focusing on technological leadership and global standard-setting. These contrasts illustrate how states sharing underlying techno-economic strengths may adopt divergent strategies in metaverse governance.

4.1.1. China: Metaverse Industrialization and Digital Economy Growth

China has been among the most proactive states in metaverse policymaking. Since 2022, more than 30 provinces and cities have issued over 50 policies, complemented by national strategies and local initiatives in major cities such as Beijing, Shanghai, and Guangzhou (Negro & Savina, 2025). Rooted in the Internet+ plan (Government of China, 2015), China's metaverse framework aligns with the *14th Five-Year Plan for Digital Economy Development*, which promotes digital transformation across industries (Government of China, 2022). In 2023, the *Three-Year Action Plan for the Innovative Development of the Metaverse Industry (2023–2025)* further codified national ambitions (Government of China, 2023), reflecting clear policy objectives within China's broader techno-economic consolidation strategy.

China's metaverse governance exemplifies a capacity-consolidating approach grounded in technological self-reliance and industrial coordination. National R&D programs prioritize breakthroughs in key enabling technologies—spatial computing, holographic displays, and 5G/6G infrastructure—aimed at reducing dependence on foreign platforms (Government of China, 2023). Beyond hardware, China actively cultivates domestic metaverse platforms and digital asset frameworks, seeking to establish alternative standards to those dominated by US tech giants. Implementation patterns at the municipal level illustrate this dual logic. Beijing's Tongzhou Sub-Center plan targets cultural tourism and enterprise clusters (Tongzhou District People's Government of Beijing Municipality, 2022), featuring digital twin applications and immersive experiences such as the Beijing City Library's metaverse center. While some initiatives remain experimental, they serve strategic functions—piloting regulatory frameworks, attracting investment, and signaling commitment to next-generation infrastructure. This sustained momentum is reinforced through China's strategic integration of industry, academia, and research, which functions as a coordinated mechanism to advance metaverse innovation (Government of China, 2023): over 8,500 academic publications addressing technological, commercial, and ethical dimensions have emerged (numbers consulted at the China National Knowledge Infrastructure at http://www.cnki.net when searching for the term "metaverse" in October 2025), supporting China's digital innovation ecosystem. Although recent policy shifts toward AI have reoriented resource allocation, institutional inertia ensures continued support for metaverse initiatives as part of China's diversified digital economy portfolio (Yao et al., 2021), reflecting adaptive rather than abandoned ambitions.

4.1.2. United States: Market-Driven Metaverse Innovation and Technological Leadership

Unlike China's state-led approach, the United States's metaverse development is driven primarily by market forces and private-sector innovation. Yet this market orientation coexists with, and is reinforced by, strategic state intervention in critical domains: standard-setting, export controls, and technological gatekeeping. The US's influence is embedded less in explicit metaverse policies than in its structural control over the global digital ecosystem.

This control manifests most clearly in standard-setting institutions. In September 2022, the IEEE Standards Association, a US-dominated body, formally adopted the term "Metaverse" at the committee level, signaling American leadership in defining technical parameters for emergent technologies. Although the IEEE engages international experts and coordinates with the International Telecommunication Union (ITU), the International Electrotechnical Commission (IEC), and the International Organization for Standardization (ISO),

decision-making authority remains concentrated within US-based networks, extending American priorities through ostensibly collaborative frameworks. This illustrates a fundamental asymmetry: standard-setting appears multilateral but functions hegemonically, marginalizing alternative visions of metaverse architecture.

While the United States has not issued a dedicated national metaverse strategy, its position is encoded in broader technology frameworks prioritizing technological primacy over geopolitical rivals. The 2022 National Security Strategy explicitly positions technology as "the core of today's geopolitical competition" (White House, 2022), framing digital leadership as existential to national security. This logic underpins aggressive export controls: in January 2025, the Bureau of Industry and Security released the Framework for Artificial Intelligence Diffusion, imposing stringent chip restrictions targeting China (Regulations.gov, 2025)—policies that extend the Trump administration's "America First" technology strategy. As a contested domain within US–China digital rivalry, the metaverse exemplifies how the US leverages standard-setting, export controls, and private-sector ecosystems to preserve technological hegemony while constraining competitors' infrastructural autonomy.

