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TIME TO START YOUR AR-ENABLED REMOTE WORKFORCE TRANSFORMATION JOURNEY

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Time to Start Your AR-Enabled Remote Workforce Transformation Journey

Introduction

Industrial workforce transformation is bringing wide-scale disruption across organizations around the globe, especially at times when "all-remote" approaches are a must-have to secure revenues while responding to market challenges. In 2020, the need for quick workforce transformation put many companies' digital resilience agendas to the test. Emerging technologies have played an enabling role and are accelerating this trend by fueling innovation across many sectors such as public sector, infrastructure, and services.

One year in, the workplace of the future is shifting from traditional models based on in-field operational tasks and in-office face-to-face interaction to hybrid digitally driven and easy-to-deliver experiences that foster innovation and agile work practices across infrastructure and culture. With global spending reaching $2.7 billion in 2021, AR will see unprecedented expansion and will serve new transformative use cases, changing the way companies deliver field services and employee training and elevating existing use cases to the next level.

COVID-19, social distancing measures, and government requirements have created a "new reality" worldwide and this has led global business leaders to look at augmented and immersive techs to enable remote workforce transformation, enhance employee skills, and enable workers to be productive even when working remotely. According to IDC's *IT Buyer Sentiment Survey*, AR adoption is growing, with 64% of companies maintaining or increasing their spend this year to achieve measurable corporate outcomes, improve return on investment, and drive corporate success.

AT A GLANCE

Industrial workforce transformation is accelerating fast and this requires companies to look at AR to enable use cases such as remote field service support, step-by-step guidance, and training. Tech leaders must overcome AR misconceptions and skepticism, and understand that the winning enterprises of the future are those that create an enterprise of "connected experts."

KEY STATS

- According to IDC's *Worldwide AR/VR Spending Guide*, the global AR market will continue to grow solidly, getting close to **$7.5 billion** by 2022.
- AR will continue to serve new use cases and will become more accepted, with global spending surpassing **$48.6 billion** by 2025.
- Manufacturing, government, and utilities will absorb **30%** of global AR spend.

KEY TAKEAWAYS

Business leaders must shift from traditional to next-generation tech-based models and must design and build knowledge networks to experience significant business outcomes and return on investments. Moving from an onsite-oriented workforce to an AR-empowered and connected employee base will enable organizations to save costs, increase productivity and safety, and at the same time reduce travel needs and carbon footprint.

Augmenting Workers and Leading Transformation

State of AR and Its Role in Creating "Connected Experts"

Augmented reality and its transformative capabilities

Augmented reality (AR) looks to overlay digital information or objects on a person's real-world view of reality. Whereas virtual reality (VR) content is designed to be fully immersive, AR loads digital content to a person's real-world field of view. The user can see the surroundings as well as the AR content. AR can transform existing and traditional industry processes by bringing innovation to the ever-changing workplace of the future while elevating and augmenting human capabilities. By empowering employees with AR-infused mobile devices and wearables, companies can overcome environmental barriers across business lines.

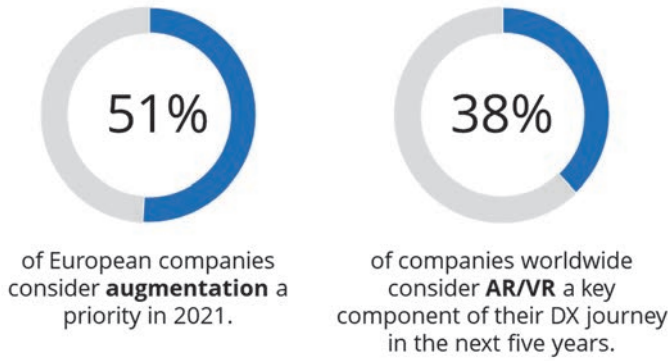
For example, AR-enabled smart devices have experienced a surge in demand between 2020 and 2021 as COVID-19 restrictions limit human contact, forcing companies to prioritize alternative ways of delivering remote guidance and support, knowledge transfer, and training.

