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XR Market in 2035 and Beyond: Forecast, Challenges, and the Road to Mass Adoption



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The likely evolution of extended reality over the next decade and beyond

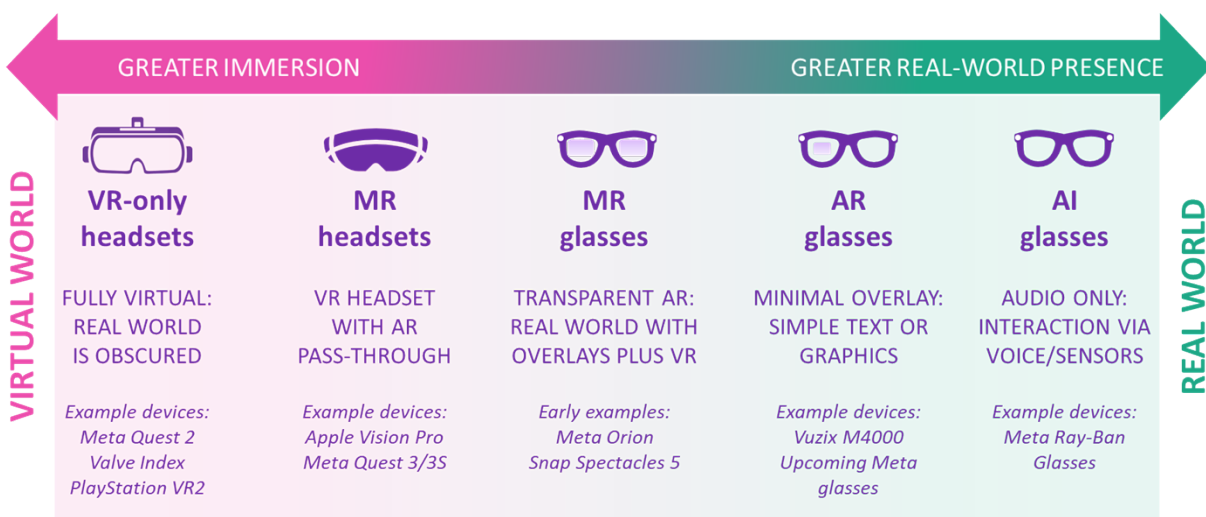
Since the early 2010s, there has been steady growth of interest in augmented reality (AR), virtual reality (VR), and mixed reality (MR), which collectively fall under the broader umbrella of extended reality (XR). However, efforts to chart XR's path to mass adoption along a predictable, linear trajectory have consistently fallen short. In particular, VR's uneven progress reflects the tech industry's recurring cycles of enthusiasm followed by disillusionment.

Looking ahead, the XR market is unlikely to show smooth or uniform evolution. Instead, its progress will be shaped by successive waves of advances driven by shifts in platform capability, technological maturity, and changes in user behavior. Both consumer and enterprise adoption will prove to be far more gradual than early forecasts expected. This report outlines what Omdia believes to be the most plausible scenario for how XR could develop from now through 2045. It examines the interplay between device categories and projects how adoption patterns and sales trajectories might unfold during this period.

Mapping the XR device landscape by function and immersion

There is no universally agreed classification system for XR hardware, but based on Omdia's analysis of the current device landscape and our assumptions about how this space may evolve, we have identified five main categories of XR devices along a spectrum from fully immersive to fully real-world-centric (see **Figure 1**). This "XR spectrum" reflects both the intended use case of each device and the extent to which it immerses the user or overlays their environment with digital content.

