



The Global Language of Business

Building the Metaverse: A Foundation of Standards



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Executive Summary

The metaverse is one aspect of the future state of the internet; it is an umbrella term for a fully interoperable, decentralized ecosystem of digital worlds that link to and interact with the physical world. Today, the digital worlds are not interoperable. However, many companies are taking the first steps needed toward the greater vision. As the metaverse is still in its earliest stages of development, now is the critical time to lay the foundation. The metaverse will enable a significant economy built on collaboration, integration, and massive scale, and standards will be a cornerstone of this interoperable ecosystem of digital worlds.

Retail, in particular, is an industry primed for the metaverse. Many retailers are already making their first experimental forays into the type of immersive digital experiences consumers will have in the metaverse. As these initial steps into the metaverse progress, standards are already being incorporated into discrete parts of the underlying infrastructure.

This whitepaper discusses the potential role of GS1 Standards in the evolution of the metaverse in the years to come. To fully realize the metaverse, there needs to be cooperation between businesses, nascent technologies, and processes. The first step of achieving that cooperation is through standardization in four key areas:

1. **Persistent digital identity**, whether cryptographically verified or secured in another manner, requires standardization to accurately identify, capture, and share products, services, tokens, and objects throughout the metaverse.
2. **Digital twins**, with standardized data, link the digital and physical worlds together so that users can interact with one world to influence the other, unlocking access to actionable, real-time data.
3. **3D asset standards ensure that augmented reality (AR) and virtual reality (VR) applications** built within the metaverse have a collective quality and cohesion as users move between different digital worlds.
4. **The interoperability at the core of the metaverse is inextricably linked to standards**—specifically, those around data models and data sharing that allow information to flow across digital worlds and into the physical world.

As a not-for-profit standards organization, GS1 US® is uniquely positioned to explore how this foundation is built and how to identify, capture, and share key aspects of the metaverse within digital worlds while also linking them to the physical realm.

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Background

What is the metaverse? Specific definitions vary across industries and organizations, but when looking at them in aggregate, common themes begin to arise:

- “A massively scaled and interoperable network of real-time rendered 3D virtual worlds that can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments.”¹
- “...the work of metaverse veteran William Burns III defines it as a collective virtual shared space, created by the convergence of virtually enhanced physical reality and physically persistent virtual space...”²
- “Like the internet, the metaverse will be an interconnected system that transcends national borders, so there will need to be a web of public and private standards, norms and rules to allow for it to operate across jurisdictions.”³
- “A theoretical or emergent networked online space with digitally persistent environments that people inhabit, as avatars, for synchronous interactions and experiences...”⁴
- “The metaverse can be defined as a simulated digital environment that uses augmented reality (AR), virtual reality (VR), and blockchain, along with concepts from social media, to create spaces for rich user interaction mimicking the real world.”⁵

For the purposes of this paper:
The metaverse is a component of the future state of the internet, a decentralized ecosystem and economy of digital worlds —fully interoperable and seamlessly linked to each other and the physical world— that users interact with in immersive ways.

Across all definitions, there is agreement about the complexity of the endeavor. Both mainstream and emerging technologies are being combined to create the layers of structure and interface that will build the metaverse. Figure 1 below delineates these layers and lists the underlying technologies that power them.

