Augmented and Virtual Reality in the Digital Workplace: Top Use Cases

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Initiatives:Product Development

Companies are increasingly experimenting with immersive technologies, but real deployments are few, and projects can be expensive and complex to deliver. Technology product managers need to be selective and focus on prominent use cases to maximize returns.

More on This Topic

This is part of an in-depth collection of research. See the collection:

- How to Strengthen Your Digital Workplace Program to Sustain Digital Transformation

Overview

Key Findings

- Immersive technologies (AR, VR and MR) are being evaluated and deployed by an increasing number of companies. Nineteen percent of respondents from Gartner's CIO survey have already deployed or are planning to do so in the next 12 months, while 40% of respondents from a Gartner webinar targeting midsize enterprises are evaluating these technologies.
- The current top immersive use cases are remote field services, training and simulation, product design and visualization, AR commerce, and immersive entertainment (360-degree video and museums/cultural events), requiring prioritization in immersive solution development.
- The top three current obstacles for businesses to deploy immersive experiences are the complexity of creating content, lack of maturity for technology and HMD devices, and cost.

Recommendations

Technology product managers involved in product development of immersive solutions with a focus on prioritizing investments must take these steps:

- Be very selective in immersive solution investments by starting small and working to the expectation that ROI will likely take more than two years.
- Evaluate Gartner's top five use cases for immersive technologies and prioritize your focus by selecting one to two use cases applicable within your client base for the next 12 months.

- Work with an internal development team to improve 3D design in the next six months by developing multimodal interactions, such as haptics, motion and gesture recognition, and controller input, where applicable, to facilitate natural human interaction within a 3D environment.

Strategic Planning Assumptions

By 2022, 70% of enterprises will be experimenting with immersive technologies, and 25% will have deployed them to production, up from less than 5% in both cases in 2018.

By 2023, well-defined digital business outcomes will drive 40% of investments in immersive technologies and enabling devices, up from less than 5% in 2018.

Analysis

This document contextualizes for technology product managers developing immersive solutions the insights and action items found in "Augmented and Virtual Reality in the Digital Workplace: Top 5 Use Cases for Tech CEOs."

Introduction

The ongoing blending of physical and digital worlds changes the way that users interact with technology in the workplace and in their lives. Immersive technologies, such as augmented reality (AR), virtual reality (VR) and mixed reality (MR), will provide a more natural and immersive ambient experience within the digital world. Therefore, a growing number of companies are experimenting with AR/VR/MR, but real deployments are few, and associated projects could be expensive and complex to deliver. This is because immersive technologies and immersive experiences are still very immature.

Technology product managers need to be selective and targeted in their product investments to survive in immersive markets that will continue to mature in the next three to five years. This requires a clear vision as to "who is my customer" and targeted use cases. In this document, we will analyze interest in immersive technologies among business users and provide recommendations to technology product managers offering immersive products and solutions.

Interest in Immersive Technologies Is High

Immersive technologies have been included as some of the most impactful technologies in Gartner's top 10 strategic technologies for the last three years (for the latest report, see "Top 10 Strategic Technology Trends for 2019"). Based on the 2019 Gartner CIO Survey, [1] 10% of respondents have already deployed an immersive experience in their workplace, while another 9% were planning to do so within the next 12 months.

Small and midsize businesses (SMBs) don't want to be left behind: 40% of respondents to our midsize-enterprise webinar survey are evaluating and piloting AR/VR, and another 18% are planning to start evaluations in the next six to 12 months. [2]

Those projects and pilots are aimed at understanding the right bets concerning digital business transformation, internal process optimization and enabling a digital workforce by transforming employee workflow.

While interest, excitement and hype are high, all three technologies are still two to five years (and even longer for MR) from the mainstream adoption phase on the Gartner Hype Cycle (see "Hype Cycle for Mobile Device Technologies, 2018"). The primary use cases that organizations are experimenting with involve field services/remote workers, manufacturing, logistics and warehousing, training, product and design visualization, and support of front-line workers via delivering hands-free information, as well as enhancing customer experience. Only by discovering real-life scenarios can technology product managers deliver immersive solutions that drive tangible business benefits with these technologies.