Figure 1: XR device spectrum as defined by Omdia



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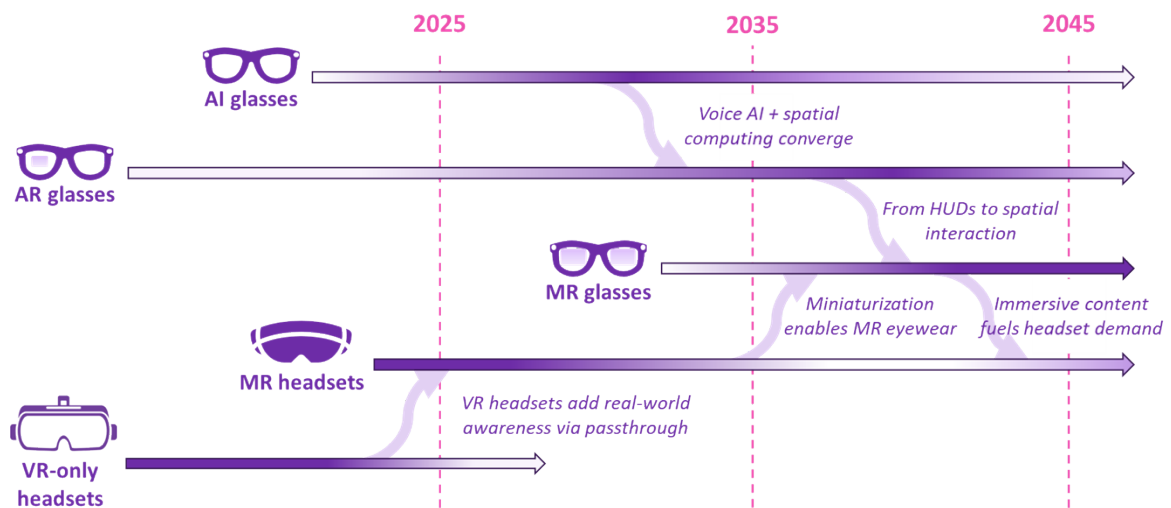
Source: Omdia

At the fully immersive end of the spectrum are *VR-only headsets*, which provide enclosed virtual experiences with little or no pass-through capability. Next are *MR headsets*, typically standalone VR devices that offer video pass-through to blend digital and physical content. *MR glasses* take this a step further, featuring transparent displays that enable AR overlays with the option to transition into full VR. Closer to the real-world end are *AR glasses*, offering minimal heads-up display (HUD) features for basic contextual information. Finally, *AI glasses* strip away visual output entirely, relying instead on audio and sensors for hands-free interaction, which positions them more as smart wearables than visual XR devices.

XR device categories will become increasingly intertwined

The XR device landscape will undergo a steady transformation over the next two decades, shifting from today's bulky headset-based formats toward lighter, more wearable smart glasses. VR and MR headsets will continue to coexist in the near term, serving niche and high-performance use cases. However, as the broader market gradually embraces face-worn computing, these devices will be complemented and, eventually, displaced by more socially acceptable and ergonomic formats that offer a balance between immersive digital experiences and real-world awareness, enabling use anywhere and on the move (see **Figure 2**).

Figure 2: The converging future of XR form factors



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Source: Omdia

AI glasses—lightweight, display-free wearables that focus on utility through audio interfaces and AI assistants—will likely prove to be the catalyst to mass-market XR adoption. They will act as a gateway to more advanced AR glasses, which add a visual layer through HUDs for information delivery and light interactivity. Both categories will help normalize face-worn technology, easing users into more immersive experiences.

Over time, advances in optics, battery life, processing power, and connectivity will enable immersive MR glasses that bring spatial computing capabilities such as full environmental awareness, gesture control, and robust app ecosystems into compact eyewear form factors. This will become the dominant category over the long term, thanks to the convergence of AI, AR, and MR technologies.

