AUGMENTED REALITY AND THE FUTURE OF WORK

An Employee-First Guide to Augmented Reality and Workplace Innovation

ptc

Augmented Reality Is Shaping Tomorrow's Workplace

Augmented reality (AR) seamlessly overlays relevant digital information onto physical objects and surroundings. This information can include demonstrations, instructions, real-time data, and even safety alerts. In the workplace, employees can access this AR content via mobile and hands-free devices—precisely when and where they need it.. AR has proven benefits for workforce optimization, from increased safety and efficiency to reduced error and waste. But to unlock the full potential of industrial AR you have to prioritize your employee experience.

Employee experience goes beyond workforce optimization

The following use cases of AR represent potent opportunities to improve the employee experience while boosting efficiency, quality, and safety.

"66% of companies with onboarding programs claimed a higher rate of successful assimilation of new hires into company culture, 62% had higher time-to-productivity ratios, and 54% reported higher employee engagement." (Source: Aberdeen Group)

AR'S IMPACT, BY THE NUMBERS

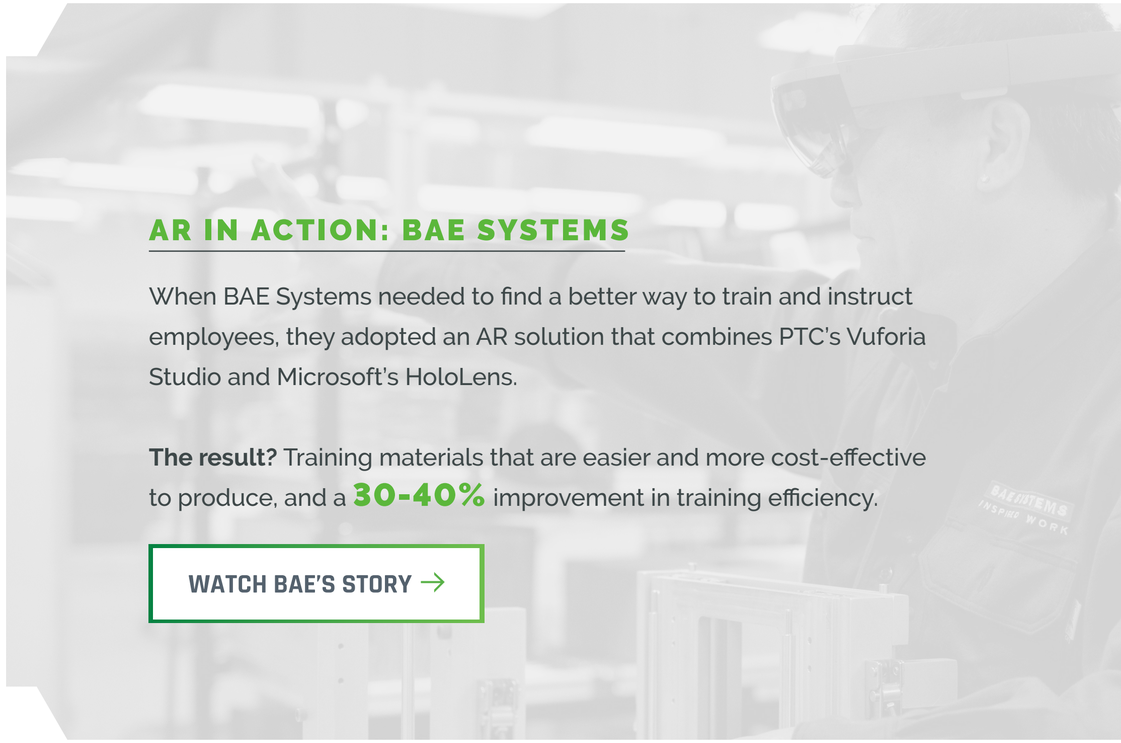
How is augmented reality is reshaping business? These numbers, derived from active AR practitioners and courtesy of Forrester, tell the story:

AR-ENHANCED TRAINING

If you provide inadequate or abbreviated training, at best your teams will be less prepared and efficient. At worst, poorly trained employees pose liabilities to compliance and safety—risking harm to themselves and your business. That's why training is one of the most important workforce investments you can make. AR-enhanced training products like Vuforia Expert Capture support the conditions for continued success, building employee competence, confidence, and engagement.

