

# Top Trends Driving Enterprise Mobility for 2022

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Initiatives: [Digital Workplace Infrastructure and Operations](#)

The shift to more remote work in the wake of the pandemic has led organizations to move mobile investments to new use cases. This research helps I&O leaders prioritize mobile technologies most likely to impact their organizations, including 5G, workplace analytics, and virtual and mixed reality.

## Overview

### Opportunities

- A virtual remote workforce demands an I&O strategy that empowers every worker to maintain a consistent level of productivity, regardless of location.
- IT must co-innovate with the other constituencies, such as HR and lines of business, to use workplace analytics to measure and improve teamwork and overall performance.
- Augmented reality (AR) and, to a lesser extent, virtual reality (VR) and mixed reality (MR) can quickly move from concept to pilot to production and maintain competitive business advantage.

### Recommendations

Infrastructure and operations (I&O) leaders focused on digital workplace infrastructure and operations must:

- Integrate mobile requirements into the organization's key strategic initiatives by forming a digital workplace I&O team that is responsible for endpoints, productivity suites and collaboration software supporting all aspects of in-office, remote hybrid and mobile work styles.
- Improve IT performance and business efficiency by combining analytics of consolidated data available from workplace infrastructure with conventional metrics.

- Pilot and showcase AR and VR applications by demonstrating their business impact for frontline worker use cases.

## What You Need to Know

For many years, information activities were broken into smaller pieces and the “big screen,” or office monitor, was augmented by the “small screen,” or smartphone and tablet. With the rise of remote working, work started to move back to the big screen and voice calls moved from smartphones and fixed phones to voice over broadband, using integrated voice features in products like Microsoft Teams, Zoom or Webex. In the short term, the lack of mobility required for working from a fixed remote location has reduced the criticality of mobile devices, except to be used as a backup in case of broadband or Wi-Fi problems or for multifactor authentication (MFA) purposes.

As such, organizations are experiencing diminishing ROI from knowledge worker mobilization investments. They are shifting the focus of their mobile strategy to digital enablement of other groups, including frontline workers. For many industries, the pandemic has dramatically increased the importance of mobile app support for the frontline workers such as courier and delivery services.

The technologies presented in this research are not necessarily right for all organizations all the time. They are Gartner’s view of current and emerging technologies that will shape the future of mobility. We have broken down the top trends technologies into three categories, as shown in Table 1.

**Table 1. Top Technologies Defining the Future of Mobility (Click Links to Jump to Profiles)**

Foundational	Incremental	Transformational
<a href="#">Continuous Endpoint Experiences</a> <a href="#">The Move to 5G</a>	<a href="#">Enterprise Mobility Post 2021</a> <a href="#">Visual Intelligence</a> <a href="#">Health, Wellness, Compliance and Safety Technologies</a>	<a href="#">Workplace Analytics</a> <a href="#">Augmented/Virtual/Mixed Reality</a> <a href="#">Frontline Worker Technologies and Wearables</a>

### Foundational Technologies

#### Continuous Endpoint Experiences

[Back to Table 1](#)