Injecting Innovation, Boosting Productivity, Improving Safety

The worldwide AR market remained resilient throughout 2020 and will continue to expand. Many companies believe AR requires significant investment in infrastructure, connectivity, skills, and training, but this is not always the case. There are many user-friendly business scenarios that can be implemented easily, making IT extremely usable even for verticals that struggle to introduce innovation.

According to IDC's *Vertical IT and Communications Survey, 2020*, an increasing number of companies (38%) see augmentation technologies as a key component of their digital transformation (DX) journey in the next five years. There are many AR opportunities to elevate high-demand use cases such as industrial maintenance, retail showcasing, logistics and package delivery management, onsite assembly and safety to the next level. Forthcoming connectivity improvements and wider acceptance will help AR users to benefit from more robust and immersive user experiences, while enabling transformation in the workplace. These experiences will be delivered through high integration with other emerging technologies such as artificial intelligence (AI), machine learning (ML), and natural language processing, which will help to add an automation layer to workforce augmentation. COVID-19 triggered demand for AR solutions that enable workers to stay connected and carry out routine collaborative tasks even remotely, with demand for AR-infused smart glasses, for example, seeing strong growth.

FIGURE 1
AR/VR Will Be a Key Component of Digital Transformation Road Maps



Q. What are your organization's technology priorities over the next two years to ensure the long-term resilience and success of the business? Which technologies do you expect to drive DX the most in your organization?
Source: IDC EMEA, *Future Enterprise Resilience and Spending Survey Europe, 2021*; *IDC Vertical IT and Communications Survey, 2020*

How Will AR Bring Transformation in the Workspace of the Future?

According to IDC's *Worldwide Augmented and Virtual Reality Spending Guide*, the worldwide AR market will increase to $53 billion by 2025. Interest in AR will continue to grow and, as the technology evolves and becomes more accepted, new use cases will emerge to tackle new business needs and priorities. These new use cases will integrate AR with AI-centric products, IoT, new devices, and smart analytics, to build knowledge networks that enable "connected experts" to digitally access the data, people, and workflows that help them to perform their work fast, efficiently, and safely.

As the tech advances, we will shift from a "connected expert" to an "AI-connected expert" workforce where integration of AR with AI will be the real game changer. This is because the need to capture and share knowledge in the workforce will never be more critical to achieve ever-changing priorities and KPIs. Currently, as much as 80% of a business' knowledge remains undocumented[1].

IDC's *Manufacturing Insights Product and Service Innovation Survey* shows that the top driver of manufacturers' service life-cycle management (SLM) efforts was to capture and make accessible service knowledge and best practices (39%). In the future, we will see a mix of augmentation and automation, which will enable employees to augment their capabilities and raise their performance to the next level. For example, capturing, monitoring, and analyzing data through smart solutions will enable companies to identify issues before they happen, finding the right technician, identifying locations, the required tools, and steps, and providing workers with data-informed just-in-time training at the site. Preventative inspection steps will begin with live analysis of assets to determine next steps and help technicians to quickly resolve issues. This

[1] Source: Bill Conerly, economist, member of the Oregon Governor's Council of Economic Advisors and chairman of the board of Cascade Policy Institute. https://www.forbes.com/sites/billconerly/2018/08/12/companies-need-to-know-the-dollar-cost-of-employee-turnover/#4f150accd590

enables companies to predict and prevent asset failures, deliver just-in-time training, and augment worker safety by building on the power of AR-augmented and AI-connected experts.

Two Use Cases Elevating Employee Capabilities Across Industries

Among the many use cases AR can be used for, there are two areas where the technology is changing the game, especially for sectors such as manufacturing, utility, and defense.

