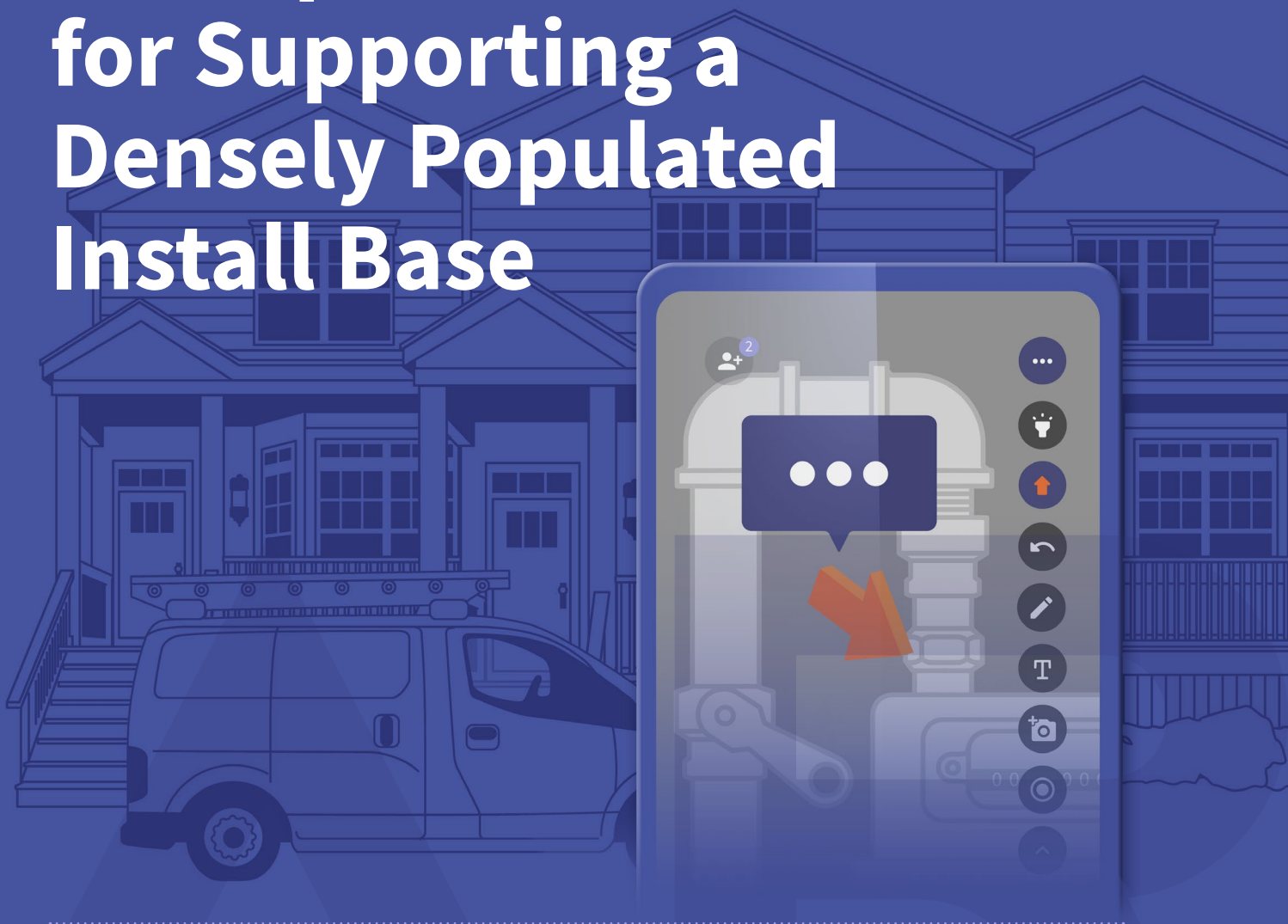
BLUMBERG ADVISORY GROUP

AUGMENTED REALITY

The Optimal Tool for Supporting a Densely Populated Install Base



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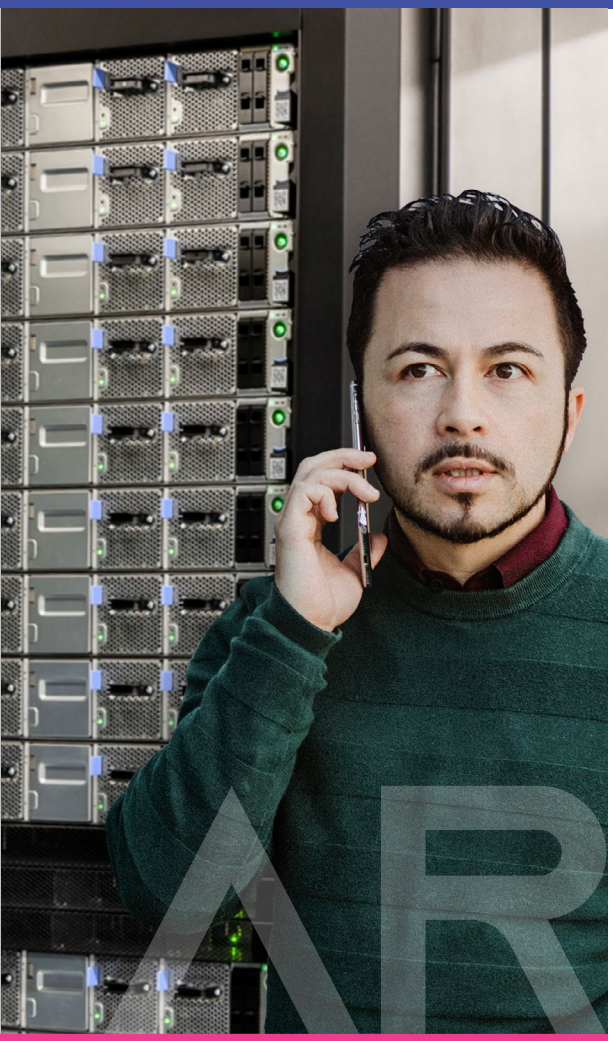


AUGMENTED REALITY PROVIDES A SOLUTION TO REDUCING THE SKILLS GAP.

Executive Summary

Field service organizations (FSOs) face several severe challenges in meeting their performance goals. These challenges include employee churn, end-user customers moving toward self-service, and original equipment manufacturers (OEM) outsourcing service to other major players. As a result, FSOs are under increasing pressure to accelerate their journey towards a complete digital transformation. In parallel, customers demand better and faster resolution when they report a problem.

On the call center side of a support call, the agent traditionally faces many challenges. These challenges are due to the call agent's lack of ability to see what the onsite technician or customer observes. The conversations are full of comments like: "You know…," "Something looks out of place," and "Which of the four buttons should I push to reset the product?"

As service and support organizations experience a shift in labor patterns due to the trends identified on the next page, the knowledge or skills gap between experienced technicians and less-experienced technicians and customers widens. These challenges are more severe among FSOs and call centers that support a densely populated install base. The larger the install base, the higher the volume of products that requires support and the more variability between them.

Augmented reality (AR) provides a solution to reducing the skills gap. This technology allows call agents and technical support engineers to see what an engineer, end-user, or customer sees onsite and communicate in real-time using audio and video techniques to help a less-skilled person perform like an expert.

A leading augmented reality platform is CareAR, A Xerox Company, which has demonstrated excellent results by more than 100,000 global enterprise users.

Critical Field Service and Call Center Industry Trends

Several trends are impacting the quality, productivity, and effectiveness of field service and call center operations, including:

Silver Tsunami

Older workers who retire from the workforce early or when they are eligible to collect their retirement package. Many are long-term employees.

The Great Resignation

Younger employees who either leave the workforce to work from home in another industry or relocate and work for a new company in a location where they are more comfortable.

Self-Service