*Analysis by Dan Wilson*

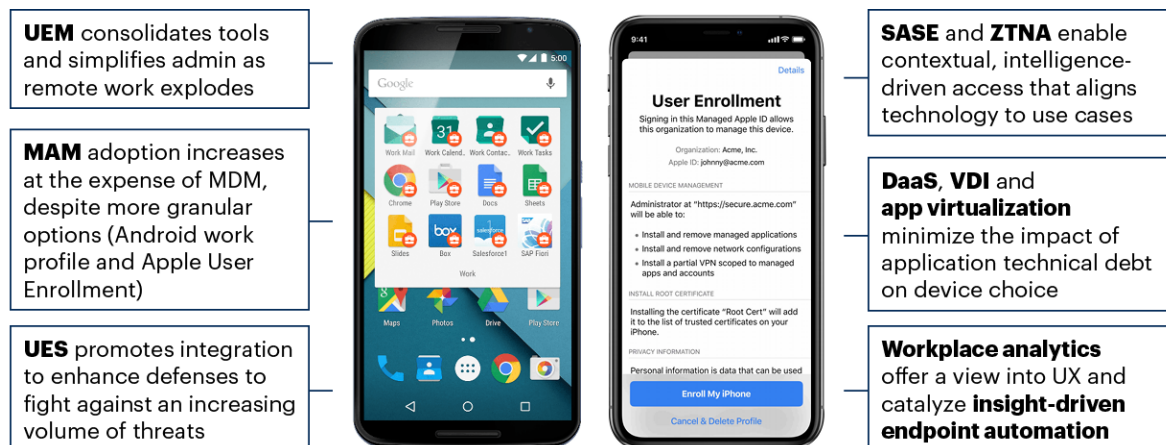
**Description:** Continuous endpoint experiences, also known as modern management, leverage cloud-enabled and intelligence-enhanced OS management. The device is enrolled in a unified endpoint management (UEM) solution that uses native OS APIs.

**Why Trending:** The rise in remote work has made technology the primary vehicle through which employees interact with colleagues, managers, customers and the company overall. <sup>1</sup> This is driving technology's growing impact on the overall employee experience.

**Implications:** Continuous endpoint experiences are anchored by the following technologies (see Figure 1).

**Figure 1. Continuous Endpoint Experiences**

## Continuous Endpoint Experiences



Source: Gartner  
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- UEM consolidates client management tools used to manage PCs with mobile device management (MDM) and mobile application management (MAM) tools. UEM also streamlines the experience of IT administrators, who are facing increasing workloads due to increased remote work and a constant influx of devices and updates.

- Despite more granular device-management options such as Android work profile and Apple User Enrollment, Gartner sees increased use of MAM and a reduction in fully enrolling devices in MDM. This is due primarily to mainstream adoption of SaaS cloud office platforms and IT admins focusing more on protecting data, apps and identity to enable bring your own (BYO) scenarios.
- Desktop as a service (DaaS) technology has matured enough to make cloud-hosted virtualization a reality for some organizations. Locally hosted virtual desktop infrastructure (VDI) and virtual delivery of legacy or latency-sensitive apps also reduce the limitations that technical debt creates for organizations looking to support remote workers and broaden device and operating system choice for employees.
- SaaS-based endpoint management tools are aggregating workplace analytics data to offer greater transparency into the employee experience across the endpoint estate. These tools also are applying machine learning (ML) to their massive datasets to catalyze insight-driven automation.

**Actions:** To improve the employee experience, I&O leaders must build integrated, intelligent architectures for digital workplace technology. Move to zero-touch provisioning by leveraging automation.

#### Further Reading:

[Enhance Digital Workplace Operations With Machine Learning and Automation](#)

[Adapt the IT Operating Model to Deliver Indispensable Digital Workplace Services](#)

#### The Move to 5G

[Back to Table 1](#)

Analysis by Leif-Olof Wallin

**Description:** 5G mobile network technology is the next-generation cellular standard after 4G. The official International Telecommunication Union (ITU) specification, International Mobile Telecommunications-2020, targets:

- Maximum downlink and uplink throughputs of 20 Gbps and 10 Gbps, respectively.
- Latency below 5 ms endpoint to radio access network (RAN).

- Massive scalability (although initial deployments may be less ambitious).

New system architecture includes core network slicing and edge computing.

**Why Trending:** 5G will encompass features aimed at a variety of audiences, including satellite access, unlicensed spectrum, vehicle-to-everything (V2X), mobile communication system for railways (Future Railway Mobile Communication System [FRMCS]) and new frequencies in mid (7GHz or more) and high band. It's also claimed to be less expensive to operate, with the cost of a transferred MB of data expected to drop five to 10 times.

**Implications:** 5G is frequently discussed together with private mobile networks (PMNs) and mobile edge compute, which both capitalize on the low latency in a 5G network and the proximity to processing in an on-premises or public edge facility.