HOW AR TRAINING SUPPORTS NEW HIRES

- **AR IS IMMERSIVE AND RESPONSIVE.** AR supports trainees with content that is more accurate and interactive. From fully immersive 3D models to navigable step-by-step video instruction, AR provides new hires with resources to learn faster, retain more, and carry out new responsibilities with confidence.
- **AR KEEPS PACE WITH CHANGE.** Equipment and machines can be expensive to repurpose for training. Printed manuals or obsolete training models are more affordable, but can be limited, confusing, or outdated. AR training can be easily edited to keep pace with product changes or support localization requirements.
- **AR MITIGATES RISK.** From expensive equipment to hazardous environments—industrial work can pose inherent risks and liabilities. Training for these kinds of applications has always been a high-wire act. AR effectively prepares trainees to work safely on the job without putting them at risk during training.
- **AR BRIDGES TRAINING AND INSTRUCTION.** Traditional training materials are mostly restricted to the classroom and printed guides. But AR-based training can also prepare employees for AR instruction once on the job. This continuity supports new hires who are making the shift from the classroom to the shop floor—or servicing assets in the field.



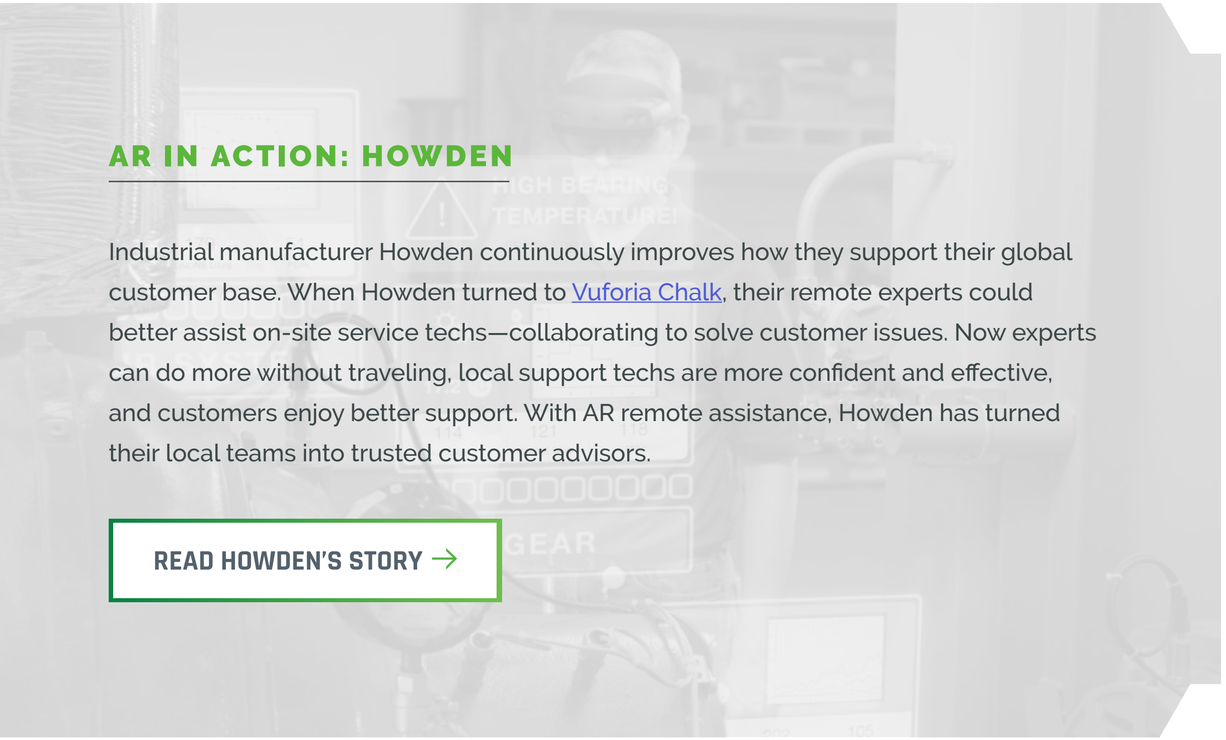
AR IN ACTION: BAE SYSTEMS

When BAE Systems needed to find a better way to train and instruct employees, they adopted an AR solution that combines PTC's Vuforia Studio and Microsoft's HoloLens.

The result? Training materials that are easier and more cost-effective to produce, and a **30-40%** improvement in training efficiency.

WATCH BAE'S STORY →

AR-ENHANCED REMOTE ASSISTANCE



AR IN ACTION: HOWDEN

Industrial manufacturer Howden continuously improves how they support their global customer base. When Howden turned to Vuforia Chalk, their remote experts could better assist on-site service techs—collaborating to solve customer issues. Now experts can do more without traveling, local support techs are more confident and effective, and customers enjoy better support. With AR remote assistance, Howden has turned their local teams into trusted customer advisors.