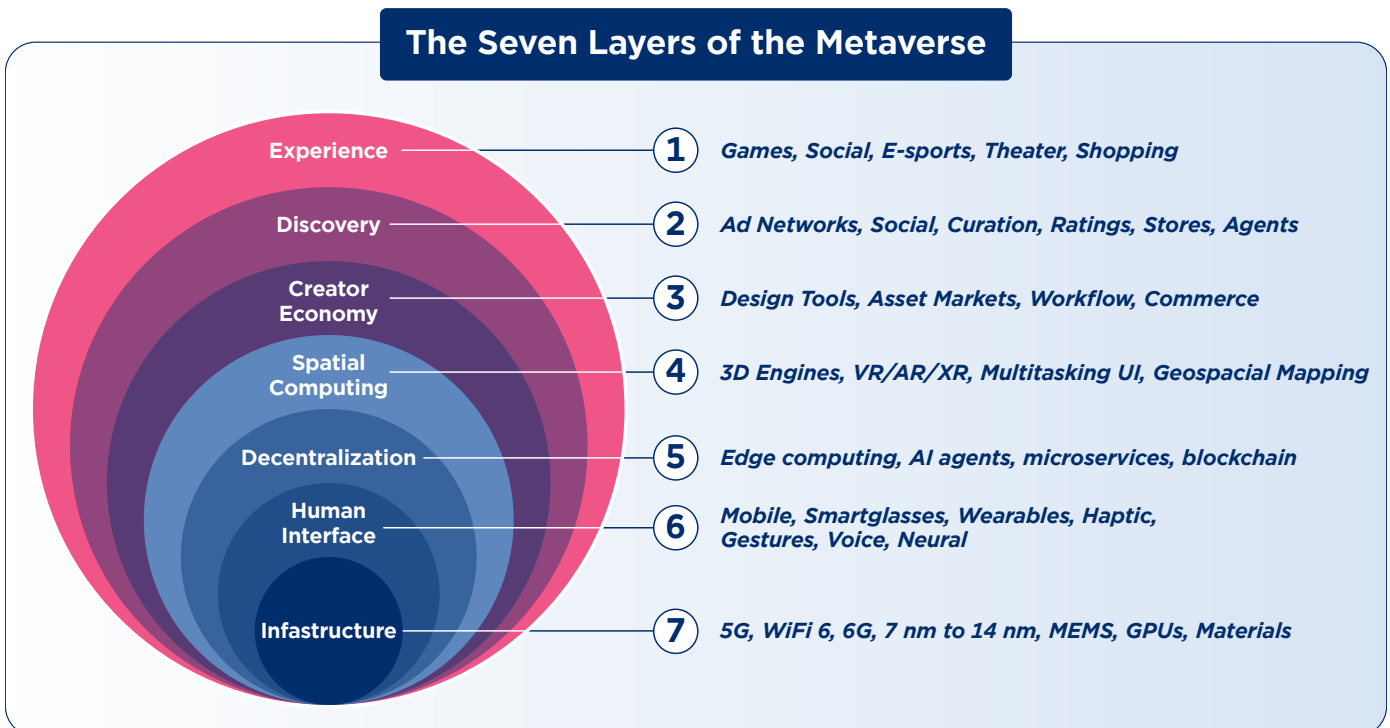


Figure 1: The metaverse is a multifaceted future state that requires a vast array of technologies to work together.⁶

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To build the metaverse is a Herculean task. No one company will be able to achieve it alone; therefore, there needs to be scalable collaboration in the pursuit of this shared goal across all manner of industries, technologies, and businesses.

The metaverse offers a massive opportunity, not only for the technology providers that will build its infrastructure but also for the businesses that will populate its digital worlds: brands, retailers, concert halls, art galleries, game studios, and more.⁷

The metaverse has the potential to generate a host of global economic activities that will enable digital real estate, a wealth of unique retail experiences, and new paradigms of product ownership. Through advanced, immersive technologies, it will augment those that exist today and introduce new ones unique to companies' digital worlds. The World Economic Forum believes that "the metaverse will unlock opportunities for retailers, infiltrating every sector in the coming years and culminating in annual revenues estimated to be in excess of \$1 trillion."⁸

The use case for the metaverse as a sales channel is clear: "The potential for retail in the metaverse, once the technology is better, is to make online shopping more engaging and useful. A tool that would allow consumers to explore and discover better than they can now would bring online shopping closer to what consumers can accomplish in stores."⁹ From fashion to farmers' markets, various industries are poised to benefit from the development of the metaverse. Well-known stores like Bloomingdale's have already invested in the metaverse, with the belief that "Virtual showrooms in the metaverse is the next phase of where the retail industry is going, and it provides an opportunity for customers to have an engaging, immersive experience that connects them to the brand and our store while also enabling us to see what users are most interested in through unique data insights."¹⁰

The introduction of the metaverse will spark a new realm of regulations, tariffs, business-to-business (B2B) transactions,

and trading relationships that will co-exist in both virtual and hybrid experiences. Global trade will be inextricably linked to the metaverse as it grows.

