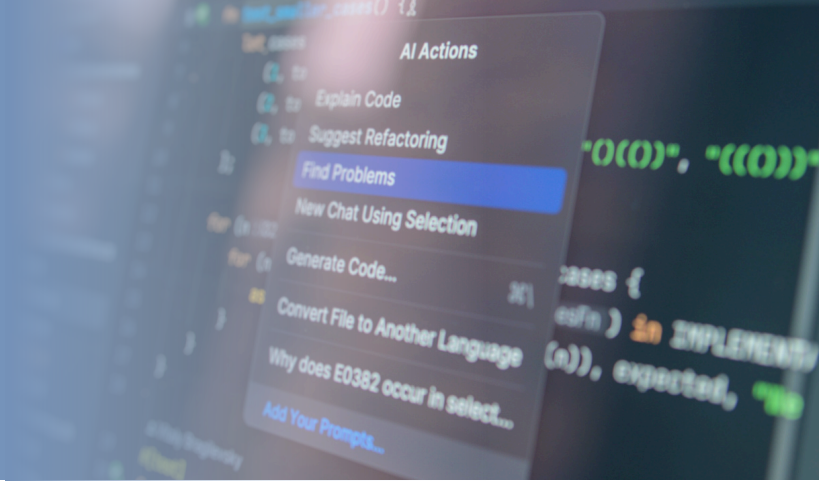
XR ASSOCIATION

# AGENTIC VS. GENERATIVE AI WITH XR




## WHAT IS GENERATIVE AI?

Generative AI is artificial intelligence that, when prompted by the user in a chat window, can generate brand-new content such as text, audio, code, video, and images using techniques drawn from inputs, training datasets, or external repositories. Generative AI excels at content creation, pattern recognition, and information synthesis based on user-driven prompts, offering new ways to express pre-existing information in human-like language. Leading examples include OpenAI's ChatGPT, Microsoft Copilot, and Character.AI.

## WHAT IS AGENTIC AI?

Agentic AI represents a paradigm shift from static generation to autonomous execution. These are advanced AI systems designed to undertake sets of complex, multi-step tasks over extended periods of time without continuous human supervision. Rather than just responding to ephemeral, session-by-session prompts, Agentic AI exhibits a degree of rationalism—learning context, modifying its functionalities based on environmental changes, and making real-time decisions to handle unexpected situations. Leading industry examples include adaptive smart home software like Apple HomeKit, autonomous recruiting via LinkedIn Hiring Assistant, and real-time automotive assistants like Mercedes-Benz MBUX Virtual Assistant.

## HOW ARE AI PARADIGMS AND XR INTERCONNECTED?

XR (extended reality) technology provides the immersive interface and spatial data, while Generative and Agentic AI provide the underlying intelligence layer. Together, they advance spatial computing beyond visualization and interaction, transforming it into an intelligent, adaptive partner.

### XR & Generative AI

Eliminate traditional digital production bottlenecks by allowing users to instantly build photorealistic 3D models, textures, and synthetic virtual environments in real-time using natural language prompts or 2D guiding images. Tools like Spline AI 3D Generation allow 3D creators and spatial designers to generate full 3D assets and environments instantly via text prompts.

### XR & Agentic AI

Convert immersive spaces into actionable environments. An agent embedded within XR can map a physical space, read user workflows, anticipate operational needs, and autonomously execute background administrative or technical tasks without needing explicit user commands. Spatial digital twin orchestration platforms like Siemens & NVIDIA Omniverse Cloud integrate autonomous AI agents into headsets to execute background factory flows.

## ADVANTAGES OF NEXT-GENERATION AI IN XR



**Enhanced Autonomy**
By moving past static, prompt-dependent guidelines, agentic workflows allow spatial systems to adapt to unexpected environmental shifts independently, minimizing the need for constant human intervention.



**Hyper-Personalization**
Next-generation AI models can analyze user preferences, biometrics, and behaviors over time, dynamically altering the appearance, tone, and pacing of an XR experience to match individual needs.



**Operational Optimization**
The convergence of spatial data and autonomous execution allows organizations to transition from reactive problem-solving to predictive orchestration, running persistent background simulations to streamline complex tasks.

## HOW GENERATIVE AND AGENTIC AI ARE SUPPORTING KEY INDUSTRIES



**Automotive and Transportation**
AI and XR are revolutionizing how vehicles are designed, tested, and driven. In development, Generative AI tools like NVIDIA Drive Sim allows designers to rapidly mock up interior concepts and test virtual dashboards in VR. On the road, Agentic AI systems, such as Google Gemini for Android Automotive and Mercedes-Benz MBUX Virtual Assistant, analyze environmental factors to make predictive routing choices and real-time driving decisions without user input, enhancing cabin safety and autonomy.



**Education and Workforce Training**
The pairing of AI and XR enables hyper-personalized, immersive learning. While Generative AI assists educators by instantly producing tailored lesson materials, quizzes, and "EdGPT" subject-matter scenarios - as outlined in UNESCO's Guidance for Gen AI in Education - Agentic AI functions as a persistent virtual tutor embedded within a training headset, drawing on research like IEEE's Affective Computing & Adaptive VR Tutoring to recognize student emotion or cognitive fatigue and automatically modify the teaching style and pace.



**Finance and Business Operations**
Enterprise operations are becoming increasingly frictionless. Financial institutions leverage enterprise solutions like Salesforce Agentforce and VR onboarding programs to automate customer service and train employees in high-stakes compliance scenarios. Additionally, platforms like Klarna Autonomous AI Agent run autonomous customer dispute resolution, financial tracking, and back-office task handling.



**Healthcare and Life Sciences**
From the research lab to the clinic, advanced AI improves patient outcomes. Generative AI accelerates drug discovery by modeling molecular structures and creates realistic, immersive virtual scenarios for medical training. Google DeepMind AlphaFold models 3D structures to accelerate target discovery, paired with VR surgical simulation suites like Osso VR. Platforms highlighting Closed-Loop Agentic AI in Drug Discovery and autonomous research systems like ChemCrow autonomously plan, synthesize, and execute laboratory experiments.

## ABOUT THE XR ASSOCIATION

The XR Association promotes the dynamic growth of the XR industry. We convene and educate policymakers, thought leaders, researchers, developers, civil society, and the public on XR's infinite potential and serve as the premiere resource for anyone interested in learning about the applications of immersive technologies. Our member companies are united in our mission to champion the responsible development and thoughtful advancement of XR solutions that foster positive societal outcomes.