



EBOOK

# A guide to immersive retail & the metaverse age

How retailers can implement  
interactive shopping experiences now  
to set the stage for metaverse commerce.

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# Introduction

## Brochure-ware websites aren't compelling anymore

In the early 2000s, the retail landscape dramatically changed as the internet became mainstream and pioneering ecommerce companies, like [Amazon.com](https://www.amazon.com), opened for business. Today, a mobile-optimized ecommerce website is table stakes. In fact, a static, 2D, brochure-ware style website with easily searchable products, categories, and prices has been commonplace among retailers since the beginning of the mobile revolution. But, this approach is no longer a compelling way for retailers to showcase and differentiate their brand to shoppers. Consumers expect an elevated, modern digital retail experience—especially as the COVID-19 pandemic accelerated the transition to online shopping at a much faster pace than anyone previously predicted.

Now, digital properties, like websites, mobile apps, and social media channels, are the “flagship store” that represents a retail brand, and these digital storefronts are almost certainly the first place consumers visit to learn more about a product or brand. This dramatic shift to online, connected retail experiences is pushing demand for innovative retail technologies that can attract shoppers and keep them coming back again and again as repeat buyers, and increasingly more importantly, as brand evangelists.

**This ebook provides a view into current trends so retailers can become familiar with relevant technologies as well as a perspective of how the industry is heading into the metaverse age. We will de-mystify the concept of the metaverse so you can have business impact today—with first-mover advantage.**

## The growth of extended reality

Leading-edge consumer websites are already leveraging immersive technologies, collectively known as extended reality (XR) solutions, like augmented reality (AR), virtual reality (VR), and three-dimensional (3D) content. A common misconception is that these technologies usually require special hardware, like goggles or glasses. In fact, windows into immersive content are broadly accessible today with mobile devices, which is how most retailers are journeying into the metaverse age. According to [a 2021 report on emarketer.com](#), because the pandemic forced people to work and shop at home, more and more people started using XR experiences. The study found that nearly 60 million people used VR and nearly 95 million people used AR at least once per month—a significant indicator that people are quickly becoming comfortable with XR technologies. This trend and the popularity of devices that will create even more immersive experiences is only expected to increase, similar to the pervasiveness of mobile devices.

## The metaverse is the future

While these technologies have mostly been associated with gaming, social media platforms, and industrial enterprises, savvy retailers are eyeing spatial computing solutions to enhance the shopping experience. In fact, many believe these experiences are mere steppingstones toward the future of retail—the metaverse. While the metaverse has a fluid definition today, much like the internet and ecommerce did in the early 2000s, it could evolve in ways we can't foresee right now.

In addition, we don't yet know how web3 will impact the metaverse. If you haven't heard of web3, it's a concept for what many consider to be the next iteration of the world wide web using blockchain to create a decentralized, token-based economy, establishing new ownership paradigms for digital goods and experiences.

Regardless, investing and experimenting in immersive technologies today can offer tangible benefits and reap huge rewards for early-adopter retailers. In this ebook, we will explain how innovative companies can implement spatial experiences (AR, MR, VR, and 3D) now, so you are well positioned to capitalize in the metaverse age.

# What is the metaverse?

The term “metaverse” is relatively ill-defined and can mean many different things depending on the context, from science fiction fantasy worlds to beautiful landscapes in far-away locales to “virtual,” yet seemingly in-person, business experiences. [Gartner defines the metaverse in the following way:](#)