Despite the hype, the introduction of 5G follows a fairly predictable cadence in the evolution of mobile network technology in that a new generation of mobile technology is introduced every decade.

Like previous stages of the GSM evolution, 5G will be introduced in multiple phases, from R15 to at least R19. R15 is about speed (enhanced mobile broadband) and, other than massive video surveillance and high-speed, last-mile access, contains virtually nothing that is important for enterprises. For enterprises, the most impactful features will be introduced in R16 and beyond.

It will take time — several years in most countries — before 5G geographical coverage matches current Long Term Evolution (LTE) coverage. Coverage, technology adoption and build out will vary significantly by country and operator. Australia, Canada, China, Japan, New Zealand, South Korea and the U.S. will be the first countries to reach 5G coverage for 90% of the population in 2023. Most other countries won't reach this level of coverage until 2026 or beyond.

Most operators are still in the process of piloting 5G with early enterprise adopter clients to better understand how 5G can be monetized. More spectrum and higher bandwidth can enable continued data growth in networks and for fixed broadband implementations.

**Actions:** Few technologies have been as hyped as 5G. Enterprises will need to embrace 5G, but there's no need to rush. Existing LTE networks handle almost all known enterprise use cases and will serve you well for a number of years. But 5G will open up new opportunities and organizations should start preparing for them by educating the decision makers about what potential opportunities 5G brings and when to realistically expect them.

## Further Reading:

[Client Question Video: What Do I Need to Know About 5G for the Enterprise?](#)

[Despite the 5G Hype, 3GPP LPWA Is the Emerging Workhorse of IoT Connectivity](#)

[Ask These Four Questions About Enterprise 5G](#)

[Innovation Opportunities Will Be Enabled as 5G Evolves Through 2025](#)

## Incremental Technologies

### Enterprise Mobility Post 2021

[Back to Table 1](#)

*Analysis by Chris Silva*

**Description:** The pandemic prompted a pivot in enterprise mobility to keep businesses operating. Organizations accelerated technology adoption and rollouts of technology strategies that had been in planning stages. This typically included a move to cloud-based services, often in combination with MFA. Essential workers, often frontline workers, increasingly worked alone, and keeping them safe and productive became even more imperative. In many situations, workers got one opportunity to fix a problem. Returning for a follow-up visit or sending someone else to complete the job became unacceptable. Many organizations adopted remote expert guidance (REG) solutions to support their frontline workers in being successful during the first visit.

**Why Trending:** In the new normal, many employees who were sent home to work will not return to the office full time. Organizations are considering how to equip a hybrid and remote workforce as well as how to manage the full life cycle of remote workers, from onboarding to offboarding.

**Implications:** As employees travel less, many organizations are questioning why they should pay for business use of employee mobile devices as part of BYO programs or provide corporate mobile devices. But the use of mobile devices as badges to access buildings, for MFA, to reserve office space in a hybrid environment and for voice connectivity challenges/backup in the remote office indicate that employee mobile devices still offer value. In addition, a growing body of legislation codifies how workers must be compensated if they are required to use personal devices or services for work purposes.

Another observation is that laptops have started to “put on weight,” meaning that many organizations have started to buy larger, heavier and less expensive laptops. For many groups of employees, the focus has shifted from small, ultraportable machines to more robust machines in support of moving them between the home and the physical office in a hybrid work mode.

The level of granular control that is common for Android and iOS devices is still lacking on macOS and Windows. This invites potential risk to data loss or of holding and destruction of personal data on devices as part of normal IT operations tasks like deprovisioning the device. The compromise approach has been to isolate the work environment from personal apps and data on the personal device by using relatively expensive DaaS/VDI technology. This negates the need for full control over the local device. However, using collaboration apps with voice and video can be challenging with VDI/DaaS. The challenges of support and ensuring continuity of operations for users on personal PCs is a bigger challenge, with many consumer-grade devices and service plans unable to match the break/fix SLAs enterprises rely on for company PCs.

