



DIGITAL TRANSFORMS PHYSICAL



+

How Augmented Reality Transforms

WORKFORCE TRAINING



Today, several factors contribute to a growing skills gap in the industrial workforce.

Traditional training methods for frontline employees are often outdated and inefficient. And as experts retire at an increasing rate, organizations lack an effective way to retain, replace, and transfer years' worth of their knowledge and experience. In the meantime, competitors are increasing their workforce productivity by investing in more modern training solutions, putting added pressure on your organization to keep up. And leaders are feeling that pressure—according to PwC, 79% of CEOs across the world worry that a lack of essential workforce skills could hinder their company's future growth¹.

To start closing the skills gap, industrial leaders must shift their focus away from outdated training methods. By overlaying digital training content on physical work or training environments, augmented reality (AR) accelerates knowledge transfer and skills development—transforming the training experience for both experts and trainees.

According to research by Amalgam Insights, AR-based training is effective because it delivers information “in a way that minimizes cognitive load while simultaneously engaging experiential and behavioral skills learning systems in the brain.”

Source: Market Milestone: *The Brain Science Behind PTC's Vuforia Expert Capture: Why It Speeds Time to Productivity While Reducing Training Costs*, Amalgam Insights

+ **AR SOLUTIONS**
IMPROVE TRAINING
OUTCOMES

AR transforms training by giving expert employees a quick, easy way to transfer their knowledge, engaging trainees through visual, interactive content, and providing real-world context—making training content more experiential, efficient, and cost-effective.

AR SOLUTIONS IMPROVE TRAINING OUTCOMES

Knowledge Capture and AR Work Instructions for Scalable Procedural Guidance

AR-based knowledge capture solutions facilitate the creation and delivery of guided Standard Operating Procedures (SOPs), making it easier to capture and scale expertise, empower new employees with on-demand guidance, and improve employee safety and compliance.

 [Explore Knowledge Capture and AR Work Instructions](#)

3D AR Experiences for Virtual Asset Training

Immersive, 3D AR experiences provide a visual, interactive training experience that trainees can access from anywhere with devices they already have, getting visibility into important details and asset complexities, such as hidden or hard-to-see components.

 [Explore 3D AR Experiences](#)

Augmented Remote Assistance for Remote Mentoring

Augmented remote assistance combines live audio and video functionality with AR annotation capabilities, enabling frontline employees to communicate with remote experts for more flexible on-the-job learning and mentoring opportunities.

 [Explore Augmented Remote Assistance](#)

+ **AR-BASED** **TRAINING IN ACTION**

Industrial organizations are already leveraging AR solutions to transform their training strategy, improve training outcomes, and realize other critical business benefits. Next, see AR-based training in action at Entegris, a global leader in the semiconductor industry, and Valmont Industries Inc., a leader in infrastructure and agricultural productivity.

AR-BASED TRAINING IN ACTION



Improving Employee Safety through AR-Based Training at Entegris

In a [Vuforia Live session](#), Steven Moskowitz, Ph.D., Director Digital Transformation, explained that originally, using AR as part of its digital transformation strategy wasn't a top priority for Entegris. But the pandemic, a growing workforce, globalization, and factory restrictions forced the company to re-examine its approaches to training, remote support, and its visual factory presence. In response to these needs, Entegris created a Connected Experience program that improved how internal training and support were delivered to frontline employees across the enterprise. As part of this program, Entegris leveraged AR to safely simulate a chemical spill at one of its facilities and teach employees how to respond².

[GET THE FULL ENTEGRIS STORY →](#)



Maximizing Experts' Time through AR-Based Training at Valmont Industries Inc.

Christin Benson, Manager Engineering IT Business Analysis and Organizational Change Management (OCM), described Valmont's opportunities for AR-based training in a [Vuforia Live session](#). With out-of-date or nonexistent SOPs, lengthy creation time for training materials, lengthy onboarding time for new employees, and other roadblocks associated with traditional training methods, Valmont needed a way to maximize its experts' time while optimizing the training experience for new employees. In response to these opportunities, experts at Valmont used AR-enabled headsets to capture step-by-step procedures while performing them—without losing production time. Later, newer employees leveraged the captured content through knowledge-based AR work instructions to try the same procedures themselves³.

[GET THE FULL VALMONT STORY →](#)

+ **AR-BASED TRAINING** **LEADS TO COST-SAVINGS**

Industry leaders realize significant improvements to their workforce's competence, productivity, and agility with AR-based training. Those benefits can lead to multiple areas of cost-savings, including reduced training costs, scrap, material defects, service costs, and workplace accidents.