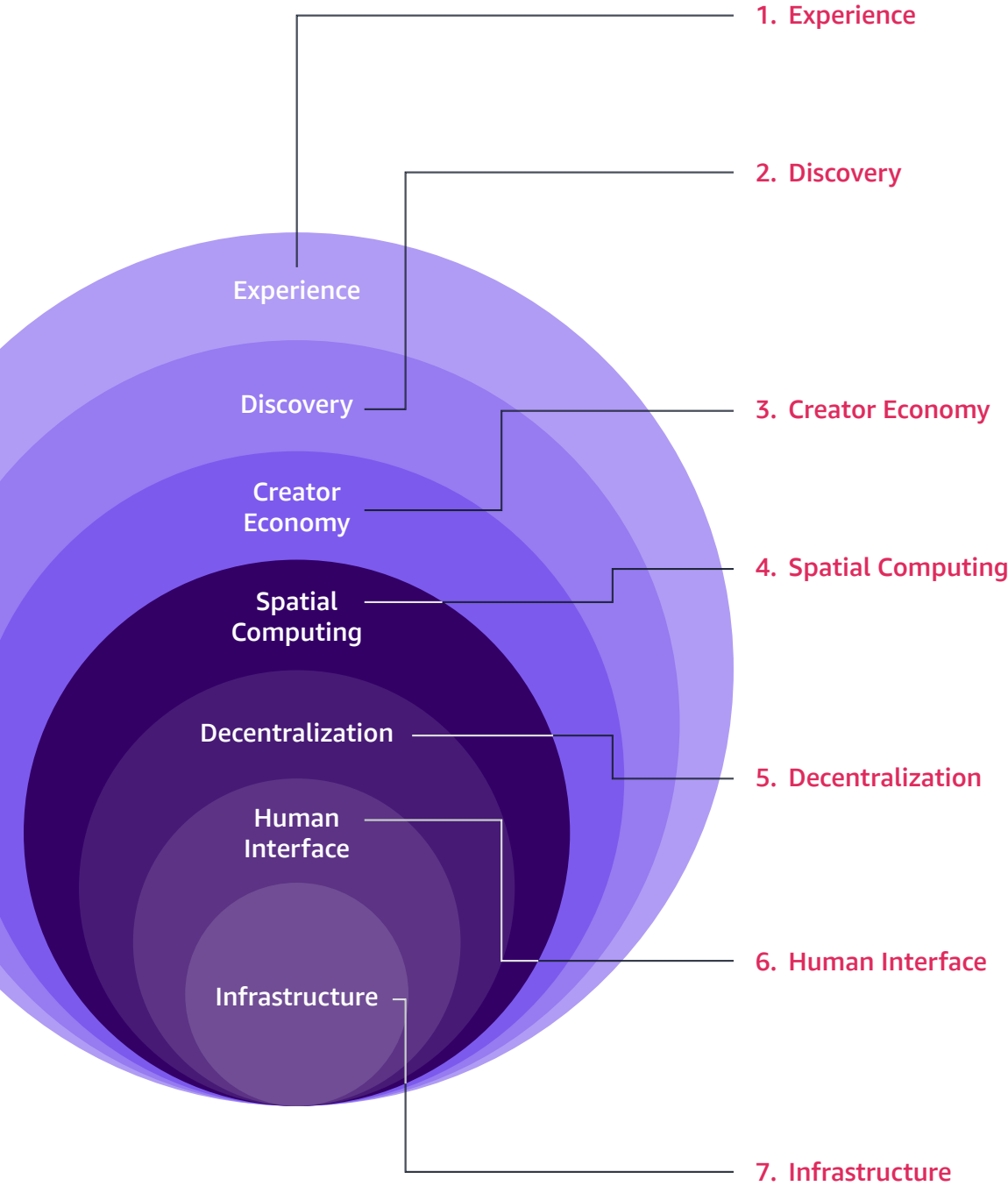
“The metaverse is an immersive digital environment of independent, yet interconnected networks that will use emerging protocols for communications. It enables persistent, decentralized, collaborative, interoperable digital content that intersects with the physical world’s real-time, spatially indexed, and organized content.”

In general, the term encompasses our increasing reliance on advanced technologies and the desire for context in our daily lives that seamlessly merges our current physical reality with virtual environments and digital experiences.

As you might expect, Generation Z consumers, also called Gen Z or Zoomers, born between 1997 and 2012, and the even younger Generation Alpha consumers, born from approximately 2010 to the present, are already well-acquainted and comfortable with virtual environments, primarily from gaming and social media. As the initial mobile-first, social-first, and gaming-first generations, they’ve spent countless hours on different games and apps dressing-up avatars, decorating spaces, and building complete worlds to work, play, and live—virtually. If you’re not familiar with the term [avatar](#), it’s the graphical representation of an online user, a character, or a persona, and it was popularized by the 2009 James Cameron movie, [Avatar](#). This generational familiarity with XR environments and avatars creates a multitude of advertising opportunities—right now—for fashion, shoe, beauty, and home goods brands as described in this NPR article, [“Looking Good in the metaverse. Fashion Brands Bet on Digital Clothing.”](#)

# The seven layers of the metaverse

According to the article, [“The metaverse Value-Chain,”](#) published in [“Building the metaverse”](#) on [medium.com](#), there are seven layers of the metaverse as depicted in this image:



Source: [“The metaverse Value-Chain,”](#) published in [“Building the metaverse”](#) on [medium.com](#)

# Why should retailers care about the metaverse?

## Surge in demand for better digital engagement

According to a March 2022 Forrester report, entitled [“The State of the metaverse: Look Beyond the Hype to Uncover the Real Opportunities.”](#) “58% of global business and tech professionals with metaverse and virtual-world knowledge say that their organization will adopt metaverse or virtual-world solutions over the next 12 months to support workplace collaboration, especially to enable anywhere work.” Meanwhile, [an April 2022 article on itnews.com.au](#) points to another Forrester research statistic that says “76% of B2C marketing execs plan to invest in the metaverse.” These data points can’t be ignored and speak to the burgeoning interest and anticipated growth of AR, MR, VR, and 3D solutions. That’s precisely why retailers should start exploring, experimenting, and adopting immersive technologies now—to bring in-store shopping experiences online where the vast majority of customers are spending their time.

## Consumer expectations for immersive experiences

As the most innovative, savvy retailers launch XR experiences and consumers enjoy these new online shopping experiences, a high bar of expectations is being set for other retailers. This is a repeat of the first ecommerce vendors. This bar is set by brand representation, level of immersion, visual fidelity, collaborative ability, customer service benefit, and availability. In essence, these new “standards” will change the landscape, and consumers will quickly come to see retailers as either innovators or laggards. A case in point—when Amazon.com started offering 2-day shipping, customers wanted the rapid service. It’s now the delivery standard shoppers have come to expect from all ecommerce retailers.

## Benefits of immersive retail

By offering 3D website and XR experiences, retailers can better meet and satisfy customer needs, which results in longer online shopping sessions, increased sales, reduced returns, and higher average order values. To validate these points, consider these interesting statistics:

**71%**

Number of consumers who say they would shop more often if retailers used AR.<sup>1</sup>

**94%**

Increase in conversion rate for products with an AR preview.<sup>2</sup>

**3.4 billion**

Number of smartphones in use that already have web-based AR capabilities, also known as webAR.<sup>3</sup>

Since online shoppers often have difficulty visualizing fashion, accessory, and furniture products in an online environment with only 2D photos and videos, many consumers don't have the confidence to make a purchase. Often, they purchase the wrong item and return it. As the data points above indicate, shoppers want more realistic experiences that provide better product interaction and visualization, so people can be confident in their purchase. Increased buyer confidence can significantly reduce returns and increase profit margins.

By integrating immersive retail strategies into retailer go-to-market approaches, retailers can boost engagement across all sales channels. For example, by combining targeted advertising with more engaging immersive shopping experiences, retailers can introduce shoppers to other online sales channels and new purchase journeys. As retailers leverage the cross-channel browse and purchase data, you can target similar customer segments to help ensure all shopper segments are aware of every sales channel.

<sup>1</sup> <https://thinkmobiles.com/blog/augmented-reality-retail/>

<sup>2</sup> <https://hbr.org/2020/10/how-ar-is-redefining-retail-in-the-pandemic>

<sup>3</sup> <https://www.clickz.com/how-web-based-ar-can-help-retailers-boost-customer-engagement-and-sales/264271/>



# What companies are doing with immersive retail experiences today

While metaverse experiences are evolving in rapid and unprecedented ways, there are immersive experiences that retailers can adopt and offer consumers today. We are already seeing wide adoption of these three use cases:

## 3D product visualization and virtual try-on via mobile phone

Shoppers often want to see products in the context of their own environment. By placing a QR code on an ecommerce product page, customers can scan the code with their mobile phone to generate a 3D rendering of the product. Then, the shopper can manipulate the 3D image to see it in the background of their camera's view finder. In the recent past, it was difficult to create 3D models of products. However, AWS Partners, [Hexa](#) and Brio (recently acquired by [Adobe, Inc.](#), also an AWS Partner), have simplified the process and drastically reduced the cost. While it's not as easy as taking a 2D photo, the process is improving and offers customers a way to visualize a product in their space.