**Actions:** Stop viewing mobility as a separate item. Integrate mobile requirements into the organization’s key strategic initiatives by forming a digital workplace I&O team that is responsible for endpoints, productivity suites and collaboration software supporting all aspects of in-office, remote, hybrid and mobile work styles.

#### Further Reading:

[Magic Quadrant for Managed Mobility Services, Global](#)

[Essential Considerations When Choosing Separate PC and Mobile Management Tools](#)

#### Visual Intelligence

[Back to Table 1](#)

*Analysis by Chris Silva*

**Description:** Visual intelligence applications use large quantities of data. Deep neural networks (DNNs) are a deep-learning architecture that is frequently used for image processing. These networks build a model that can be executed by a runtime environment in near real time.

**Why Trending:** Image and video processing has become much more affordable, and integration of images and video into many workflows has become easier. With low-latency networks, image or video processing can be offloaded to a gateway or central processor.

**Implications:** Use cases for visual intelligence include:

- Establishing the size of a package from one or multiple images.
- Confirming that a load carrier is optimally and safely packed.
- Identifying a specific box among many by detecting bar codes.
- Verifying that a person has all prescribed safety equipment before entering a facility.
- Identifying potential threats in real time.
- Visually identifying users and detecting fatigue, mood or symptoms of illness such as fever.
- Assessing real-time vehicle damage.

**Actions:** Include DNNs in your overall artificial intelligence (AI) and ML strategy. Use QR codes to enable check-ins for health and safety protocols, share access and process information in a touchless manner, and provide Wi-Fi instructions in the postpandemic, digitally augmented physical workplace.

**Further Reading:**

[Emerging Technologies Tool: Video Analytics Functionality Matrix](#)

[Best Practices in Implementing Video Surveillance, Analytics and Response Systems in Physical Security](#)

**Health, Wellness, Compliance and Safety Technologies**



[Back to Table 1](#)

*Analysis by Leif-Olof Wallin*

**Description:** Applications and technology that monitor and protect workers include distress sensors, gas detection, emergency notification solutions and positioning solutions to track employees working in hazardous areas.

**Why Trending:** Interest in these technologies and self-certification of health and monitoring of social distancing practices grew rapidly in response to the pandemic.

**Implications:** The pandemic focused attention on solutions for the following use cases:

- A contactless method for identifying employees and partners at turnstiles, for time and attendance and other situations requiring identification where technologies that require contact, like fingerprint readers, are no longer desired.
- Leveraging eye movements for selection or using personal smartphones to enter information instead of touching shared keyboards.
- Using track-and-trace technology to identify instances when two people or objects have come in close proximity. This can help with contact tracing, identifying patterns and redesigning layouts to minimize the risk of accidents or close encounters. Video analytics also can be used for this purpose. Smartphone-based solutions using Bluetooth are inherently unreliable.
- Attestation and health questionnaires.

**Actions:** Set realistic expectations for contact tracing solutions. The promise sounds great, but the underlying technology may generate too many false positives to be really useful. Showcase and pilot the technologies, like drowsiness detection, that have sustainable advantages and long-term impact on preventing deaths.

**Further Reading:**

[Market Definition and Methodology: Wearable Electronic Devices](#)

[Use Wearable Technology to Enhance Frontline Worker Productivity: Field Service Management](#)

## Transformational Technologies

### Workplace Analytics

[Back to Table 1](#)

*Analysis by Dan Wilson*

**Description:** Workplace analytics help organizations understand how mobile technology is being used by their employees. It is key to identifying areas for further development/optimization, additional training and even candidates for retirement to maximize the value of mobile investments. These aggregated insights are derived by analyzing contextual data from applications, employees, endpoint devices, processes and networks.

**Why Trending:** Workplace analytics improve technology adoption, employee engagement, user experience, system performance and behaviors that promote collaboration and productivity. Workplace analytics provide insights at various levels — device, employee, team/department and across the organization. The use of workplace analytics has expanded beyond IT and HR to line of business (LOB) leaders to measure and improve teamwork and overall performance.