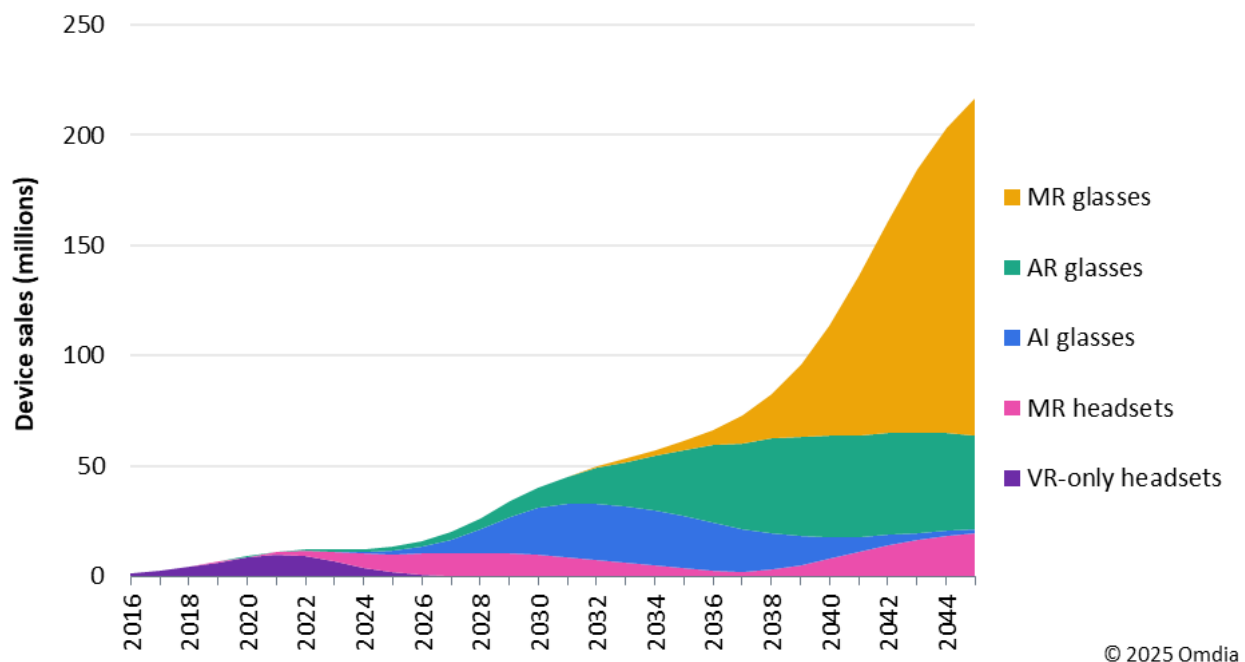
That said, this evolution will not result in a single end state. Demand will remain for fully immersive headsets in areas where graphical fidelity or presence are critical, such as gaming, training, and design. Simpler or more affordable glasses will also persist, especially in enterprise contexts or for basic utility tasks.

Ultimately, the cultural and ergonomic groundwork laid by smart glasses could reshape consumer expectations. Wearing a computer on your face feels novel or niche today, but it may become as normal as carrying a smartphone. The long-term trajectory points toward ambient, always-on spatial computing: lighter, context-aware devices that blend naturally into everyday life.

More than 60 million XR devices could be sold annually by 2035, more than 200 million by 2045

Sales of XR devices are expected to increase substantially over the next two decades, driven by the emergence of new product categories, evolving consumer behaviors, and continued investment in enabling technologies. However, this growth will not be evenly distributed across device types or time periods. Instead, the market will shift through distinct phases with certain categories declining while others gain momentum, sometimes sequentially and sometimes in overlap. Omdia's forecast outlines how these dynamics could unfold, projecting a combined total of more than 200 million XR devices sold annually by 2045 with a value of \$217bn, up from 61.5 million units at \$47.1bn in 2035 (see **Figure 3**). For comparison, in 2024, 1.2 billion smartphones were shipped with a value of \$609bn.