As a result, companies in the apparel and general merchandise, foodservice, and retail grocery industries will all be impacted by the emergence of the metaverse. GS1 Standards can help ensure that these industries' introduction to the metaverse is done in a way that enables scalability and interoperability. While there may be a need for new attributes or data-sharing paradigms, the essential foundation is already in place, since the identification of products and services using GS1 Standards has long been established for physical trade among brands, suppliers, and trading partners. With so much potential at hand for so many industries, companies are starting to collaborate to ensure clear, cohesive avenues for communication as the first step in the creation of the metaverse.



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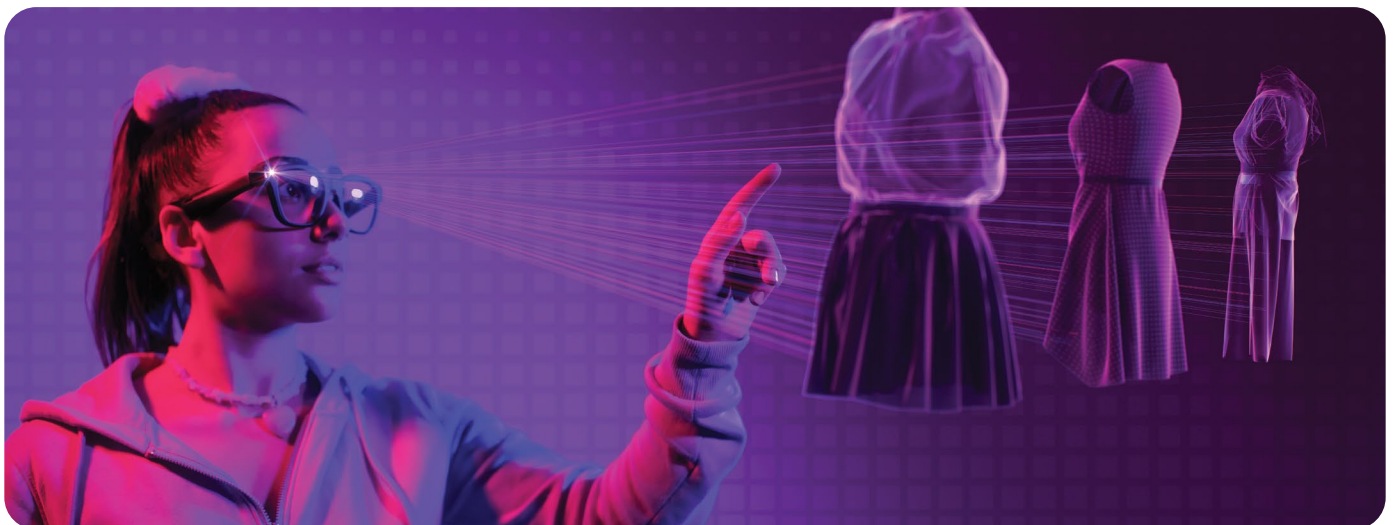


Figure 2: Example of a virtual showroom

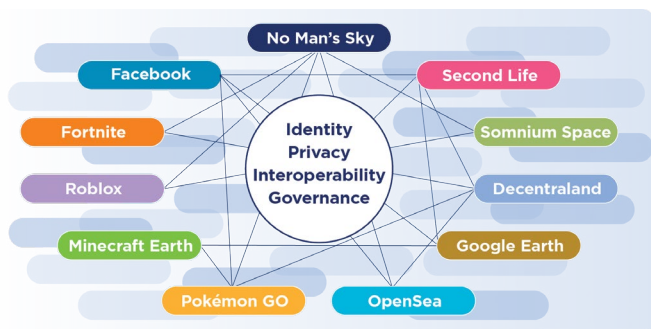


Figure 3: “We have one Web. We can have one Metaverse. To create the Metaverse, we need an evolving set of standards and protocols everyone agrees to use.”¹¹

Standards organizations, whose purpose is to bring industry together to work toward a common goal, can serve as the connective tissue binding these foundational metaverse efforts. Because development is still in its early stages, opportunities for standards organizations are just beginning to appear. One example of a recent entry into this space is the new Metaverse Standards Forum, a consortium of companies that are collaborating to achieve an open, interoperable, and inclusive metaverse.¹²

GS1 US has been a standards organization since 1973, leveraging its neutral status to lead a collaborative revolution across the retail, grocery, apparel, and healthcare sectors. Based on the current state of metaverse work in the industry, the key businesses that will partake in the metaverse as it develops, and GS1 US's longevity and credibility in support of physical commerce, the GS1 US Innovation and Partnerships team believes that GS1 Standards have a foundational role to play in the building of the metaverse.