READ HOWDEN'S STORY →

Tenured experts are your best problem solvers—but cost and scale prevent them from addressing every challenge. Junior team members are more available but may lack the experience to handle unusual or consequential problems. AR remote expert assistance bridges this gap, giving experts and novices tools to solve problems together.

HOW AR REMOTE ASSISTANCE WORKS

Remote assistance has traditionally been limited to phone or video chat. These models are susceptible to miscommunication and subsequent error.

AR remote assistance solutions like Vuforia Chalk combine audio, video, and AR-powered annotation. A user with questions aims their supported device's camera (e.g., smartphone) at an object of interest (i.e., the device or machine that requires service). Users can then draw on the touchscreen to clarify questions and answers, focus areas of interest, and simplify directions.

HOW AR REMOTE ASSISTANCE HELPS EMPLOYEES SUCCEED

- **AR EXTENDS THE REACH OF YOUR EXPERTS.** AR enables your tenured experts to apply their talents without leaving their workspace. This reduces travel costs and scales up their reach and availability.
- **AR PROVIDES SENIOR EXPERTS WITH A "SECOND ACT."** By replacing the grueling demands of travel with the ease of AR-based remote assistance, tenured experts are discovering rewarding reasons to stay in the workforce longer.
- **AR BUILDS SKILLS AND CONFIDENCE.** By teaming up to solve problems, on-site technicians and remote experts play valuable roles—together. Newer employees build their skills and confidence faster, while feeling supported by a company invested in career growth

AR-BASED SAFETY AND INSPECTION

Electrical currents, temperature, pressure, chemicals, and other factors make job sites a place where attention, knowledge, and clear communication are paramount to ensuring employee safety. There are also inspections that need to be performed to ensure that machines, work processes, and products are safe and meet specifications. AR safety solutions can identify hazards, display warnings, and provide clear, step-by-step instructions for workplace tasks. AR-based inspection applications like Vuforia Instruct can integrate visual checkpoints that require pass/fail confirmation.

HOW AR INSPECTION SUPPORTS SAFETY, QUALITY, AND CONFIDENCE

- **AR IS CLEAR AND CONTEXTUAL.** Traditional inspection instructions may be outdated or ambiguous. Or they may be overly broad, lacking key details about process or product customizations. AR instruction provides context so that employees can be confident they are correctly performing inspections.
- **AR OFFERS VISUAL COMPARISON.** Printed or verbal descriptions of processes are prone to error and can be distracting. AR guidance is highly accurate, providing a direct visual for workers to compare without looking away. This assures employees they are correctly performing inspections. AR can also accelerate their familiarity and confidence in the inspection process.
- **AR ENABLES CHECKPOINTS AND CONFIRMATION.** Without inspection confirmation, employees may lack certainty. This can be compounded when inspections involve many facets of an object, like a large or complex machine. AR can direct the correct steps, provide specific checkpoints, and require active confirmation. This ensures that employees can confidently perform safety checks and inspections on even the most complex machines.

HOW TO MAKE AR AN EMPLOYEE-FIRST INITIATIVE

AR is reshaping the workplace for employees, from new hires to senior employees. But if AR applications don't meet the needs of their users, they can potentially hinder the employee experience. Here are some simple, actionable steps you can take to ensure that AR content, use cases, and technology all come together to improve employee experience, engagement, and performance.

RECRUIT EMPLOYEES AT THE EARLIEST STAGES OF AR PLANNING.

If your teams of technicians and frontline workers are the main beneficiaries of an AR investment, recruit them as stakeholders. Also look to assemble a core group of champions who can keep the focus on employee experience as a priority.

FOCUS ON THE USER FIRST.

AR experiences should be evaluated based on their benefit to the employee. That doesn't necessarily mean wowing executives with elaborate prototypes and pilots. Often the most effective AR solutions are simple and intuitive.

TAKE AN INCREMENTAL APPROACH.

Compared to other industrial technologies, AR is very easy to implement and update. It doesn't require disrupting existing systems and applications. This allows you the freedom and flexibility to experiment.

CONSIDER AR A SET OF TOOLS, RATHER THAN A SINGLE TECHNOLOGY.