## Virtual stores

There are a few ways to approach this scenario. First, retailers can provide a 3D walkthrough of an actual store that enables shoppers to browse items as if they were physically in the store. This is similar to a 3D walkthrough of a house that's for sale on a real estate website, and it's convenient for retailers with a brick and mortar presence. With the other option, retailers create an entire digital 3D store, which is convenient for ecommerce retailers who have relied on a 2D website to showcase their brand. This approach is more interactive for buyers. For example, shoppers can move items to visualize one item near another coordinating product. With either approach, consumers can experience a retail store via their computer or mobile phone with an uncanny resemblance to walking into a physical store. The net result for retailers is better shopper engagement, increased dwell time, more confidence to purchase products, and higher conversion rates. Retailers can replicate their flagship store, craft entirely new virtual stores, or create special holiday or event spaces. AWS Partner [Obsess](#) is an expert in virtual stores.

## Digital goods and product placements

Here, think of the avatars and virtual worlds in games and apps that were mentioned in the ["What is the metaverse"](#) section on pages 4-5. Retailers can place products in existing popular VR games and apps so players can dress their avatar and decorate their spaces with your products. Depending on the game or app, consumers can select clothing and accessories for their avatar, like with Bitmojie, or play games to earn points, tokens, or money to purchase items to decorate their digital world. This is an excellent opportunity for retailers to subtly and strategically advertise specific products to the gaming audience—as a tie into a new product roll-out or a highly targeted merchandising campaign aligned with a movie launch, for example.

## Immersive retail in action—customer examples

As you search the internet you'll find examples of retailers dipping their toes in the waters of the metaverse. Some examples are:

### **Nike**

The global athletic apparel brand launched [Nikeland](#) on Roblox, an online gaming platform. According to the article, "[Nike Jumps into the metaverse with 'Nikeland,' a Roblox Virtual World,](#)" players can dress avatars in Nike clothing and compete in games to win virtual products.

### **Amazon Salon**

Launching in London, Amazon's new [hair salon](#) will be a place where customers can experience some of the leading technology, products and services in hair care and styling. Customers will be able to experiment with different virtual hair colors using augmented reality technology, enjoy entertainment on Fire tablets at each styling station and capture their new look in a dedicated creative area.

### **Amazon.com**

With photorealistic 3D assets for key product categories, like furniture and fittings, this is the foundation for a variety of immersive retail experiences on the Amazon website. Customers can [spin a product 360 degrees](#) to inspect it from every angle. They can use [Amazon's "view in your room" feature](#) to see what furniture will look like in their homes or the ["showroom feature"](#) to create virtual showrooms by mixing and matching products online.

### **Burberry**

This luxury retailer launched a series of AR pop-ups in marquee retail department stores around the world featuring ancient statues as part of a campaign to launch its new Olympia handbag collection. The initiative provided shoppers with a unique AR experience and encouraged people to return to Burberry stores now that the pandemic appears to be over. [Source](#)

### **Ralph Lauren**

In the virtual store of this iconic retailer, shoppers can browse items as if they were physically in the store. If you click on an item, you'll see price and size information along with a phone number to immediately order the item. [Source](#)

# Creating a metaverse-ready technology infrastructure

## Monolithic ecommerce applications won't cut it

In the early days of ecommerce, most shoppers used their desktop computer. Today, customers are using smart phones, tablets, and social media apps to browse and purchase products. Consumers expect frictionless shopping experiences where products are available, additional items are recommended, check-out is easy, delivery is quick, and returns are seamless. As new social media apps or purchase opportunities hit the market and explode in popularity, retailers need to rapidly launch frontend user interfaces (UIs) to accommodate the new sales channels.

A traditional ecommerce platform built on a monolithic architecture isn't nimble enough to adapt quickly to new consumer touchpoints. Research, development, and testing could take months—which doesn't cut it anymore.

Retailers need to think strategically about the path from their current IT infrastructure to a metaverse-ready technology stack to ensure you don't limit your growth, waste money, or lock yourself into a specific technology. A common starting point for retailers is to gradually start coding custom services into existing monolithic ecommerce system. While these services will function in the short run, they will most likely end in a technology quagmire that's difficult to manage and limits your long-term growth potential.