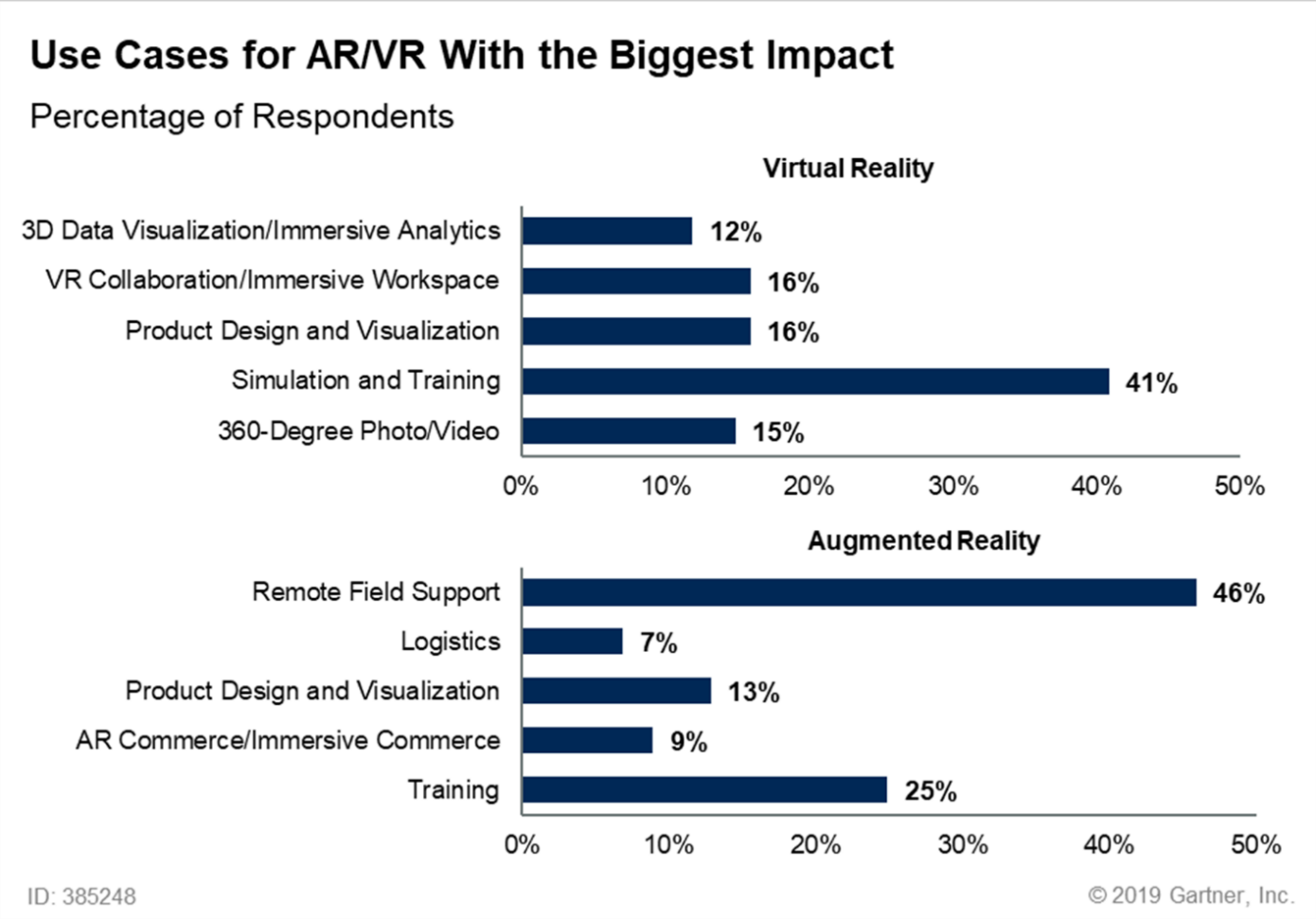
Top Five Use Cases for AR/VR

While many companies are evaluating immersive experience, production deployment is still limited. However, some use cases can demonstrate visible benefits linked with digital business initiatives and operational improvements. Gartner has identified five AR/VR use cases that exhibit enough maturity for serious consideration by technology product managers of immersive products and solutions:

- Remote field support
- Training
- Product design and visualization
- AR commerce (retail)
- Immersive entertainment (360-degree video and museums/cultural events)

These five immersive use cases require prioritization in immersive solution development. This use case selection is closely supported by Gartner webinar results from August 2018. [2] As shown in Figure 1, the top two use cases with the biggest impact for AR were remote field support and training. Meanwhile, for VR, the top use case was simulation and training, while product design and visualization tied for second.