- **AR-enabled remote field services and step-by-step guidance.** Remote services and guidance enable experts and field workers to perform inspections, monitor assets and operations, run diagnostics tasks, and carry out maintenance and repair operations remotely. This is done by sharing knowledge of asset conditions and providing access to operational data through mobile devices or wearables. This empowers field workers and inspectors' capabilities, enabling them to reduce "in-person" tasks, minimize disruptions, and reduce travel costs to the facility. Step-by-step guidance creates simple and immersive experiences to store and transfer knowledge across the workforce, while visualizing complex procedural tasks in simple and small instructions, enhancing the learning curve and building effective knowledge networks across employees. Global spending on AR-enabled industrial and asset maintenance and onsite assembly and safety will reach $1.5 billion in 2022.
- **AR-enabled training and support.** This revolves around creating augmented environments for employee training, support, and upskilling, providing new ways for trainers to demonstrate, educate, assist, and pick up knowledge from more experienced workers. Global spending on AR-assisted training alone will reach almost half a billion dollars in 2025. IDC's *2020 Industry IT and Communications Survey* shows that 31% of automotive manufacturers describe their intended use of AR or VR technologies today to be for employees to increase collaboration with other employees.

Rolls-Royce uses digital visual tech to check engines remotely

With the pandemic making it more difficult to send inspectors to airline facilities to perform engine inspections and maintenance tasks, Rolls-Royce has deployed Onsight Connect to train its customers' engineers to remotely examine engines. This has enabled airlines to save on travel costs to secure onsite inspections and to achieve greater operational flexibility even for more complex inspections. Using remote digital visual technology has had an impact on carbon footprint reduction, enabling engineers to avoid traveling and to perform tasks remotely. Remote inspections also freed up an aircraft and allowed Neos to ship medical supplies from China on behalf of the Italian government.

"AR is changing workloads even across industries with old legacy systems and lower innovation. Workplace transformation is happening, and AR is playing a key role in augmenting employees' capabilities."

Andrea Minonne, senior research analyst, IDC

Manufacturing, Energy, and Government Revolutionizing Employee Experiences

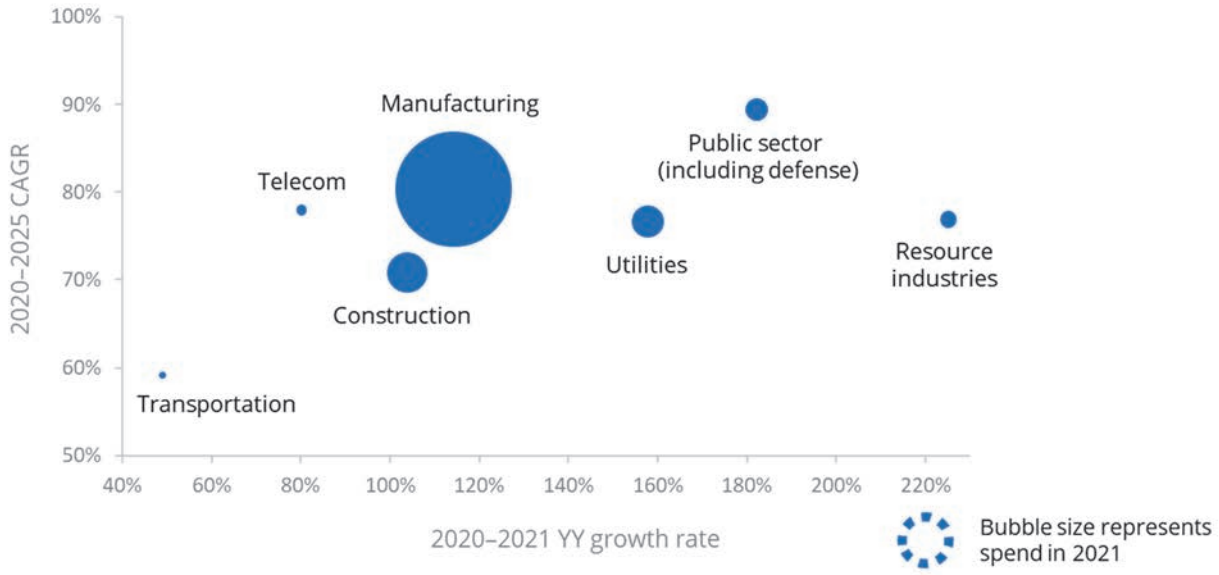
AR will continue to grow across all verticals. Adoption is also accelerating within industries where embracing transformation is harder, outlining that organizations are accepting the technology and the benefits it