Figure 3: Global XR device annual sales, 2016–45



Source: Omdia

VR-only headsets

VR-only headsets are already seeing a significant decline in sales. Once the primary entry point into XR, their limited functionality in comparison with newer devices has rendered them increasingly obsolete. The category is being cannibalized by headsets that offer MR capabilities through pass-through video, which is rapidly becoming a baseline expectation as seen in the entry-level Meta Quest 3S. Omdia does not expect any major VR-only hardware innovations going forward, nor does it foresee renewed consumer interest in devices that lack outward-facing capabilities or spatial awareness. Enterprise and training use cases, where immersive-only environments are still valuable, may offer limited short-term demand, but even this segment will look to upgrade to more capable headsets.

MR headsets

The next few years will see small growth in MR headsets, led by new releases from Meta (Quest 4), Apple (Vision Pro successors), and Android XR partners (such as Samsung and others). This category balances immersion with MR features; however, headsets are still bulky and conspicuous, which limits their mainstream consumer appeal. In the 2030s, as more attractive MR smart glasses emerge, MR headset volumes will gradually contract. That said, Omdia expects a resurgence from 2038, as the thriving immersive content ecosystem led by MR glasses drives demand for headsets able to provide fully engaging experiences in entertainment, simulation, and productivity.

MR glasses

MR glasses are expected to become the central XR platform over the next two decades. Omdia forecasts their commercial debut around 2032, though initial volumes will be constrained by high costs, limited field of view, and early-stage developer support. However, key enabling technologies such as high-quality transparent optics, low-power spatial processors, compact batteries, and AI-assisted user experience (UX) will improve substantially by the late 2030s. From 2037 onward, adoption will ramp up quickly as MR glasses begin to support a wide range of consumer and enterprise use cases, both at home/indoors and on the go. With their ability to offer both immersive and lightweight contextual experiences in a single form factor, MR glasses are forecast to exceed 150million unit sales annually by 2045, making this the dominant category.

AI glasses

The current entry point for face-worn computing is AI glasses, and these are forecast to experience strong early growth, especially in Western markets. These devices, exemplified by Meta Ray-Ban Glasses and expected Android/Gemini-powered competitors, will appeal to users interested in hands-free access to AI assistants, music, voice interaction, photography, and real-time information retrieval. Their simplicity and lightweight form factor are key strengths, especially as wearers acclimatize to face-worn technology. Adoption will be supported by continued improvements in conversational AI and agentic behaviors, which will make these glasses useful in daily life. However, their functionality will eventually be outpaced by that of AR and MR glasses, which will integrate similar assistant capabilities with richer visual outputs. As a result, sales of AI glasses are expected to peak in the early 2030s then begin a gradual decline as users transition to more advanced formats.

AR glasses

Though they have long existed in the market, AR glasses have struggled to move beyond niche enterprise deployments. The next generation of AR glasses, offering a minimal heads-up display for glanceable information, messaging, and navigation, is expected to see early signs of consumer traction from the end of 2025 onward. Growth will also be bolstered by Google's Android XR platform, which aims to support OEMs in bringing a broader range of AR glasses to market. However, AR glasses will always remain somewhat limited by their lack of immersive or spatial capabilities. Though strong sales are expected through the mid-2030s, growth will taper as many users opt for more capable MR glasses once price and performance barriers come down.

Key factors affecting XR adoption over the next 20 years

A range of broader market forces, including technological, behavioral, and structural factors, will play a critical role in shaping how, where, and when XR becomes part of mainstream digital life (see **Figure 4**). Each of these factors presents both tailwinds and headwinds: opportunities to accelerate adoption and

challenges that could stall or constrain it. This section outlines five such factors that Omdia believes will be particularly influential over the next 20 years.