Figure 1. Use Cases for AR/VR With the Biggest Impact



Source: Gartner (March 2019)

In the context of digital business initiatives, business buyers currently prefer piloting smaller, iterative projects, where the end products can be tested often as minimum viable products (MVPs), rather than planning large-scale projects with excessive failure costs. Therefore, technology product managers need to be prepared that customer acquisition will take longer than usual and upfront investments will be required, possibly without ROI for two to three years.

Additionally, many new deployments are highly customized, so it is not easy to replicate them to another customer. Currently, the top five most mature use cases can be fulfilled via various immersive technologies, as technology selection is closely linked with a specific business objective, workspace and cost. Table 1 contains various examples of AR, VR and MR proofs of concept (POCs) and deployments linked to the top five use cases.

Table 1: Use Cases and Examples for AR/VR/MR in the Workplace

Use Case	Type of Immersive Technology	Customer	Technology Solution Provider	Business Objective	Solution Descriptio

Use Case	Type of Immersive Technology	Customer	Technology Solution Provider	Business Objective	Solution Descriptio
Training	AR	GE Aviation	Upskill	GE Aviation wanted to reduced errors linked to building engines and thus improve operational efficiency.	Upskill's solution connected smart torq perfect all t steps in building a j engine tha require tightening nuts.
	VR	ExxonMobil	EON Reality	ExxonMobil wanted to leverage new immersive technology to ensure workers are well-prepared with the skills and knowledge necessary to work safely in an unforgiving environment.	Using Immersive Training Environme (I3TE) technology allows the trainee to "learn by doing," thu increasing understan and knowl retention.

Use Case	Type of Immersive Technology	Customer	Technology Solution Provider	Business Objective	Solution Descriptio
Product Design and Visualization	MR	Ford Motor	Theorem Solutions	Ford wanted to reduce the time for the design of new cars, trucks and SUVs and improve collaboration across designers in different locations.	The solutic allowed designers t reduce the cognitive g between 3I models on screen and real life an the change top of an existing physical vehicle, ins of the traditional model approach t car design.
	AR	Vodafone	PTC	Vodafone required help in the development of new Vodafone Internet of Things (IoT) applications to drive device connectivity.	PTC's ThingWorx platform includes ra application enablemen functionali device manageme machine learning capabilities AR. Once a company connects it devices, ThingWorx deliver real insights by solutions t use AR.

Use Case	Type of Immersive Technology	Customer	Technology Solution Provider	Business Objective	Solution Descriptio
Remote Field Support	AR	Caterpillar	Scope AR	Caterpillar wanted a way of getting technicians away from the computer in their service trucks and giving them the information as they performed their tasks.	Scope AR's solution ga virtual step step direct on how to perform ta such as machine maintenan and safety checks.
	AR	Coca-Cola	Pristine (now a part of Upskill)	Coca-Cola saw the opportunity for technicians to use AR to access maintenance and service information within their line of sight, while keeping their hands free.	Pristine's solution all technician wearing AR glasses to stream, in time, what see and he a subject matter exp watching c computer screen fror anywhere i the world.