brings. IDC's *Worldwide Augmented and Virtual Reality Spending Guide* shows that manufacturing, utilities, and the public sector (including government, education, and healthcare) will absorb almost half of global AR spending by 2022. In the defense space, for example, AR is playing a key role in training military personnel but also in maintaining and repairing military vehicles, aircraft, gadgets, and equipment. Manufacturing, utilities, and government (including defense) are looking to deploy simple-to-implement use cases to respond to their business needs promptly while achieving optimal operational efficiency. In this context, AR provides experts, inspectors, and technicians with remote support, step-by-step guidance, training, and upskilling, and enables companies to swap traditional tools and approaches with immersive and easy-to-deploy platforms.

Remote routine asset inspection for the automotive sector

A European car maker was looking to carry out routine asset inspections without requiring the physical presence of a technician at its manufacturing factory. By deploying Onsight, the company managed to provide remote routine inspections, reducing machine downtime and maintenance costs by up to 15%. The solution made employees more productive and agile on the manufacturing floor as IT equipment could be fixed by accessing technician remote support, instead of waiting for in-house technician visits.

FIGURE 2
Leading Industries Investing in AR for Asset Maintenance, Training, and Guidance



Note: The chart includes AR spend only for the following use cases: AR assisted surgery, asset maintenance, industrial maintenance, network maintenance, onsite assembly and safety, public infrastructure maintenance, training.
Source: *IDC's Worldwide Augmented and Virtual Reality Spending Guide*, April 2021

AR is transforming manufacturing on many fronts, bringing disruption to product design and prototyping process enhancements to R&D departments, AR-based visualization tests and data validation to product development and analysis departments, and remote industrial maintenance to field technicians. Industrial AR is disrupting **manufacturing** operations and supporting remote operations, and although it's been here for a while, manufacturers have

Facilitating field support and IT issue resolution anytime, anywhere

A European oil and gas company was looking to implement innovative technology to provide employees with remote field support and resolve IT issues. By using AR-enabled Onsight, it was able to improve resolution times, reduce the needs and costs related to technician travel, and ultimately cut costs by up to 20%. In 2020, the company used AR-based remote solutions to help employees set up home office equipment, reducing pressure on traditional helpdesk employees, who were trained to help users virtually to resolve IT issues.

recently accelerated the use of technology to respond to new needs. 2020 shed a light on how AR can help workers with remote maintenance and repair tasks, inspection and fault detection, virtual demonstrations, as well as onboarding, on-the-job training, and upskilling. According to IDC's *2020 Industry IT and Communications Survey*, 33% of discrete manufacturers are using AR and VR to increase safety for their employees, while 32% are using the technologies to increase collaboration, outlining that the key aspects to tackle for the industry are employee safety and collaborative approaches. AR-enabled real-time remote expert guidance to field technicians on the asset site and digital work instructions helped manufacturers to both reduce asset downtime and get step-by-step instructions to fix technical issues at an asset location.

Automotive companies around the world are using AR to help automotive technicians carry out complex maintenance tasks and optimize prototyping and assembly tasks. These experiences are delivered in the form of interactive manuals and step-by-step guidance, and leverage AR applications that are built on mobile devices or wearables.