Companies are increasingly adopting customer self-service models to improve the customer experience and reduce the cost of service. These models are possible because end-users have become more tech-savvy and want a faster response from their service providers.

Outsourcing

Because of employee churn, many businesses hire recently displaced workers to perform jobs once held by full-time employees. Also, some form companies with their previous peers and become independent third-party service organizations to capitalize on their skills, while also working for themselves.

Contingent Labor

Many companies are turning to contingent labor platforms to locate, qualify, and hire gig workers for field service coverage in low-demand areas as well as to smooth out peak demands or fill in when a new skill is required.

These trends create a knowledge gap for the call center and field service industry. There aren't enough qualified service personnel to meet service demand through traditional telephone support and onsite service models. The more extensive and densely populated the install base, the bigger the problem this becomes.

KEY POINT

The shortage of skilled labor combined with new service delivery models is creating a knowledge gap within the field service and call center industry.

Install Base Characteristics and Their Impact on Service

It is possible to find any product or service in any developed or developing country in today's industrialized world. But the density of installations of any one type of product, units per square mile or units per 100,000 people, can vary widely. This variation will strongly influence a support organization's mission, size, tools, and budgets. Here are some comparisons:

Densely Populated	Sparsely Populated
• Relatively high call volume	• Relatively low call volume
• Highly experienced repair people	• Relatively inexperienced repair people
• Shorter travel time per dispatch	• Longer trips to reach customers
• Silver Tsunami causing experienced field service people to churn	• Great Resignation causing less experienced repair people or operators to churn
• Service people need detailed "training" on new and infrequently serviced products	• Service people need thorough "training" on most products
• Territory requires management to build strong customer relationships	• Management must spend a lot of time coaching and mentoring the less experienced engineers
• Local service teams have high business visibility	• Local service teams have low business visibility
• A large number of resources	• Few resources

The difference between densely and sparsely populated territories is significant from all aspects of the service business. But the more densely populated areas have more importance to the company from a service perspective because of the relatively large amount of revenue and profit they generate.