**Implications:** Large enterprises with broad technology portfolios see the most value in gaining visibility into data that traditionally has been difficult to gather without advanced scripting, remote controlling into devices or pulling reports from multiple consoles.

Workplace analytics enable organizations to:

- Identify and remove technology issues that degrade employee experience.
- Identify process, training and technology improvement opportunities.
- Measure employee engagement with the company, managers, peers and customers.
- Optimize costs by better aligning technology to use cases.

**Actions:** To maximize the benefits of workplace analytics, I&O leaders must collaborate with HR, legal and LOB peers to:

- Consolidate and align requirements to corporate objectives.

- Minimize potential legal and compliance issues.
- Avoid comparing scoring/progress with other companies and across tools. Rather, establish and measure changes internally.
- Ensure appropriate and ethical use of data and insights across all managers.

## Further Reading:

[Enhance Digital Workplace Operations With Machine Learning and Automation](#)

[Adapt the IT Operating Model to Deliver Indispensable Digital Workplace Services](#)

## Augmented/Virtual/Mixed Reality

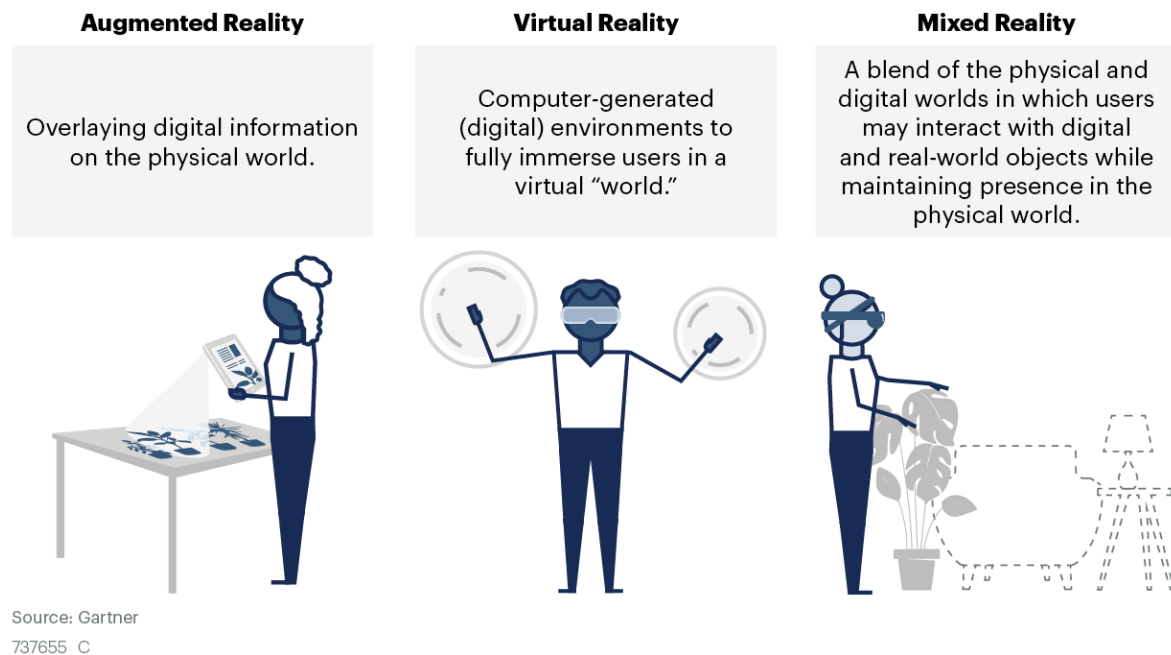
[Back to Table 1](#)

*Analysis by Chris Silva*

**Description:** Augmented reality refers to digital content overlaid on a view of the real world. Virtual reality creates a digital environment that shuts out the real world. Mobile devices such as smartphones, tablets and head-mounted displays (HMDs) will be the window through which users view the worlds of AR and VR (see Figure 2).