Similarly, AR helps **aerospace** manufacturers to guide technicians with step-by-step instructions, reducing errors and increasing productivity. Airlines strive to reduce turnaround times for airplane maintenance and repair tasks. To achieve this, AR is deployed to survey ongoing tasks in an airplane hangar, for example, while accessing maintenance work history for an engine or an aircraft component, enabling knowledge and insights that are not achievable in the physical world. AR is also enabling training and knowledge transfer in a sector that has been strongly affected by a shortage of skilled workforce — helping it to bridge these gaps.

AR is under the spotlight and is simplifying many traditional processes, bringing unprecedented transformation in the **energy** sector too. According to IDC, by 2025, utilities will spend $2.5 billion on AR solutions and industrial maintenance, and will continue to innovate at scale to support this trend. AR is facilitating employee training across the energy sector, supporting knowledge transfer and enhancing safety practices, enabling technicians to improve their situational awareness and be more responsive in unexpected situations. Through AR-infused wearables it is possible to insert virtual items into the visual field, enabling technicians to better understand repair and maintenance techniques. Augmented technologies enhance workforce transformation, with shared skills and expertise digitally improving a low-innovation culture. AR also enables field technicians to remotely inspect, maintain, and repair assets such as steam and

gas turbines, onshore and offshore oil and gas platforms, and plant panels and controls — improving productivity and safety for frontline technicians at asset-heavy companies.

Although overall **government** spending on AR will remain limited compared with more innovative industries like retail, there are many areas in the sector where the technology is making headway and bringing innovation, such as **defense** and **military aviation**. AR offers dynamic digital platforms for training in the defense sector, enabling military and defense forces to train through real-life scenarios and increase situational and environmental awareness. Immersive technologies are enabling use cases such as onfield medical assistance, flight or vehicle simulation, battlefield combat replication, military weapon usage, bomb disposal, and remote maintenance of military equipment. The defense industry is very keen to invest in emerging technologies for training and combat enhancements, and as AR capabilities and possibilities around data and graphics processing expand, the number of AR-enabled use cases in the military sector will grow significantly. AR is also enabling public bodies to enhance their infrastructure maintenance and repair operations, giving users access to historical and real-time data of mechanical or electrical infrastructure and assets to improve workflows.

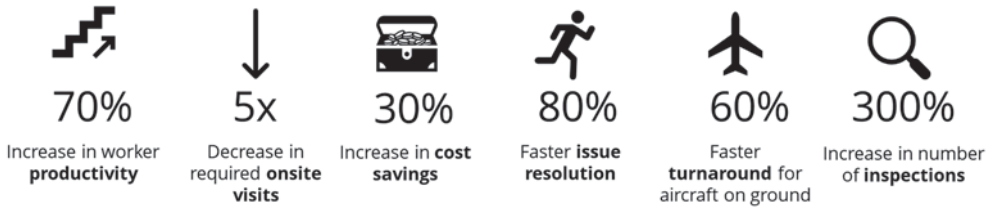
AR Is Also About Bringing Measurable Corporate Benefits

Not only does AR augment employees — it also triggers the move from the "traditional" enterprise to the "hybrid" workplace of the future. According to IDC's augmented humanity research, companies in this workplace of the future will use technologies to complement and augment employees' capabilities or enable them to carry out tasks beyond their human capabilities.

This workforce transformation will generate significant corporate benefits. According to IDC's *Advanced Technologies for Industry Survey 2020*, over 50% of businesses in Europe associate the adoption of emerging technologies to three key KPIs — customer satisfaction, time efficiency, and product/service quality. AR-enabled remote workforce transformation brings interactive and immersive support and training experiences, which ultimately boosts the productivity of in-field and remote workers. It will also increase first-time fix rates, shorten time to asset failure resolution, increase the level of technical support, and enable customers to get faster assistance — all resulting in higher customer satisfaction and reduced asset downtime. As far as training is concerned, immersive knowledge transfer and upskilling of new and existing workers will reduce technician training time, increase employee situational awareness and agility to respond to unforeseen situations, and boost productivity levels.