Figure 4: Five key factors affecting XR adoption over the next two decades

	DRIVERS	INHIBITORS
Generative/agentive AI	Hands-free AI access increases appeal of smart glasses	AI usage spreads across many non-XR devices
See-through display and wearable tech advances	Miniaturized, lighter tech improves comfort and usability	High costs and form-factor limitations persist
Social norms and consumer behavior	Glasses gain acceptance, with head-worn cameras now broadly tolerated	Privacy concerns and behavioral inertia limit uptake
Connectivity infrastructure	Better fixed and cellular speeds enable cloud offloading and streaming	Patchy infrastructure, high data costs, regional disparities, spectrum scarcity
Ecosystem development	Increased investment fuels content and platform expansion	Heavy platform investment required, fragmentation, platform control risks

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Source: Omdia

Generative and agentive AI will have a profound impact on the trajectory of XR adoption

As conversational assistants become more intelligent, personalized, and embedded into daily routines, consumer demand for more seamless, always-on access will rise. XR wearables, especially glasses, will emerge as a compelling interface to meet this need, offering a hands-free and context-aware way to interact with AI agents on the move. However, the very ubiquity of AI could undermine this opportunity. If access to intelligent assistants becomes frictionless across a wide range of existing devices, such as smartphones, earbuds, or smartwatches, the value proposition for dedicated XR hardware could diminish. XR devices will have a lot to prove: they must demonstrate that their form factor offers such distinct utility that it justifies their cost and behavioral change.

Advances in see-through displays and other wearable technologies will unlock the mass-market potential of XR

Progress in areas such as lightweight optics, compact power systems, spatial audio, and thermal efficiency are steadily improving the viability of head-worn devices that are comfortable for extended usage. Miniaturization will be key to making MR glasses viable, as will the integration of high-performance components without sacrificing ergonomics. However, despite these advances, fundamental limitations remain. VR headsets, for instance, already offer strong graphical fidelity but are still hindered by bulk, battery life, and heat management. Transferring or replicating that performance in a glasses-sized form factor will be far more challenging. These high-performance components also come at a steep cost, making cutting-edge XR devices prohibitively expensive for many during the forecast period.

Shifts in social norms and consumer behavior will be equally decisive

A decade ago, early AR efforts such as Google Glass were met with significant cultural resistance, particularly arising from privacy concerns around head-worn cameras. Today, the growing acceptance of wearables, fueled by the proliferation of camera-equipped smartphones and the absence of any meaningful

public backlash to products such as Ray-Ban Meta Glasses, suggests that attitudes are shifting, and wearing smart glasses in public is less stigmatized. Nonetheless, widespread adoption still requires a major behavioral leap, especially for those who do not already wear glasses. Face-worn technology introduces new social dynamics, and concerns around surveillance, data capture, and social etiquette will persist. Price sensitivity will also be a barrier: many consumers may not see sufficient value in XR glasses to justify the premium, especially in areas outside leading markets where disposable income for such tech will remain limited.

Connectivity infrastructure will play a foundational role in shaping the XR experience

As wireless standards evolve, be it Bluetooth, Wi-Fi, or cellular networks, XR devices will be able to offload more processing, access richer content, and support real-time interactions. Cellular technologies such as 5G and, in future, 6G could be particularly impactful, reducing device weight by shifting compute to the cloud while maintaining low latency. However, these benefits depend heavily on the reliability, coverage, and affordability of advanced networks. The rollout of 5G has been uneven, and rural and emerging markets are lagging significantly behind. Moreover, cellular-enabled XR devices may face higher cost structures and complex carrier partnerships, which could slow adoption. Network congestion, inconsistent latency, and patchy access to high-speed data will undermine the viability of cloud-reliant XR experiences in many parts of the world, at least in the short to medium term, particularly where network capacity or spectrum availability remains constrained.