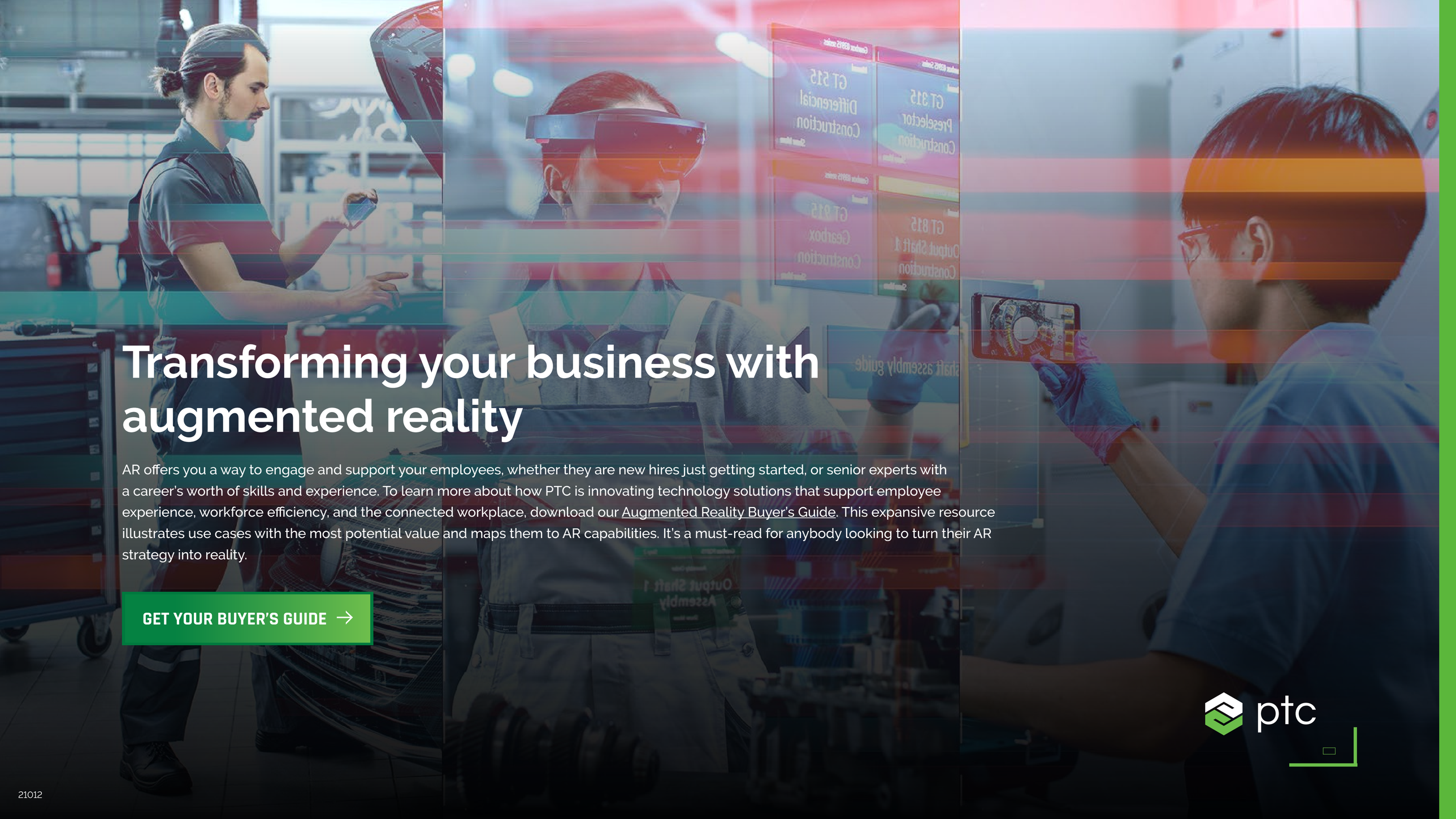
An AR remote assistance application is very different from step-by-step AR work instructions, or AR-driven training applications. Pick the right solution for the right use case and select the applications and hardware that fits best.

PLAN AROUND YOUR INFRASTRUCTURE.

One of AR's benefits is that it can be easy to update, localize, scale, and customize, to better meet diverse needs across your workforce. Plan for that up front, and your training and guidance resources will become more valuable and easier to maintain.

EMPHASIZE INTERACTIVITY.

While initial applications should be simple, more advanced AR experiences can incorporate user feedback, at multiple levels. AR experiences are much more engaging when users can actually provide feedback. Gesture-based checkpoints, error identification, and even gamification of processes can make work more engaging and enjoyable.



Transforming your business with augmented reality

AR offers you a way to engage and support your employees, whether they are new hires just getting started, or senior experts with a career's worth of skills and experience. To learn more about how PTC is innovating technology solutions that support employee experience, workforce efficiency, and the connected workplace, download our Augmented Reality Buyer's Guide. This expansive resource illustrates use cases with the most potential value and maps them to AR capabilities. It's a must-read for anybody looking to turn their AR strategy into reality.

GET YOUR BUYER'S GUIDE →

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