FIGURE 3

Perks of Implementing an AR-Remote Workforce Transformation Strategy



Source: HCL/Librestream, 2021

Road Map to Successful AR-Empowered Workforce Transformation

Best Practices to Build a Successful Workforce Transformation Strategy

Workforce Transformation Brings Benefits to the Digital Dream Team

FIGURE 4
The Digital Dream Team

Source: IDC C-suite research, 2021

When it comes to tech investment decision making, C-suites from companies around the world are looking at ways to optimize their processes and workflows. They want to create a company culture based on digitization, innovation, disruption, and agility. The successful digital dream team constantly strives to drive workforce transformation. It looks at ways to improve its workforce productivity and create an environment where technologies such as AR complement and augment employees.

For that reason, it's important to pick the right set of technologies that respond effectively to business needs and that are appropriate for specific LOB needs, avoiding an organizationwide unified approach. Transformation starts from the ground up, and focusing on employees enables the enterprise of the future to attract new talent while retaining existing talent. The digital dream team is increasingly seeking growth opportunities with a focus on innovation and disruption, and AR-powered workforce transformation is an opportunity to bring change on all these fronts.

Workforce transformation benefits the digital dream team on many fronts

Operation leaders experience optimized supply chains, improved and faster operations, streamlined processes, higher safety, and fewer incidents, thanks to the versatility that AR can offer.

Customer experience leaders will experience enhanced 360-degree customer satisfaction and will secure a new type of customer engagement as AR-enabled workforce transformation enables faster services that can be delivered anytime anywhere.

Human capital leaders will introduce innovative and tech-driven training, promoting workforce transformation in which innovation-driven productivity, employee experience, and training/upskilling are key aspects of corporate culture.

Technology leaders will promote enterprise innovation and disruption, bringing agility and business resilience into the corporate space and transforming the traditional enterprise into the hybrid enterprise of the future through technological change.

Six Milestones You Should Target While Setting Out Your Workforce Transformation Strategy

- **Milestone 1: Assess corporate digital readiness.** Companies willing to embrace workforce transformation must assess their digital readiness and run due diligence checks, such as assessing their level of corporate digitization, remote workforce culture, and employee level of technology acceptance and usability. At the same time, they must assess IT concerns and establish the corporate vision and strategy to ensure that technologies are adequately protected from a privacy and data security point of view. It's important that organizations also consider how digitally resilient they are, how rapidly the entire organization but also specific business lines adapt to disruption by leveraging digital capabilities, and how quickly they can restore business operations and capitalize on the changed conditions.
- **Milestone 2: Define your corporate goals.** Organizations must identify measurable outcomes and KPIs that they want to achieve by embracing an AR-enabled remote workforce culture. Start small and think at scale by brainstorming how workplace transformation augmented technologies can help your organization enhance operations, elevate customer and employee experience, and empower your workforce. Set out achievable business outcomes that you want to achieve in the short (next 12 months) and longer term (next two to three years).
- **Milestone 3: Build a gradually transformative road map.** This will be based on structured and flexible approaches, oriented toward gradual workforce augmentation. Assess the financial sustainability of your project and start by implementing small AR projects that create simple, clear, straightforward, and usable experiences. Target small roadblocks that do not require extensive resources, before adding more complexity to the use cases and to your AR-enabled remote workforce transformation road map.
- **Milestone 4: Build an ecosystem.** Accentuate interaction and collaboration between stakeholders such as customers, enterprises, policymakers, investors, and technology providers. Continuous user feedback and technological upgrades stimulate implementation, and this is essential for new technologies. Barriers to entry for AR are

lowering, as a growing number of innovative products and use cases are surfacing. Infusing a technologically open mind into the workforce culture and an inquisitive attitude to new information are vital.