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The Relevance of GS1 Standards

Persistent Digital Identity

Entities in the metaverse, including individuals, brands, and retailers, will likely form digital identities to serve similar purposes as their physical identities in our current economy. Individuals want to engage socially, build community, and create livelihoods. Brands want to engage consumers; build trust; and create and distribute products, services, and experiences to metaverse users. Manufacturers and suppliers want to produce digital components that are used by other businesses to create virtual products. Retailers want to provide authentic venues for commerce. This should sound like traditional supply chains, emphasizing the necessity for trust in commerce—but how will entities build the assurance necessary to form these trading relationships for entities and their products in a digital world?

To form a robust economy within the metaverse, entities and assets need trusted, universally unique identification. Physical and metaverse identifier requirements differ. While physical global identifiers grew from machine readable symbologies driven by physical constraints, metaverse identifiers are emerging from the cryptographic arena where attribution, authentication, privacy, and security are paramount. Actions and assets within the metaverse must be attributable to identities in a verifiable way, with trusted provenance, to facilitate commerce and portability.

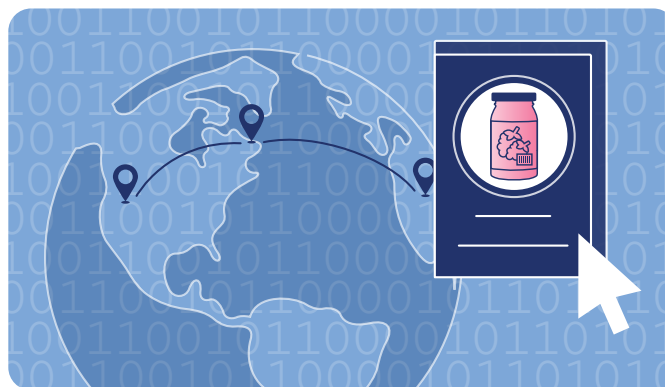


Figure 4: Attribution, authentication, privacy, and security are critical in the metaverse.

Many metaverse assets, services, and entities may have corresponding physical manifestations. Examples include brands that sell products in both economies, consumers who tie their metaverse identities to their physical ones, and products that have a physical and digital component that perform some combined functions.

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A seamless relationship between both components requires a unique identification system that interoperates. GS1 US believes that extending identification for physical entities, products, and assets to the metaverse will create the most efficient path for today's omni-channel companies to grow their business in the metaverse economy.

GS1 US is exploring new technologies like Decentralized Identifiers (DIDs) and Verifiable Credentials (VCs) in combination with GS1's traditional identifiers. DIDs combined with GS1 identifiers can give digital products, entities, and assets the cryptographic abilities of public key infrastructure (PKI), but in a decentralized manner that scales with a metaverse economy. VCs provide a standard data container that holds key product information and confirms that data's authenticity. Combining DIDs and VCs, metaverse entities can build a web of trust to establish digital relationships and identification—the basis for metaverse-based digital commerce.

Digital Twins

Many consumer-facing brands are experimenting in the metaverse to deliver customer experiences that fluidly move between the boundaries of physical and digital worlds. Whether it is through exclusive digital collectibles or physical-to-digital product releases, companies such as Adidas, Coach, Coca-Cola, Dolce & Gabbana, Gucci, Nike, Starbucks, Taco Bell, and others are looking for novel ways to transcend the current commerce experience. Digital twins will be a vital enabler to unlock the potential of such capabilities.

Digital twins are defined as “virtual representations of an object or a system that spans its lifecycle, is updated from real-time data, and uses simulation, machine learning and reasoning to help decision-making.”¹³ Digital twins allow for the re-creation of a physical product in the virtual world. Traditionally used in a manufacturing context, the concept of digital twins has since evolved to entail some significant implications for the metaverse, including real-time product updates, virtual customization, and transfer of ownership.