**Figure 2. Augmented/Virtual/Mixed Reality**

## Augmented/Virtual/Mixed Reality



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**Why Trending:** Even before the pandemic, customers — both consumers as well as business customers — did not accept anything but first-attempt resolution. Coming on-site without the proper spare parts or sending someone unqualified to do the job just wasn’t enough. In addition, many millennials entering the workforce seem to be less accepting of a company that didn’t make them look successful in the eye of the customer. If they thought the company “set them up to fail” they tended to quit.

**Implications:** Consumer adoption currently outpaces enterprise use, but the overall volumes remain small. As such, consumer experiences will drive expectations and push VR vendors to focus on the user experience of enterprise VR.

Enterprise applications for VR currently lag those for AR and are limited to those that would benefit from total immersion in a virtual world, such as virtual visits to a hotel or on-site training when users cannot attend site-specific training in person.

**Actions:** Organizations must pilot and leverage technology such as remote expert guidance, not only to remotely assist frontline workers but also to capture the substantial knowledge of frontline workers about to retire. In certain verticals, being able to prove delivery of a quality service is becoming paramount and part of the compliance process.

**Further Reading:**

[Top Strategic Technology Trends for 2021: Anywhere Operations](#)

[Emerging Technologies: Head-Mounted Displays for Augmented, Mixed and Virtual Reality](#)

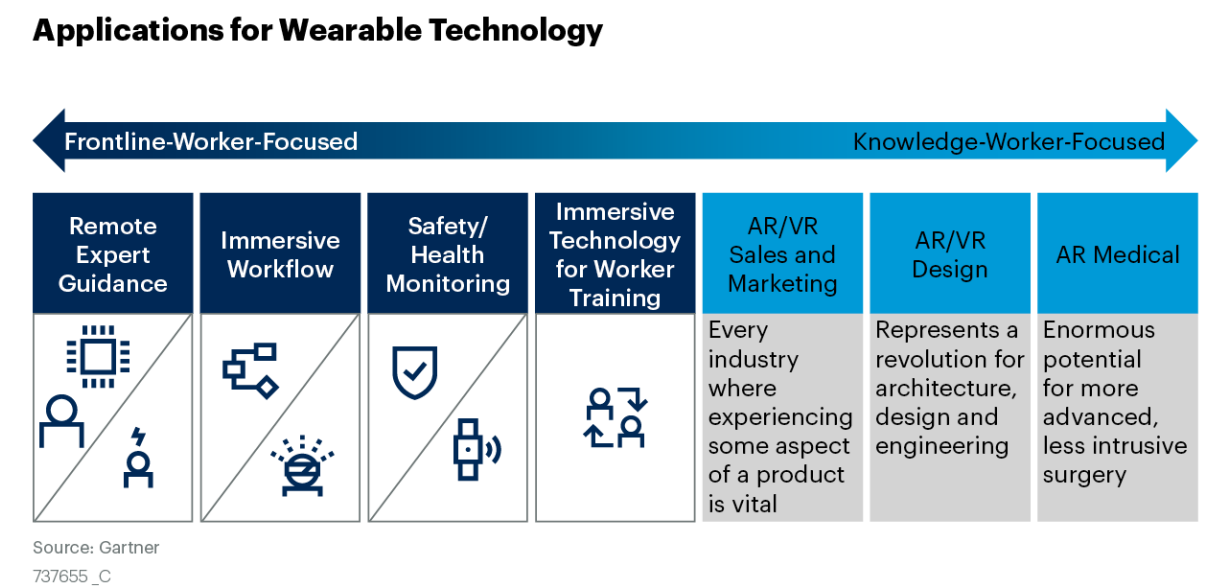
**Frontline Worker Technologies and Wearables**

[Back to Table 1](#)

*Analysis by Leif-Olof Wallin*

**Description:** The emergence of digital platforms and cloud-based services has changed how organizations think about equipping the frontline workforce with technologies such as wearables and hearables fortified by AR, VR, the Internet of Things (IoT), analytics and AI/ML (see Figure 3).