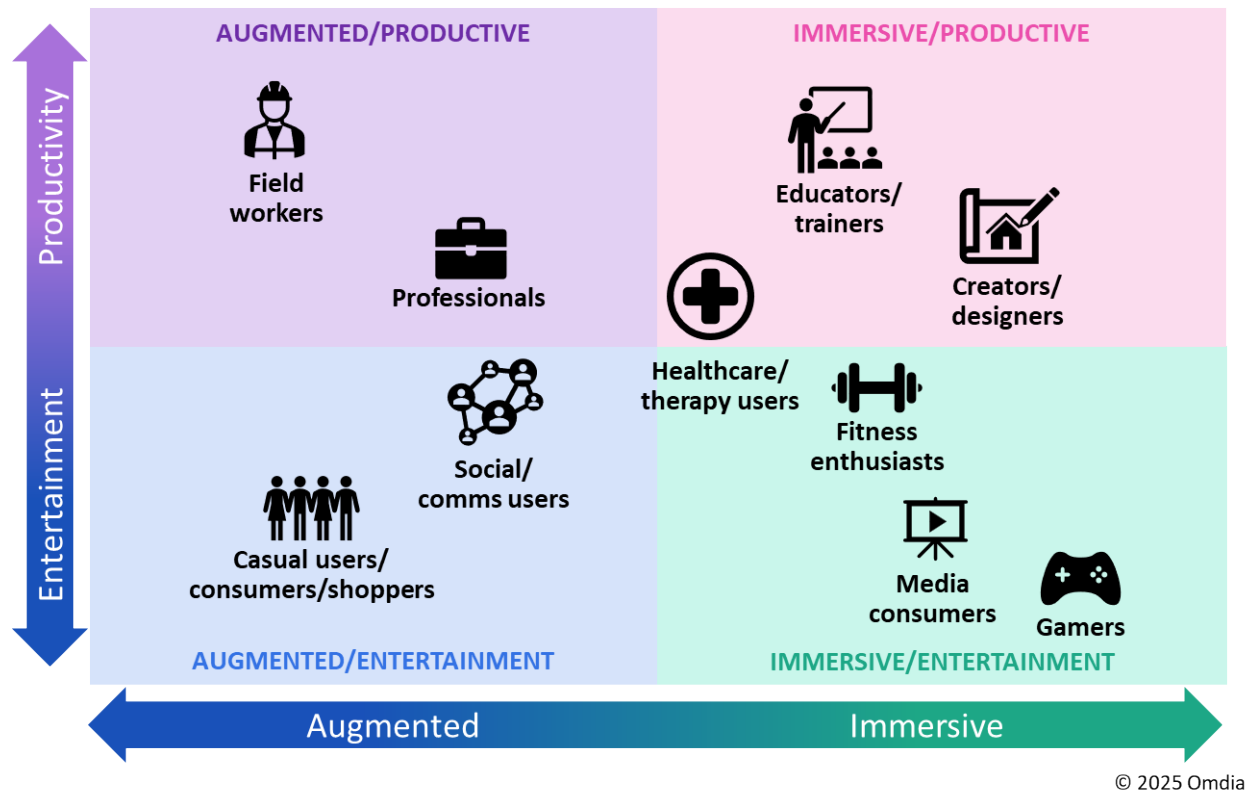
Ecosystem development will determine whether XR becomes a sustainable platform or remains fragmented

As part of its long-term commitment to the category, Meta has led the way in building a comprehensive XR ecosystem, despite having incurred over \$60bn in Reality Labs losses since 2020. Google's renewed engagement with Android XR is a sign that others may follow. Still, high barriers to entry and unclear monetization models may make other players hesitant to invest heavily. A critical unknown is how open the future XR platform(s) will be. More open ecosystems such as Windows have enabled greater competition and developer innovation, but mobile has trended toward closed, vertically integrated platforms, though this appears to be slowly shifting as market forces and regulatory scrutiny drive change. If XR follows the latter path, dominated by one or two major players, innovation may be stifled and consumer choice limited. Building a vibrant, competitive ecosystem—open enough to foster broad participation but curated enough to ensure quality—will be one of the biggest challenges for XR.

XR adopter profiles and user archetypes: Needs, behaviors, and connectivity

The diverse and evolving use cases for XR devices necessitate a more granular understanding of how different types of users engage with the technology. XR is not a one-size-fits-all solution; rather, adoption patterns will be shaped by varying demands around form factor, immersion, productivity, and connectivity. To capture this complexity, Omdia has identified 10 user archetypes and mapped them across a two-axis matrix (see **Figure 5**), reflecting their orientation toward productivity versus entertainment, and immersive versus augmented experiences.