One technology that businesses are seeking to use in the metaverse is non-fungible tokens (NFTs). More concretely definable than the metaverse, “an NFT is a digital asset that links ownership to unique physical or digital items” that is “securely recorded on a blockchain.”¹⁴ As Figure 1 on page 4 shows, the metaverse is made of a multilayered ecosystem of technologies, with NFTs being one manifestation of blockchain that leverages decentralization.

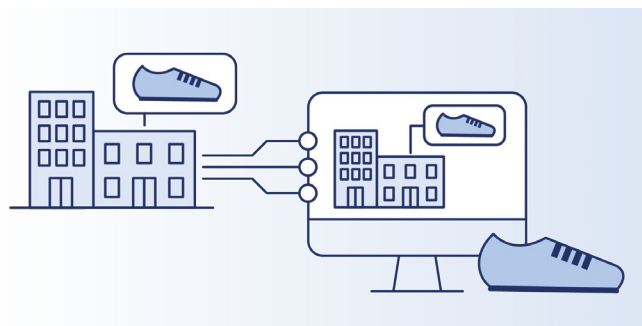


Figure 5: Digital twins update in real time to reflect the state of their physical halves, potentially providing analytics to interested users.¹⁵

For example, companies like Starbucks are developing consumer experiences that combine “the company's successful Starbucks Rewards loyalty program with an NFT platform, allowing its customers to both earn and purchase digital assets that unlock exclusive experiences and rewards.”¹⁶ When an NFT is then linked to a physical product, it grows beyond a solely cryptographic asset into a digital twin.

For companies looking to tap into the potential of consumer-oriented digital twins, starting with globally unique identifiers for products, such as the GS1 Global Trade Item Number® (GTIN®), will allow them to extend their physical products into the metaverse. By making the most of unique identifiers already placed on physical goods, brands can derive further value from their existing investment into product attributes, master data, and traceability, allowing the product to have an anchor of trust in the physical world. In fact, the creation of digital twins in the metaverse will require attributes and assets that are a natural extension of preexisting data sources, such as the GS1 Global Data Synchronization Network™ (GDSN®), which already contains and maintains high-quality product content. While some physical attributes would not be necessary for the metaverse, others such as size, shape, and color will be important for digital assets.

The myriad of metaverse experiences that a brand can offer to customers, linked to the purchase of a physical product, will be a major opportunity for engagement. While a GTIN is a class-level identifier of all products that share the same physical characteristics, there is a more specific version called a Serialized Global Trade Item Number (SGTIN) that is unique to exactly one instance or one unit of a specific product anywhere in the world. Serialization of products could allow companies to create more specific, customizable, and unique customer experiences. For example, SharpEnd and Threedium worked with Puma to sell sneakers that each had an



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associated digital twin, where media and digital product data were unlocked via integrated near-field communication (NFC) sensors in the product. This created a unique experience for each customer purchase and ensured the connection between the physical and digital product.¹⁷

3D Image Standards for Augmented and Virtual Reality (AR/VR)

Whether it is browser based, through AR glasses or mobile device apps, or via a VR headset, the interface through which users experience the metaverse is meant to be immersive. That immersion is realized when objects and products within digital worlds are rendered in a 3D environment. The task of creating 3D models is not easy, but “when it comes to tapping into the metaverse, the thing that separates the doers from the dreamers is the ability to produce and launch 3D models of items at scale... if the metaverse really is to become the new iteration of the internet, the production of 3D models of real-world objects needs to be possible at scale.”¹⁸

Scaled utilization of 3D models for the metaverse across all interested businesses and digital worlds and industries can be more fully realized through the application of standards. The Khronos Group is a standards organization that has been working to create a unified, standardized process for the creation, storage, and usage of 3D assets throughout the current online ecosystem.¹⁹

A potential complement to the efforts of the Khronos Group, GS1 Standards can build upon the existing 2D image identification standards for the current iteration of the internet to ensure consistency and continuity of retail products via 3D asset identification standards in the metaverse.