4.2. Industrial Innovators

Our analysis of metaverse policy documents from South Korea, Japan, and France reveals a distinct governance pattern characterized by sectoral specialization rather than comprehensive technological competition. South Korea leverages the K-Metaverse to boost the fan economy and enhance smart city integration and digital governance. Japan cultivates an anime-driven metaverse ecosystem, using anime IPs as tools of cultural diplomacy to expand global influence and promote cultural exports. France mobilizes heritage digitization and luxury brand virtualization to assert cultural presence amid platform dependency. Rather than directly challenging the US–Chinese platform hegemony, these states convert sectoral strengths into strategic niches, demonstrating how cultural assets enable governance participation even when technological control remains structurally foreclosed.

4.2.1. South Korea: K-Metaverse Fan Economy and Smart Governance Synergy

South Korea's *Pan-Governmental Strategy on Metaverse* (Ministry of Science and ICT, 2022) coined the term "K-Metaverse," branding immersive technologies as extensions of the country's globally influential entertainment industry. The strategy positions metaverse platforms as vehicles for monetizing cultural exports, exemplified by SK Telecom's K-pop Metaverse Project, which integrates AR and mixed reality technologies into fan engagement ecosystems. Beyond commercial applications, this approach reflects hybrid governance ambitions, sectoral innovation in entertainment coexists with efforts to establish Seoul as a global metaverse hub—balancing industrial consolidation with symbolic nation-branding (Proctor, 2021)

The metaverse also figures prominently in South Korea's urban governance agenda. *The Metaverse Seoul* is the first comprehensive plan by a local government to develop a new tech-based administration platform, which is designed to quickly adapt to changing administrative needs and provide innovative public services (Seoul Metropolitan Government, 2021). Aligned with South Korea's longstanding approach to *Smart City Korea* and *Digital Strategy of Korea*, the plan targets metaverse integration across government services and urban management. While implementation remains largely experimental, digital twin applications serve as proof-of-concept rather than fully functional infrastructure. This dual emphasis illustrates South

Korea's enforcement-oriented approach, leveraging existing advantages while piloting innovations within established competitive sectors.

4.2.2. Japan: Game Empower Metaverse and Cultural Soft Power Expansion

Japan's competitive advantage in the gaming and anime industries provides foundational infrastructure for metaverse development, reflecting technological alignment in virtual reality, 3D modeling, and immersive social environments. Capitalizing on this strategic positioning, Japan constructed the Open Metaverse Infrastructure RYUGUKOKU, which adopts role-playing game architectures as outlined in the *Agreement on the Japan Metaverse Economic Zone* (Fujitsu, 2023). This initiative, inspired by Hajime Tabata's vision of "updating Japan through games," targets digital twin society applications.

The establishment of Japan's Web 3.0 Policy Office in 2022 positioned the metaverse as an emerging interface for Generation Z, emphasizing economic opportunities arising from digital space and asset proliferation (Ministry of Economy, Trade and Industry, 2022). Prime Minister Kishida (2022) subsequently prioritized the development of Web 3.0 service development leveraging metaverse technologies. Japan strategically mobilizes its influential anime and otaku culture to consolidate global cultural soft power through metaverse platforms. However, Roquet (2023) identifies dual motivations underlying Japan's engagement: strategic cultural initiatives coexist with societal escapism impulses, revealing drivers that extend beyond state-directed cultural diplomacy.

4.2.3. France: Digital Heritage Metaverses and Luxury-Fashion Marketing

France, renowned for its rich cultural heritage and extensive museum collections, positions itself for the metaverse as an instrument reconciling technological sovereignty with cultural autonomy. President Macron articulated this imperative: "France, through its language, its heritage, its towns and villages, its monuments, must also exist in the metaverse" ("Innovation and risk taking," 2022). The report *Mission Exploratoire sur les Métavers* commissioned by the Ministry of Economy, Finance, and Industrial and Digital Sovereignty, underlines French technological-cultural collaboration through public procurement to reduce American technology dependency (François et al., 2022), extending the *exception culturelle* doctrine into digital domains (Richieri Hanania, 2019).