Figure 5: XR adopter archetypes and their needs and use cases



Source: Omdia

Augmented/entertainment

This quadrant is defined by casual, everyday users engaging with XR in lightweight, ambient ways. *Casual users*, including consumers and shoppers, gravitate toward smart glasses for straightforward functionality such as camera capture, real-time navigation, and access to AI assistants. Their needs are centered on convenience, comfort, and discretion; XR here serves as an extension of the smartphone, not a replacement for it. A growing subset of these users will adopt AR for shopping-related tasks, such as virtual try-ons or showrooming, especially as retailers invest in spatial commerce. *Social and communication-driven users* also fall into this group. For them, XR's appeal lies in its potential to enhance presence and connection, whether through avatar-based meetups, spatial messaging, or AR-enhanced calls, with less focus on realism/graphical fidelity. In both cases, low friction and affordability are essential: devices must be easy to adopt and socially acceptable to wear in public settings.

Augmented/productivity

These users approach XR as a practical tool to improve their workflow, often in job-critical scenarios. *Field workers* in construction, logistics, or utilities benefit from AR glasses that support hands-free access to schematics, live instructions, or remote guidance. Their usage demands rugged hardware, robust connectivity, and tight integration with enterprise platforms. Immersion is deliberately limited: maintaining environmental awareness is a safety requirement, not a preference. *Professional users* similarly seek utility, though often in office or studio settings. Architects, designers, or engineers might rely on MR headsets for onsite spatial visualization, multitasking, or collaborative review. For them, XR is a productivity enhancer rather than a novelty, so seamless interaction, ergonomic design, and compatibility with existing software ecosystems are paramount.