Use Case	Type of Immersive Technology	Customer	Technology Solution Provider	Business Objective	Solution Descriptio
Retail	AR	New Look	Engine Creative	U.K. fast-fashion retailer New Look wanted to find new ways to engage with its superconnected, always-mobile young target audience.	Engine Cre created a r of AR experience using an A platform (Reality En to bridge th gap betwe the real an digital wor of the your target audience.
	AR	IKEA	SPACE10	IKEA wanted to move away from paper catalogs and allow customers to better visualize new furniture in the home, reducing purchase time and product returns.	The Place a lets users c virtual furn into their o homes anc view it thro a smartph camera.
Museums	AR, VR	Aquarium of Genoa, Italy	ETT	The aquarium wanted to use immersive technology to provide a more engaging visitor experience and thus increase visitors.	ETT develo a mobile ap with virtua trails, the Abyss VR r for deep-se exploratior virtual aquariums where chilc can create own specie fish.

Use Case	Type of Immersive Technology	Customer	Technology Solution Provider	Business Objective	Solution Descriptio
	MR	Kyoto National Museum	hakuhodo-VRAR	The museum wanted to create a new and exciting way for visitors to understand and appreciate Japanese treasures.	The 10-mir experience provides a dynamic, holographi narrative tl helps temp visitors bet understan Tawaraya Sotatsu's v for the Fol Screen of F and Raijin.
	VR	National Museum of Natural History, France	HTC	The museum is dedicating a permanent room to VR, comprising several different experiences, with a different program for each session. It will be updated based on the museum's events.	The VR roo include five stations to offer uniqu experience which VR becomes a educationa tool to pro scientific knowledge combining emotion w discovery.

Source: Gartner (March 2019)

Recommendations:

- Be very selective in immersive solution investments by starting small and working to the expectation that ROI will likely take more than two years.
- Keep in mind that this market needs significant business and use-case development. Engage with sales teams to develop a compelling strategy of POCs, which is essential to convert a client's interest in immersive technologies into an actual deployments.
- Evaluate the current top use cases for immersive technologies. Prioritize one to two for the next 12 months by reviewing your company's strategic focus, in-house expertise and/or current

clients' use-case priorities.

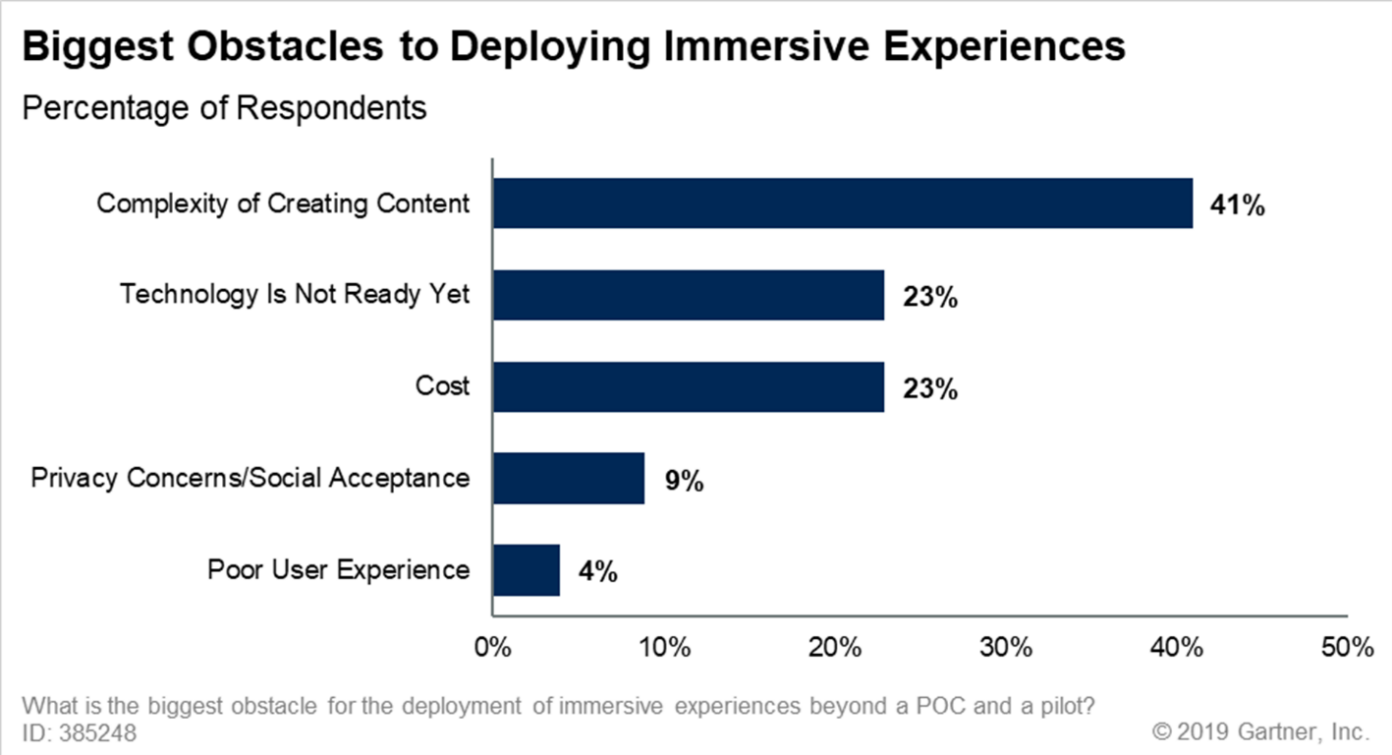
- Engage with sales and marketing teams to develop pilot projects with customers through identifying what immersive technology (AR/VR or MR) and what devices (e.g., smartglasses, head-mounted displays [HMDs] or tablets) can:
  - Help support digital business transformation
  - Improve existing processes
  - Provide a more engaging way to complete tasks such as remote field worker support, employee training, and product design and maintenance