**Figure 3. Applications for Wearable Technology**



**Why Trending:** Many enterprises believe that mobility permeates all necessary activities for knowledge workers and that new opportunities for business innovation lie with equipping frontline workers. Most net new enterprise mobile and endpoint investment in 2021 will be focused on task workers rather than office productivity workers.

**Implications:** From a new-device perspective, Gartner has identified four common emerging, high-value use cases for nonoffice productivity workers:

- Remote expert guidance (leveraging HMDs, smartphones or tablets).
- Hands-free workflow (leveraging HMDs and/or hearables).
- Immersive technology for worker training (leveraging AR HMDs).
- Wearables for safety/health monitoring (leveraging special tags, smartwatches, earbuds or specific hardware).

These investments can deliver benefits including cost optimization, revenue growth and improved customer or employee experience through:

- Process optimization/improved workflow.
- Improved quality/error reduction/first call resolution.
- Safety improvement/injury prevention/social distancing/contact tracing.
- Compliance/regulation adherence.
- Faster problem resolution.
- Travel expense reduction.
- Employee satisfaction.

**Actions:** Pilot technology like REG to determine how it can help the organization meet increasing customer demands. Sometimes these demands include additional self-help fueled by curbside delivery — a situation in which the customer won't allow third-party employees into the facility — just to bring the spare/product to the site and then support the repair/installation from the curbside.

**Further Reading:**

## Transform Frontline Worker Computing With a Product-Oriented Focus

### Technology Investments for Frontline Workers Will Drive Real Business Benefits

#### Evidence

In the past 12 months, Gartner clients have conducted more than 21,300 searches on gartner.com and engaged in more than 15,100 inquiries on the trends covered in this research.

<sup>1</sup> 2020 Gartner Employee Engagement Survey

The 2020 Gartner Employee Engagement Survey was conducted in September 2020 among 5,000 employees in the APAC (Australia, China, India and New Zealand), EMEA (Germany, Spain and the U.K.), LATAM (Argentina and Brazil), and NA (Canada and the U.S.) regions. Respondents predominantly worked for organizations employing more than 1,000 people. All industries were eligible for participation. The survey was administered as a web-based survey.

## Acronym Key and Glossary Terms

API	Application programming interface
AR	Augmented reality
BPMS	Business process management system
BRMS	Business rule management system
DEM	Digital experience monitoring
DNN	Deep neural networks
HMD	Head-mounted display
LBS	Location-based service
LCAP	Low-code application platform
MADP	Mobile application development platform
MAM	Mobile application management
MCAP	Mobile consumer application platform
MEAP	Mobile enterprise application platforms
MR	Mixed reality
MXDP	Multiexperience development platform
RAD	Rapid application development
SDK	Software development kit
UEM	Unified endpoint management
VR	Virtual reality

## Document Revision History

[Top 10 Technologies That Are Defining the Future of Mobility, 2019 Update - 17 December 2019](#)

[Top 10 Technologies That Are Defining the Future of Mobility - 17 July 2018](#)

[Ten Technologies Defining the Future of Mobility - 27 September 2017](#)



## Recommended by the Authors

Some documents may not be available as part of your current Gartner subscription.

[2020 Strategic Roadmap for Digital Workplace Infrastructure and Operations](#)

[Adapt the IT Operating Model to Deliver Indispensable Digital Workplace Services](#)

[Predicts 2021: Digital Workplace Infrastructure and Operations](#)

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Foundational	Incremental	Transformational
Continuous Endpoint Experiences The Move to 5G	Enterprise Mobility Post 2021 Visual Intelligence Health, Wellness, Compliance and Safety Technologies	Workplace Analytics Augmented/Virtual/Mixed Reality Frontline Worker Technologies and Wearables