Another essential element of immersion will be engagement experiences consistent with the real world. 3D assets in the metaverse can provide brand-directed engagements using a standard like GS1 Digital Link, which extends the power and flexibility of GS1 identifiers by making them part of the web. That means that GS1 identifiers, such as the GTIN, are

now a significant gateway to product information. Consumers and patients gain access to information that improves supply chain visibility, strengthens brand loyalty, and promotes patient safety.

These same standards can address the interoperability challenges that the competing metaverse platforms have yet to solve.

Figure 7: An example of an AR engagement experience



Interoperability of Digital Ecosystems

The metaverse is an ecosystem that could serve as a digital twin to the physical world. For ecosystems, interoperability has always been a critical factor to the exponential connectivity that creates widespread adoption. In the early days of electronic communications, without the right protocol, users could only communicate with those who used the same service providers. The convergence between physical and digital worlds is no different.



Figure 6: While the chairs are all the same product, the color distortion from different image viewers highlights the need for 3D image standards to achieve a cohesive 3D commerce experience.²⁰

Building the Metaverse: A Foundation of Standards

There is a significant gap between the conceptual metaverse and its current state, and that chasm can only be crossed if the entities in the metaverse agree to use a foundational common language for data exchange.

Today, GS1 Standards like Electronic Product Code Information Services (EPCIS) are used to link physical product flows with digital data and achieve end-to-end visibility across supply chains. In addition, Electronic Data Interchange (EDI), when supported by GS1 Standards, provides global standards for electronic business messaging that allows for the automation of business transactions from manufacturer to distributor to retailer. The GDSN also makes it possible for any company, in any market, to share high-quality product information seamlessly, further paving the way for essential data sharing. Through GDSN, trading partners have immediate access to the most current and complete information they need across physical supply chains—a process that can also be extended to digital supply chains. Interoperability is achieved in the physical world today through these standards that ensure a consistent flow of data with a product along its journey. This could form the blueprint for the flow of digital products, assets, and identifiers throughout the metaverse.

Mutually beneficial collaboration is essential to creating the digital ecosystem of the metaverse. At its core, “interoperability—that is ‘the ability to unify economies, avatars and systems across platforms’—is often described as one of the defining properties of the metaverse. As our physical and virtual worlds merge, users will need to experience synchronous and seamless movement between different platforms just like we do in real life.”²¹ Collaboration and standardization are the two pillars upon which an interoperable digital ecosystem can be created.



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Figure 8: Digital ecosystems that can communicate, share, and interoperate are a core aspect of the metaverse.

Conclusion

Commerce at scale requires standards to function. Today that is achieved by GS1 Standards, and in the future, the metaverse will introduce a new dimension of digital commerce that needs a similar foundation. The metaverse is a natural extension of the internet, and it is important to realize the evolution is already underway. Consumers increasingly want to be active, immersed participants, which is driving the shift from current 2D toward customized 3D experiences.

Companies' ability to satisfy that desire in a branded way will be increasingly important and eventually become table stakes for commerce in the metaverse. As technology evolves and consumers and brands adopt new ways of engaging with each other, it is important for brands to similarly evolve and expand their use of standards. Those who fail to do so risk costly cleanup and catchup later. Just as standards enable the physical supply chain of today, standards can enable the digital supply chain and the interoperability needed to realize the future opportunities of the metaverse.