Complex Content, Immature Technology and Cost Are the Key Inhibitors to Adoption

While the potential and opportunities of immersive technologies look very impressive, there are still challenges ahead. The VR ecosystem still lacks maturity and control, while AR is mostly delivered via smartphones/tablets. Gartner expects that AR and MR HMDs will go through several rounds of device upgrades before an enterprise-viable product is available, thus restricting immersive experiences and the appeal of technology through the next 12 months. The top three current obstacles for deploying immersive experiences beyond POCs and pilots are the complexity of creating content, lack of maturity for technology and HMD devices, and cost (see Figure 2).

Complexity of content creation is the biggest obstacle, as developers must shift from 2D experiences to 3D. Immersive experiences, such as AR and VR, require developers to use current and upcoming technology differently from how it was applied to 2D interfaces, as well as continually adapting to changing device capabilities. Also, the availability of tools for 3D content creation is limited. These tools are designed for very specific experiences, and so each 3D development/creation tends to be highly customized, thus limiting the ease of leveraging investments into new projects or POCs.

Figure 2. Biggest Obstacles to Deploying Immersive Experiences



Source: Gartner (March 2019)

Recommendations:

- Work with an internal development team to improve 3D design in the next six months by developing multimodal interactions, such as haptics, motion and gesture recognition, and controller input, where applicable, to facilitate natural human interaction within a 3D environment.
- Minimize the investment risk in new devices, wearables and immersive experiences by making several “small bets” with short-term returns, running pilots/POCs and reviewing their outcome every six months.
- Be prepared for ongoing fast evolution in devices supporting immersive experience. Minimize investment risks by finding ways to support multiple mobile devices and HMDs, and by quickly adapting your solutions to the latest product versions.

Evidence

[1] **The 2019 Gartner CIO Survey**

The 2019 Gartner CIO Survey was conducted online from 17 April through 22 June 2018 among Gartner Executive Programs members and other CIOs. Qualified respondents were the most senior IT leader (CIO) for their overall organization or a part of their organization (for example, a business unit or region). The total sample was 3,102, with representation from all geographies and industry

sectors (public and private). A team of Gartner analysts collaboratively developed the survey, and it was reviewed, tested and administered by Gartner's Research Data and Analytics team.

[2] **Immersive Technology Webinar**

Gartner's immersive technology webinar for midsize enterprises ("Midsize Enterprises: Get Started With AR, MR, and VR Experiences") was conducted on 30 August 2018 and was attended by 93 people. Although the webinar was targeted to midsize enterprises, attendees were from enterprises of all sizes. Five polling questions were asked during the webinar.

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Differentiate a Driver Assistance System With Evolving Autonomous Driving Technologies