France's luxury sector actively promotes metaverse engagement, driving innovation and market experimentation. Prominent brands such as Louis Vuitton, Gucci, and Burberry are exploring virtual storefronts and NFT collaborations with gaming companies, leveraging digital art and technology to enhance global influence and consumer experience (Profumo et al., 2023). As luxury production increasingly incorporates computational design alongside traditional craftsmanship (Armitage, 2023), metaverse marketing offers consumers immersive brand experiences that enhance both hedonic and utilitarian value, thereby strengthening customer satisfaction and brand loyalty (Weinberger, 2022). These industry practices, combined with France's strategic policy initiatives, demonstrate how the nation balances cultural sovereignty, technological innovation, and market execution to advance its metaverse presence.

4.3. Transformative Opportunists

Energy-dependent economies view the metaverse as a transformative technological catalyst for future growth. Their policies adopt bold and far-reaching measures to diversify economies, create new jobs, and establish global leadership in the digital age. Although these countries actively invest in metaverse-related projects, including AI, digital cities, quantum computing, and biotechnology, many initiatives remain largely symbolic, serving as performative signals rather than as a reflection of fully implemented technological capacities. Nevertheless, these efforts illustrate how the symbolic political signaling in national policies can foster innovation and enhance international visibility, even when practical execution is limited, integrating them into a broader strategy aimed at long-term competitiveness.

4.3.1. UAE: Achieving Economic Diversification and Global Visibility with the Metaverse

As the pioneering emirate of the UAE, Dubai launched the *Dubai Metaverse Strategy* with the ambitious objective of becoming one of the world's top ten metaverse economies (Government of Dubai Media Office, 2022). This strategy incorporates a diversification approach, emphasizing technological innovation, talent development, industry applications, and regulatory governance. Notably, Dubai has already attracted over 1,000 companies specializing in blockchain and metaverse technologies and aims to support more than 40,000 virtual jobs by 2030. While the actual implementation of some initiatives remains difficult to assess, they serve as high-profile signals of Dubai's commitment to digital leadership and attract global attention. To advance its metaverse vision, Dubai hosts events such as the Dubai Metaverse Assembly in August 2022, bringing together global experts to explore potential applications (Dubai Future Foundation, 2022). However, with the subsequent decline of the metaverse, this forum was not held again. These activities demonstrate how Dubai leverages the metaverse to enhance international visibility, attract foreign investment, and ultimately advance its broader goal of economic transformation.

4.3.2. Saudi Arabia: Energy Transformation and Sustainable Development in the Metaverse

Saudi Arabia's metaverse strategy reflects vision-centric governance driven by *Saudi Vision 2030*'s economic diversification mandate, positioning the metaverse as a transformative catalyst for reducing oil dependency (Saudi Arabian Government, 2024). At the heart of this strategy is the $500 billion NEOM project, which leverages digital twin technology to simulate human interactions and enhance living experiences. By analyzing data from sensors and Internet of Things systems, NEOM is designed to stimulate growth in the digital economy. Another key initiative, the Cultural Universe platform (Saudi Press Agency, 2024), was launched by Saudi Arabia's Ministry of Culture, which provides an immersive, interactive exploration of the kingdom's cultural heritage. These centralized initiatives signal state commitment to technological innovation and cultural preservation, yet they function primarily as symbolic instruments projecting global leadership despite nascent implementation.

In the global wave of digital transformation, Middle Eastern nations are actively investing in the metaverse, with Dubai aiming to become a leading metaverse economy and Saudi Arabia focusing on its NEOM smart city project. Despite distinct national strategies, these efforts share a performative dimension that prioritizes visibility over operational depth. In order to convert vision-centric policies into competitive advantages, these efforts entail leveraging unique cultural and resource strengths to develop region-specific metaverse

applications alongside establishing transparent and adaptable regulatory frameworks to attract international investment and talent.