- **Milestone 5: Involve your workforce during the transformation process.** Companies must involve technology users while identifying the right use case that can empower employees, comply with safety regulations and procedural protocols, and boost worker productivity. Operation leaders must assess the feasibility of accelerating transformation in the workplace and involve tech users at every stage of the process, from planning to testing and adoption.
- **Milestone 6: Educate your workforce and equip employees with the right workforce transformation toolsets, skills, and knowledge.** Make sure that end users can access, host, store, and stream content. Focus on the skills your workforce needs to master the technology and target hardware usability issues, data security concerns, and connectivity requirements. Promote a remote workforce transformation culture by tackling employee and business leader misconceptions about what is needed in terms of infrastructure, connectivity, and tech, safety, and privacy concerns, as well as employees' ability to use the tech. This happens by ensuring that tech users have the necessary training, support, and tutorials to master the technology and achieve the outcomes you have set out. Train, educate, and ensure that your workforce is ready to undergo a transformation, but also focus on letting your workforce understand the importance of AR-driven transformation and the benefits that come with it, such as increased workforce productivity and safety, enhanced employee experience, and positive customer experience.

Conclusion

With the increasing commercialization, popularity, and affordability of AR, accelerating remote workforce transformation through augmented technology can increase corporate digital resilience at scale, while introducing innovative ways to run processes.

Implementing an AR-enabled remote workforce transformation strategy following the milestones discussed above will enable organizations to adopt emerging technologies more naturally. This will enable the entire organization to achieve significant outcomes including reduced carbon footprint, increased worker safety, and positive customer experience. Industries around the world are already using AR for a wide range of use cases and if you are aiming to increase workforce productivity, decrease the number of onsite inspections, increase cost savings, resolve issues faster, and reduce the amount of travel for technicians, you should consider starting your AR journey.

MESSAGE FROM THE SPONSOR

HCL Technologies is consistently recognized as a leader by best-in-class technology analysts and research organizations in the digital workplace transformation space. With a presence in over 50 countries, a worldwide network of R&D facilities and co-innovation labs and global delivery centers, HCL is at the forefront in delivering technology products and services to more than 250 of the Fortune 500 companies. HCL offers the most effective technology solutions to help customers accelerate their digital transformations and deliver the best possible user experience. Onsight, an augmented reality powered live video sharing based remote support and guidance solution, can help enterprises drastically increase productive uptime, cut costs, and help users, technicians, and subject matter experts collaborate instantly by leveraging the information-rich immersive-experience features.

This paper helps enterprises to recognize the business functions that stand to benefit from AR-based remote support. As a trusted remote collaboration technology provider for organizations in Forbes' Global 2000 list and more, Librestream transforms workforces through advanced AR and AI solutions that scale knowledge across businesses to enhance safety, efficiency, and resilience. With the Onsight augmented reality knowledge platform, we help workers and distributed teams gain immediate access to the content, people, relevant data, and guidance needed to solve business challenges. Expanding on our joint partnership with HCL, we sponsored this paper to offer organizations insights on the benefits associated with deploying AR and industry best practices. Contact us to learn more. This report is a testament to our continued commitment to partnering with industry leaders like Librestream. Read this blog to learn about the HCL and Librestream partnership: https://librestream.com/blog/hcl-and-librestream-offering-critical-remote-it-services-across-industries/

About the Analyst

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Andrea Minonne is a senior research analyst in the IDC Customer Insights & Analysis team in Europe. He is involved in IDC's Spending Guide portfolio, including the artificial intelligence, Big Data and analytics, IT industry, and company size spending guides. He also leads the Augmented Humanity Launchpad and analyzes how technologies such as AR/VR, wearables, exoskeletons, smart pills, injectables/implantables, biometrics, brain computer interfaces, affective computing, and smart peripherals are augmenting human capabilities in the workplace and in ordinary life, with a strong focus on industry market sizing and forecasting, emerging trends, and use cases.

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