## Microservices will be critical

Consumer expectations for immersive online buying experiences are increasing rapidly, and headless commerce is the innovative alternative to the monolithic ecommerce application architecture. It gives retailers the flexibility to meet shoppers where they are now and where they will be as the metaverse comes to fruition. If you're not familiar with headless commerce, it's where the storefront technology is decoupled from backend commerce functionality. By implementing common backend retail business logic as cloud-based microservices, retailers connect the backend microservices with different storefront UIs, such as a retail store point of sale system, an ecommerce website, a mobile app interface, or a virtual environment. For more detail on this topic, be sure to read the AWS blog, ["How to Deliver Headless Commerce in Retail."](#)

## Ramp up compute power

To support high quality immersive experiences, retailers will need a lot of computing power, specifically real-time graphics compute infrastructure. This will be especially important for generating and storing 3D content and for creating seamless virtual gaming-style environments. AWS offers elastic, rapidly scalable cloud infrastructure services that can automatically expand and contract to keep pace with workload demands, so you only pay for the resources you use. These AWS resources provide more information about managing compute resources for immersive experiences:

- **White paper**—[“Serverless 3D Data Optimization Pipelines on AWS”](#)
- **Announcement**—[“Announcing General Availability of Amazon EC2 G5 Instances”](#)
- **Case study**—[“Varjo Makes Cloud-Based, High Fidelity VR/XR Delivery a Reality Using Amazon EC2 G5 Instances”](#)

Now is the time for retailers to transform core business systems with agile microservices and to implement automatically scalable infrastructure, so your business is ready for the metaverse age. With preparation, planning, and investments in innovative, flexible cloud-based IT services and infrastructure now, you can pave the way to rapidly adopt emerging and yet-to-be-designed technologies that will support next-generation shopping experiences.

## Key technologies to watch and understand

While the metaverse is taking shape, you should keep an eye on these technologies:

- **3D models and imagery**—Solid form objects that have length, width, and height and images that appear to have depth versus a typical flat image.
- **5G networks**—The 5th, and latest generation, of cellular technology.
- **AR or augmented reality**—A real-world experience that is altered by computer-generated graphics, videos, or sounds.
- **AR and VR glasses and goggles**—The apparatus used to experience VR and AR environments.
- **Blockchain**—A shared, unalterable ledger that records transactions.
- **MR or mixed reality**—An experience where the real and virtual worlds merge to create a new combined world.
- **Non-fungible tokens (NFTs)**—Unique cryptographic tokens that reside on a blockchain that cannot be copied or replicated.
- **Spatial computing**—The digitalization of interactions between people, machines, and objects in the environments that the interactions take place.
- **VR or virtual reality**—A computer-simulated experience where a person is fully immersed in an imaginary world
- **WebAR**—Augmented reality technologies built into a web page.
- **Web3**—Also called “web 3.0,” it’s a concept for what many consider to be the next iteration of the world wide web using blockchain to create a decentralized, token-based economy.
- **XR or extended reality**—This is the umbrella term that refers to technologies that appear to alter real environments, like augmented reality, mixed reality, and virtual reality.

As AWS learned from the early ecommerce success of Amazon.com, dipping your toe in the water and experimenting is the best way to lead through sea-level shifts in technology and society. Start testing some of these services within your company, in marketing or merchandising, to begin your process of experimentation. As you test different scenarios, learn, revise, and test again, you'll quickly become comfortable enough to integrate a pilot project featuring spatial computing into a marketing campaign or ecommerce offering. The more you test, learn, revise, and test again, the quicker and more successfully you can introduce immersive technologies into your ecommerce operations. This, in turn, will become your gateway to capitalize in the metaverse age—which is upon us.

**“The metaverse will be an immersive experience of interoperable and interlinked environments that will be delivered via a variety of devices — from smartphones and VR headsets to other form factors not yet conceived”**

—“[The State of the metaverse: Look Beyond the Hype to Uncover the Real Opportunities](#),” Forrester, March 29, 2022

# The future of shopping

While it's difficult to predict what retail shopping will be like in the coming years and when exactly the metaverse age will be in full swing, AWS already sees innovation from market leaders. These trends will be commonplace across the retail industry in the near future.

## 3D realism

The last few decades have been dominated by 2D imagery. First, there were websites, where images were used to showcase and sell products. Then came social media, which quickly evolved from text-based posts with an occasional picture to channels dominated by curated images and videos intended to quickly pique the viewer's curiosity and push them to a particular page.

We're now seeing a shift from 2D imagery to real-time, interactive, 3D content—as if the content is leaping out of the device, so customers can see and almost feel physical products. The evolution towards a next-generation 3D UI for retailers and brands involves spatial computing—using game engine technology in retail to power interactive experiences across the board. These advanced 3D technologies, combined with XR solutions, will bridge the online-offline gap to offer shoppers realistic product experiences.