4.4. Regulatory Vigilants

Distinguished by its strategic prioritization of rights-based regulation, the European Union embodies the regulatory vigilant archetype in metaverse governance. Often characterized as lacking the "gene" for internet innovation due to weaker economic foundations and strong legal traditions emphasizing privacy protection (Mayer, 2000), the EU has nonetheless emerged as a global regulatory superpower. Through landmark frameworks such as GDPR, the Data Act, and the AI Act, it shapes the normative contours of emerging digital environments, including the metaverse (Young, 2015). This trajectory reflects strategic reliance on regulatory instruments to assert discursive sovereignty despite heavy dependency on foreign digital infrastructure and platform capital.

Although regulatory spheres sometimes overlap, the EU and its member states pursue different strategic priorities and should be treated as distinct actors. The EU, as a supranational bureaucratic body, has its own institutional interests and incentives. It seeks to exercise normative authority through anticipatory regulations rooted in ethical, privacy, and security concerns, signaling discursive leadership despite material constraints (Manners, 2002). By contrast, member states such as Germany and France—classified here as industrial innovators—leverage industrial and cultural assets to capitalize on the metaverse's economic and strategic potential. Germany applies digital twin technologies to smart manufacturing, while France uses immersive media to amplify cultural branding and luxury markets (Profumo et al., 2023). These approaches reflect national ambitions to enhance competitiveness, not simply to regulate.

This strategic divergence is shaped by structural differences. The EU, lacking major indigenous platforms and significant economic sovereignty, attempts to project power through regulatory activism, relieving a tension between its discursive authority and dependency on foreign technological infrastructure (Leonard et al., 2019). These compliance burdens may redirect resources away from R&D (Martini, 2025), limiting practical innovation. In addition, its bureaucratic logic prioritizes harmonization, standard-setting, and normative consistency. In contrast, member states have the flexibility to experiment with sectoral policies and pilot initiatives that align with national growth models—even as they must navigate EU-wide regulations. These national efforts are not merely subcomponents of EU policy, but expressions of distinct economic agendas.

Diverse national trajectories confirm this distinction. Finland was the first EU member state to launch a national metaverse strategy, warning of digital dependency on foreign tech giants (Digital Finland, 2023). Sweden and Norway have explored metaverse applications in music streaming and virtual tax offices, respectively. France's metaverse strategy emphasizes cultural sovereignty and cross-sector collaboration (François et al., 2022), while the EU focuses on cross-border data governance and regulatory integrity. These examples highlight the persistent tension between the EU's bureaucratic orientation and its member states' strategic objectives, which do not fully converge.

In sum, classifying the EU as a regulatory vigilant—separate from France and Germany—captures the institutional logics that underpin metaverse governance in Europe. While the EU promotes a coherent ethical regime through regulation, member states pursue more pragmatic innovation strategies aimed at

advancing national power and competitiveness. This analytical separation reflects not only formal legal distinctions but also the inherent tension between normative authority and material dependency in shaping Europe's digital future.

5. Conclusion and Discussion

Despite the cooling of global metaverse hype, examining its development, governance, and international implications remains highly relevant. As a convergence of digital technologies, cultural production, and regulatory frameworks, the metaverse—and Web 3.0 more broadly—provides a lens for analyzing how states navigate technological innovation and governance challenges. Understanding these dynamics provides insights into digital competition, policy experimentation, and the tension between discursive sovereignty and material infrastructure. Even if immediate enthusiasm has subsided, ongoing technological, cultural, and regulatory trajectories continue to reshape international digital landscapes.

