VIRTUAL AND AUGMENTED REALITY

Emerging Technologies for Knowledge Management

Virtual reality (VR) is technology that superimposes computer-generated visual elements (sometimes accompanied by audio and other types of sensory feedback) on the user's environment. VR replaces the user's entire real-world environment with a complete virtual environment. Augmented reality (AR) adds virtual elements while still preserving some view of the real-world environment. As such, augmented reality is sometimes called "mixed reality" or "computer-mediated reality."

Enterprise applications of VR and AR technology are growing, especially as the tools to create and consume this content become more accessible and affordable. Organizations can use VR and AR to prototype and demo products, model processes, give a human feel to chatbots and other virtual tools, perform scenario analysis, and provide immersive training experiences for employees.

> **About This Research**
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> Based on in-depth interviews with more than 20 knowledge management practitioners and thought leaders, APQC's *Emerging Technologies for Knowledge Management* series examines leading-edge technologies, their potential implications for KM, implementation factors, and how organizations use them.

WHY VR AND AR MATTER FOR KM

KM teams can use VR to provide engaging and responsive learning environments. For example, the KM team at architecture and design firm Shepley Bulfinch uses VR to teach junior architects about state code requirements. Instead of memorizing codes and diagrams on paper, employees can explore a virtual environment to see what the codes look like in practice and then test their knowledge of the correct measurements in another VR environment.

Smartglasses and similar wearables can also deliver knowledge to employees in the flow of their work. For example, the system can superimpose relevant best practices and how-to instructions on a user's field of vision based on what they're looking at and working on. When combined with voice-activated search, the wearable can respond to an employee's question even when their hands are occupied.

IMPLEMENTATION FACTORS

Some virtual or augmented reality applications use special hardware—such as smartglasses, head-mounted displays, optical tracking sensors, and even full-body haptic suits—to achieve a

fully immersive experience. However, the effect can also be achieved by using a consumer-grade handheld device (such as a smartphone or tablet) with GPS and/or gyroscope for video see-through. Then, the user can hold the device and scan the environment or mount the device in a headset accessory (e.g., Samsung Gear).

Tools used to build virtual and augmented reality environments include spherical cameras, drones, video-stiching software, and 3D modeling software. Fortunately, there are low-cost options for hardware and no-cost, open-source options for software.

HOW ORGANIZATIONS USE VR AND AR FOR KM


PROFESSIONAL SERVICES

One **professional services** firm is using VR to add a human face to chatbots that facilitate enterprise search and discovery. It is working to develop holographic "experts" that can provide expertise to project teams or deliver one-on-one training to novices. This tool is in the early stages of development.

Another professional services firm is using VR in client projects. For example, it created a VR oil rig that its customer uses to train employees. For an insurance customer, the firm replaced hundreds of pages of product documentation with an interactive, VR product demonstration environment. These types of VR interfaces represent new ways to aggregate, package, and deliver organizational knowledge.

PETROLEUM/ CHEMICAL

A **petroleum** company is using virtual reality to simulate field-based training. A virtual environment allows employees to experience failure safely.

GOVERNMENT/ MILITARY
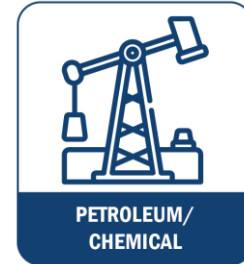
A **government** agency is exploring the use of augmented reality to walk employees through case studies and risk assessments. It is also using 3D imaging to create interactive maps that help employees explore vast amounts of information and find what they are looking for.

ABOUT APQC

APQC helps organizations work smarter, faster, and with greater confidence. It is the world's foremost authority in benchmarking, best practices, process and performance improvement, and knowledge management. APQC's unique structure as a member-based nonprofit makes it a differentiator in the marketplace. APQC partners with more than 500 member organizations worldwide in all industries. With more than 40 years of experience, APQC remains the world's leader in transforming organizations. Visit us at www.apqc.org, and learn how you can make best practices your practices.