## Livestreaming

Several years ago, Chinese social media influencers started using a livestreaming format to host webcast retail sales events that have become very popular and lucrative. This [campaignasia.com article](https://campaignasia.com/article) reported that, "In 2020, two-thirds of Chinese consumers bought products via livestream, according to [McKinsey Digital](https://www.mckinsey.com/digital)." Now, the livestream format is at a mature stage in China, while many other countries are just starting to implement this model. If other global regions and markets can tap into China's success, it could be very profitable for the fashion, beauty, and food retail segments. And, as livestreaming is enhanced with AR, shoppers could feel like products are physically in their environment as if they could try on a piece of clothing, test a lipstick color, and potentially explore an entire store.

## Enhanced virtual stores

As mentioned on page 7, virtual store technologies are readily available today. With that said, in the coming years as we shift closer to pure metaverse experiences, next-generation virtual stores will likely involve a seamless digital overlay of reality—a hybrid XR mode that can interact with real life. With a focus on Gen Z and Gen Alpha consumers, the goal will be to make ecommerce more experiential and memorable by offering interactive, entertaining shopping formats that tap into gaming and social experiences with which these consumer segments are already familiar and spend an incredible amount of time.

# Getting started

All signs point to the metaverse age as the next generation of the internet, which will undoubtedly impact current retail models and the way people shop by converging ecommerce, social networks, and entertainment. And, although the metaverse in its full definition isn't here now, elements of the metaverse and many technologies are available for early-adopters to test, learn, finetune, and create immersive retail experiences to excite existing customers and attract net new shoppers.

## What can retailers do now?

In short, do something—rather than nothing—to learn, experiment, design, and implement immersive retail strategies and technologies. Here are a few suggestions to consider:



### Identify points of innovation within your business

This may include specific customer segments, key markets, geographic regions, and marketing channels that could benefit from retail innovation.



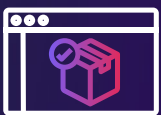
### Collect and mine customer data

Learn as much as you can about your customer behaviors to help you determine where to invest your time, money, and resources on immersive experiences.



### Figure out how to showcase your products in 3D

This is quickly becoming the status quo for ecommerce retailers. If you haven't started experimenting with 3D technologies, you can begin by learning about and experimenting with AWS compute and storage technologies to create what's known as a "3D pipeline and asset management" workflow. Partner solutions, from Hexa for example, can simplify and accelerate this effort.



### Try a virtual store

As mentioned on page 13, AWS Partner Obsess is highly experienced in virtual stores. They can help your company develop a proof-of concept to test different scenarios, so you can better understand the costs and benefits.



### Pay attention to videogaming platforms

Key players include Roblox, Fortnite, Sandbox, and Decentraland. This is where Gen Z, Zoomers, and Gen Alpha consumers are socializing with friends, attending events, and spending a lot of time. Because gaming platforms are already valuable, lucrative marketplaces and ecosystems that drive a massive number of transactions every day, they will likely be the inspiration for immersive metaverse environments.

## Contact AWS today

AWS has been helping retailers implement and optimize digital commerce strategies for nearly two decades, and we are at the forefront of immersive technologies and the metaverse, working with pioneers like [Meta](#), Snap, and [Epic Games](#) (via the [Unreal Engine](#)). We can offer the most robust cloud computing infrastructure and storage solutions in the industry to support immersive retail use cases, and we also offer the broadest partner ecosystem in the technology industry.

- [Contact](#) AWS today to discuss your immersive retail needs.
- Learn more about [AWS solutions for the retail industry](#).
- Find out how the [AWS Professional Services](#) team can help you design and implement solutions to simplify your organization.
- Find an [AWS Partner](#) to help you simplify and scale.

## About AWS

For over 15 years, Amazon Web Services has been the world's most comprehensive and broadly adopted cloud offering. AWS has been continually expanding its services to support virtually any cloud workload, and it now has more than 200 fully featured services for compute, storage, databases, networking, analytics, machine learning and artificial intelligence (AI), Internet of Things (IoT), mobile, security, hybrid, virtual and augmented reality (VR and AR), media, and application development, deployment, and management from 81 Availability Zones within 25 geographic regions, with announced plans for 21 more Availability Zones and seven more AWS Regions in Australia, India, Indonesia, Israel, Spain, Switzerland, and the United Arab Emirates. Millions of customers—including the fastest-growing startups, largest enterprises, and leading government agencies—trust AWS to power their infrastructure, become more agile, and lower costs. To learn more about AWS, visit [aws.amazon.com](https://aws.amazon.com).



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