This study analyzed 34 metaverse policy documents issued between 2021 and 2024 across 13 countries and regions, revealing variations shaped by strategic positioning, technological capacity, and industrial structure. To explain these differences, we propose a typology: techno-economic vanguards, industrial innovators, transformative opportunists, and regulatory vigilants. Techno-economic vanguards, such as China and the United States, leverage metaverse governance to maintain or challenge global hierarchies (Gilpin, 1981). Industrial innovators, including France, Japan, and South Korea, integrate metaverse technologies into industrial and cultural sectors. Transformative opportunists, such as UAE and Saudi Arabia, view the metaverse as a catalyst for economic diversification, while regulatory vigilants like the EU emphasize ethical governance and privacy protections (Bradford, 2020).

The typology advances understanding of metaverse and Web 3.0 governance within a structural context. First, it shows how governance styles reflect states' adaptive management of dependencies on US or China-controlled Web 3.0 platforms rather than fully autonomous choices (Mueller & Farhat, 2022). This typology thus functions as a diagnostic tool for assessing how states navigate reliance on foreign-controlled digital infrastructure while pursuing governance objectives. Second, a performance-versus-execution lens captures symbolic policymaking, where some states launch high-visibility Web 3.0 initiatives to signal intent but may lack substantive implementation. Third, contrasting discursive sovereignty with control over material infrastructure highlights structural contradictions, explaining why some states lead in Web 3.0 regulation while still relying on foreign chips, cloud services, or platform ecosystems, and why even ambitious governance strategies may encounter practical limits.

In addition, the typology also provides practical guidance for policymakers grappling with the uncertain and evolving nature of Web 3.0 technologies. By unpacking the governance logics embedded in national strategies, it offers a comparative lens for assessing not only where states stand, but also how their political economies, institutional capacities, and normative commitments shape feasible policy choices. Rather than promoting a one-size-fits-all model, the typology encourages reflexive governance—enabling states to align their metaverse and Web 3.0 ambitions with broader developmental priorities, avoid policy imitation, and critically evaluate the symbolic versus substantive functions of digital strategy in times of market volatility and technological hype. Importantly, the framework is not a static categorization but a dynamic one: as key factors such as infrastructure dependencies, regulatory priorities, and cultural strategies evolve, states may

move across categories or combine multiple logics. This emphasis on adaptability highlights the typology's role in capturing fluid governance trajectories rather than fixed policy types.

Despite these contributions, the study confronts inherent limitations rooted in the metaverse's fluid and contested nature. Deriving from formal policy documents rather than implementation outcomes, the typology cannot fully assess operational effectiveness or distinguish symbolic performance from substantive execution. The sample inevitably skews toward digitally proactive states, as many countries have yet to articulate formal metaverse strategies, raising questions about generalizability. Most critically, the 2021–2024 timeframe captures metaverse hype's rise and fall as a synchronic snapshot, flattening temporal dynamics and obscuring how states adapted—or failed to adapt—to market volatility and technological pivots. Without tracing these diachronic shifts, the analysis risks missing crucial discontinuities, policy reversals, and rhetorical adjustments that reveal how digital governance evolves under uncertainty.

Future research, therefore, should adopt complementary approaches to deepen understanding. Longitudinal studies tracking early adopters like China, South Korea, and the UAE would reveal whether ambitious strategies yield tangible transformation or merely symbolic gestures (Radu, 2021). Equally important is examining policy revisions, defunding, and discursive rebranding following industrial stagnation—dynamics that illuminate how states manage failure within digital policy cycles. Regional comparative analyses, particularly within the EU, could expose tensions between supranational coordination and national autonomy (Hine et al., 2024), while integrating science and technology studies perspectives would clarify how non-state actors, stakeholder contestation, and public deliberation shape more accountable metaverse governance (Goldberg & Schär, 2023).

This study advances digital governance scholarship by revealing how technological capacities, industrial endowments, and geopolitical positioning fundamentally shape metaverse policy formations. The typology exposes persistent gaps between discursive sovereignty and material infrastructure control, challenging policymakers to align ambitions with capabilities while acknowledging structural dependencies. As Web 3.0 governance evolves amid market volatility and technological uncertainty, sustained inquiry into these asymmetric dynamics remains essential—not only for understanding present challenges, but for exploring pathways toward more inclusive and equitable digital governance that accommodates diverse national strategies and development priorities.

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Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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