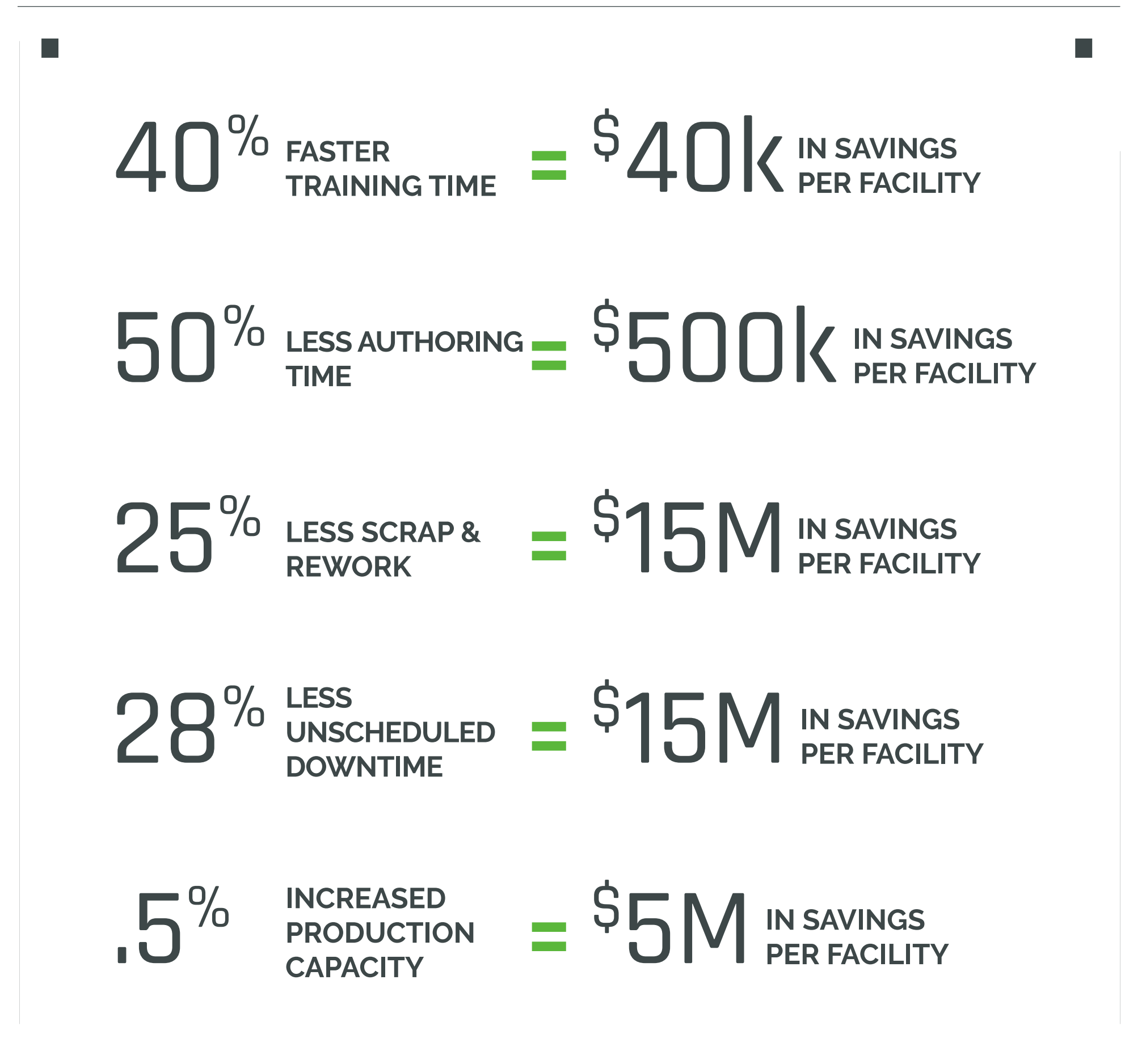
REAL-WORLD RESULTS

AR-Based Training Reduces Scrap

AR improves training outcomes and facilitates knowledge transfer across the enterprise, helping frontline employees limit mistakes that often result from poor training. By minimizing mistakes across the frontline, organizations can lower the costs of scrap and rework.

One high-tech manufacturer reviewed its business challenges and set out to improve upon its manual documentation, content creation standards, and return on training investments. After implementing knowledge capture and AR work instructions, the manufacturer realizes the outcomes on the right.

[READ THE FULL STORY →](#)



REAL-WORLD RESULTS

AR-Based Training Reduces Material Defects

Defects are among the biggest drivers of high operating costs. AR-based training helps to minimize material defects—and their associated costs—by improving the competency and skills of frontline employees.

One pharmaceutical manufacturer realized it needed to improve upon its manual documentation, line clearance, and insufficient expertise to keep up with increasingly complex processes—all challenges that can contribute to material defects. By using knowledge capture and AR work instructions, the manufacturer realizes the outcomes on the right.

[READ THE FULL STORY →](#)



Source: *Vuforia Expert Capture Reduces Material Defects: How a Pharmaceutical Manufacturer Is Saving Millions with Industrial AR*

REAL-WORLD RESULTS

AR-Based Training Reduces Service Costs

AR-based training improves technicians' competency and time-to-productivity, helping organizations provide more efficient service, minimize recurring service visits, and save service costs.

An equipment manufacturer set out to improve upon its in-person classroom training, corrective maintenance and service, and recurring service visits. Knowledge capture and AR work instructions help the company realize the outcomes on the right.

[READ THE FULL STORY →](#)

40% FASTER TRAINING TIME = **\$3M** IN SAVINGS PER FACILITY

26% LESS REWORK = **\$8M** IN SAVINGS PER FACILITY

27% LESS TRAVEL FOR UNSCHEDULED DOWNTIME = **\$8M** IN SAVINGS PER FACILITY

Source: Vuforia Expert Capture Reduces Service Costs: How an Equipment Manufacturer Is Saving Millions with Industrial AR

Transform Training and Realize Benefits Across the Enterprise with AR

AR-based training helps employees learn and retain information more effectively. Experts also leverage AR as an intuitive solution to transfer their valuable knowledge. By empowering your workforce with real-time, up-to-date AR training experiences, frontline employees benefit from faster onboarding, increased productivity, and improved safety and job satisfaction, leading to multiple areas of cost-savings.

Read IDC's report, *How Augmented Reality Expedites Training and Knowledge Transfer for Frontline Workers*, to learn how AR-based training can help you get ahead of the growing skills gap and improve workforce productivity across your business.

[GET THE REPORT →](#)