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References

- ¹Ball, Matthew. *The Metaverse: And How It Will Revolutionize Everything*. 1st ed., Liveright Publishing Corporation, 2022, p. 29.
- ²Hackl, Cathy. "Defining the Metaverse Today." *Forbes*, 2 May 2021, <https://www.forbes.com/sites/cathyhackl/2021/05/02/defining-the-metaverse-today/?sh=5b1ea1116448>.
- ³Clegg, Nick. "Ensuring an Open and Interoperable Metaverse." *Meta*, 18 May 2022, <https://about.fb.com/news/2022/05/ensuring-an-open-and-interoperable-metaverse>.
- ⁴Metaverse (2022). Dictionary.com. Retrieved from <https://www.dictionary.com/browse/metaverse>.
- ⁵"Metaverse Meaning - What Is This New World Everyone's Talking About?" *XR Today*, 10 Jan. 2022, <https://www.xrtoday.com/mixed-reality/metaverse-meaning>.
- ⁶Radoff, Jon. "Building the Metaverse: The Seven Layers of the Metaverse." https://miro.medium.com/max/793/0*W7d2kJ2UjzeDkc9Q.
- ⁷"Metaverse Market Size Worth \$824.53 Billion, Globally, by 2030 at 39.1% CAGR: Verified Market Research®" [Press release]. Cision, 13 Jul 2022, <https://www.prnewswire.com/news-releases/metaverse-market-size-worth--824-53-billion-globally-by-2030-at-39-1-cagr-verified-market-research-301585725.html#:~:text=According%20to%20Verified%20Market%20Research,39.1%25%20from%202022%20to%202030>.
- ⁸El Khatib, Shireen. "How Digitalisation and the Metaverse Are Revolutionizing the Retail Industry." *World Economic Forum*, 25 May 2022, <https://www.weforum.org/agenda/2022/05/the-shopping-revolution-how-digitalisation-and-the-metaverse-is-improving-retail>.
- ⁹Kestenbaum, Richard. "What the Metaverse Means for the Future of Retail." *Forbes*, 16 Mar. 2022, <https://www.forbes.com/sites/richardkestenbaum/2022/03/16/what-the-metaverse-means-for-the-future-of-retail/?sh=6eab8c8147ff>.
- ¹⁰Hall, Christine. "Bloomingdale's Goes All-In on Metaverse With New Virtual Store." *TechCrunch*, 8 Sep. 2022, <https://techcrunch.com/2022/09/08/bloomingdales-metaverse-virtual-store>.
- ¹¹Siegel, David. "Announcing the Metaverse Standards Working Group." *Medium*, 6 Oct. 2021, <https://medium.com/the-metaverse/announcing-the-metaverse-standards-working-group-f997b107c6a0>.
- ¹²Homepage. *Metaverse Standards Forum*, <https://metaverse-standards.org>.
- ¹³"What Is a Digital Twin?" *IBM*, <https://www.ibm.com/topics/what-is-a-digital-twin>.
- ¹⁴DeNicola, Louis. "What to Know About Non-Fungible Tokens (NFTs) — Unique Digital Assets Built on Blockchain Technology." *Insider*, 12 Jul. 2022, <https://www.businessinsider.com/personal-finance/nft-meaning>.
- ¹⁵<https://www.emersonautomationexperts.com/wp-content/uploads/2019/08/Emerson-Digital-Twin-Illustration.png>
- ¹⁶Perez, Sarah. "Starbucks Details Its Blockchain-Based Loyalty Platform and NFT Community, Starbucks Odyssey." *TechCrunch*, 12 Sep. 2022, <https://techcrunch.com/2022/09/12/starbucks-unveils-its-blockchain-based-loyalty-platform-and-nft-community-starbucks-odyssey>.
- ¹⁷"Threedium and SharpEnd Announce Partnership to Get Consumer Brands 'Metaverse Ready' With Digital Twins and Connected Products" [Press release]. *Business Wire*, 12 Sep. 2022, <https://www.businesswire.com/news/home/20220912005776/en/Threedium-and-SharpEnd-announce-partnership-to-get-consumer-brands-'Metaverse-Ready'-with-Digital-Twins-and-connected-products>.
- ¹⁸Ripert, David. "The Pathway to the Metaverse Begins With 3D Modelling." *Entrepreneur*, 24 May 2022, <https://www.entrepreneur.com/science-technology/the-pathway-to-the-metaverse-begins-with-3d-modelling/425643>.
- ¹⁹3D Commerce Landing Page. *Khronos*, <https://www.khronos.org/3dcommerce>.
- ²⁰Blair, Adam. "Khronos Group Goal: 'Create One 3D Model That Works for Everyone.'" *Retail TouchPoints*, 18 Oct. 2021, <https://www.retailtouchpoints.com/topics/customer-experience/khronos-group-goal-create-one-3d-model-that-works-for-everyone>.
- ²¹Metaverse Policy Lab. "Metaverse Dialogue: Interoperability and the Future of the Metaverse." *Access Partnership*, 22 Sep. 2022, <https://accesspartnership.com/interoperability-and-the-future-of-the-metaverse>.

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About GS1

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