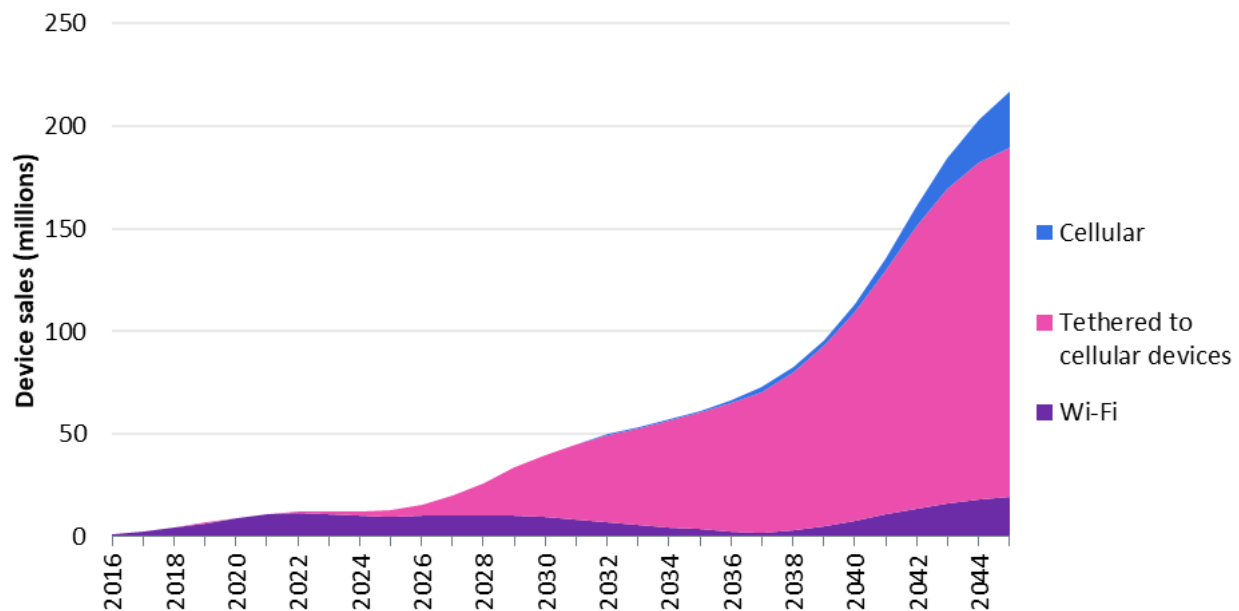
Immersive/entertainment

This quadrant encompasses users who engage with XR primarily for entertainment, wellness, and sensory immersion. *Gamers* are the most established segment, demanding high-performance hardware, expansive content ecosystems, and low-latency experiences. Their commitment to XR is tied directly to content quality and platform support. *Media consumers*, by contrast, favor passive experiences: watching immersive films, concerts, or live sports events in virtual settings. For them, comfort, display quality, and battery life matter more than complex interactivity. *Fitness enthusiasts* also belong here, using XR for gamified workouts that are engaging but session based. Their needs are specific: accurate body tracking, safety, and content that motivates consistent use. These users are highly engaged, but their immersion tends to be bounded: XR is a context-specific experience, not a constant companion.

Immersive/productivity

This final group consists of users who depend on XR for deep engagement with complex tasks, learning, or healthcare. *Creators and designers* demand immersive tools for 3D modeling, virtual prototyping, and creative expression. They require precision, graphical fidelity, and compatibility with professional-grade workflows. *Educators and trainers*, meanwhile, use XR to simulate environments that support experiential learning, whether in classroom teaching or corporate onboarding. These use cases prioritize reliable content delivery, ease of deployment, and learner engagement. *Healthcare and therapy users* adopt XR for highly targeted applications such as mental health interventions, guided physiotherapy, or clinical training. Devices in this space must meet higher standards of comfort, usability, and reliability and are often tailored to medical protocols. Across all three, the common thread is that immersion serves a functional, outcome-driven purpose, making XR a high-value tool rather than a discretionary experience.

Figure 6 : Global XR device annual sales by primary form of connectivity, 2016–45



Note: "Tethered" includes devices that connect wirelessly to a cellular-enabled companion such as a smartphone, wearable, or portable hotspot.

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Source: Omdia

The XR adopter profiles framework helps to clarify where demand is emerging and how product strategies must diverge to meet the expectations of these distinct segments. Connectivity requirements also vary significantly across these profiles. While today's MR headsets are largely static and Wi-Fi dependent, AI

glasses are mostly used in mobile contexts, tethered to smartphones. Looking ahead, XR devices reliant on cellular connectivity are forecast to grow rapidly (see **Figure 6**).

In 2035, 92% of XR devices are expected to rely on tethering to cellular-connected companions, such as smartphones or wearables, while only 2% will feature direct cellular connectivity; mostly limited to specialist enterprise use cases. However, by 2045, 13% of XR devices sold could feature built-in cellular capabilities, signaling a long-term shift toward self-contained, mobile XR experiences that do not depend on secondary devices for connectivity.

Each of the aforementioned profiles has distinct needs and constraints, reflecting the breadth of XR's potential beyond any single device or use case. For device manufacturers and platform builders, recognizing these archetypes is essential in guiding hardware design, software compatibility, and market positioning. Content creators and application developers likewise need to align experiences with the specific behaviors and priorities of their intended users. As the XR landscape matures, success will hinge on how well the ecosystem can accommodate this diversity, not by chasing a universal solution but by addressing the nuanced demands of each adopter group. By doing so, XR has the potential to evolve from early experimentation to widespread, meaningful adoption across consumer and enterprise domains alike.

Appendix

Further reading

[*Consumer VR Headset and Content Revenue Forecast*](#) (December 2024)

[*Consumer VR Headset and Content Revenue Forecast Report: 2024–29*](#) (February 2025)

[*Consumer VR: Assessing key players and market developments in 2024*](#) (July 2024)

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