Consequently, all call centers and field service organizations must execute a plan to support all the customers and products in their assigned territory. And they must do so with a system that can satisfy the support requirements of all customers using all of the products and services available from the company.

Examples of a densely populated install base include:

- **Building Automation Systems** – elevators, fire safety, and HVAC equipment in large and mid-sized cities
- **Desktop Equipment** - used by knowledge workers at companies, universities, government facilities, or large hospitals
- **Point of sale (POS) systems** – installed in major shopping areas and malls
- **Medical Devices** - patient monitors, defibrillators, EKG machines, and patient beds
- **Data Centers** – many different configurations, including co-location centers, enterprise centers, and cloud centers

The more products and customers a service organization must support, the more the knowledge gaps widen.

Densely Populated Install Base Challenges

Call centers and field service organizations supporting a densely populated install base generally have a high concentration of experienced and skilled personnel who know their customers and products. As these employees age, they will most likely retire early and be replaced by more junior or inexperienced technicians or by outsourced providers and contingent labor platforms. Therefore, one of the most significant challenges for both the call center and field service team managers is to quickly and efficiently bring these new team members up to the competence level of those leaving.

KEY POINT

Supporting a densely populated install base creates challenges from a knowledge, training, and performance perspective.

The second challenge: the more pieces of equipment requiring support, the more likely the installed base includes legacy (out of production) products. While this is common in the building automation segment (except in Dubai and other new cities), it is also common in fast-changing products like POS systems and medical devices.

Learning about all these products and their usage is an almost impossible challenge. As one new building automation technician recently said, "I feel like I am drinking from a firehose."

The Role of Augmented Reality

In the past few years, augmented reality has come into its own as a tool to help field service engineers and end-users who perform self-service to obtain higher-level remote support when trying to repair or upgrade a physical product. The work can be simple to understand but hard to get right, like with all promising technologies.

Using smart devices, such as smartphones or tablets, field engineers or customers can communicate with technical support engineers at a central location who are also using smartphones, tablets, or desktop computers running an AR application. They communicate over a connection that transmits both audio and video content. This technology enables call center engineers to see what the onsite engineers or customers see, provide detailed verbal instructions, and add symbols and notes for onsite users to read and retain as the troubleshooting process progresses. AR also permits call center technicians to share content such as checklists, engineering documents, and videos with onsite engineers when appropriate.

This technique differs from the traditional ways onsite people received assistance in the past. Older methods include:

- **Audio only** – telephone or walkie-talkie
- **Personnel handholding** – another person on site with the service engineer

The table below compares the three major techniques used to provide technical support and training to people working with equipment. **(5= highest/best, 3= neutral, 1= lowest/worst)**

	Criteria	Telephone (audio)	AR (audio + video)	OnSite coaching
Investment	Cost (low is best)	5	3	1
Ease of use	Difficulty (easy is best)	5	4	4
Time to start of assist	Minutes (short is best)	5	4	2
Context for tech support	Complete	2	4	5
2-way info transfer	Quality	2	4	5
Interaction	Quality	1	3	5
Ease of escalating	Ease	3	5	2
Value during pandemic	Facility access	5	5	1
Scalability	Ease	2	5	1
Multiple people	Ease	3	5	1
Video streaming	Ease	1	5	1
Weighted Average		**3.1**	**4.3**	**2.5**

In other words, augmented reality is the top choice for call centers helping field engineers, a telephone is the second choice, and onsite coaching is the last choice. AR is superior because it is flexible, economical, and easy to use.

AR IS SUPERIOR BECAUSE IT IS FLEXIBLE, ECONOMICAL, AND EASY TO USE.

The Business Case for AR

Like with other digital initiatives, many service leaders will have what they consider to be good reasons not to investigate and then implement augmented reality.

Unfortunately, few people will be willing to make what they perceive to be a career-limiting move. One of the most compelling reasons for AR hesitancy is that the success rate of digital transformations (DX) is low. Companies get stuck in "pilot hell" and cannot move beyond that stage. Nor do they want the DX project to disrupt day-to-day operations, particularly if their field organizations must respond to a high volume of service transactions per day. Fortunately, AR has a better track record than other DX initiatives. One widely shared statistic that illustrates how successful implementing AR can be is that AR users experience up to a 35% improvement in first-time-fix rates after implementing it!

KEY EMPLOYEES ARE CHANGING JOBS AND COMPANIES BECAUSE OF BURNOUT.

Another reason service leaders might be reluctant to implement AR is they do not want to risk upsetting their field and technical support engineers in the middle of the Silver Tsunami and the Great Reshuffling. But one big reason why these key employees are changing jobs and companies is because of burnout. Aspects of service jobs that can lead to burnout, even in the best of times, include:

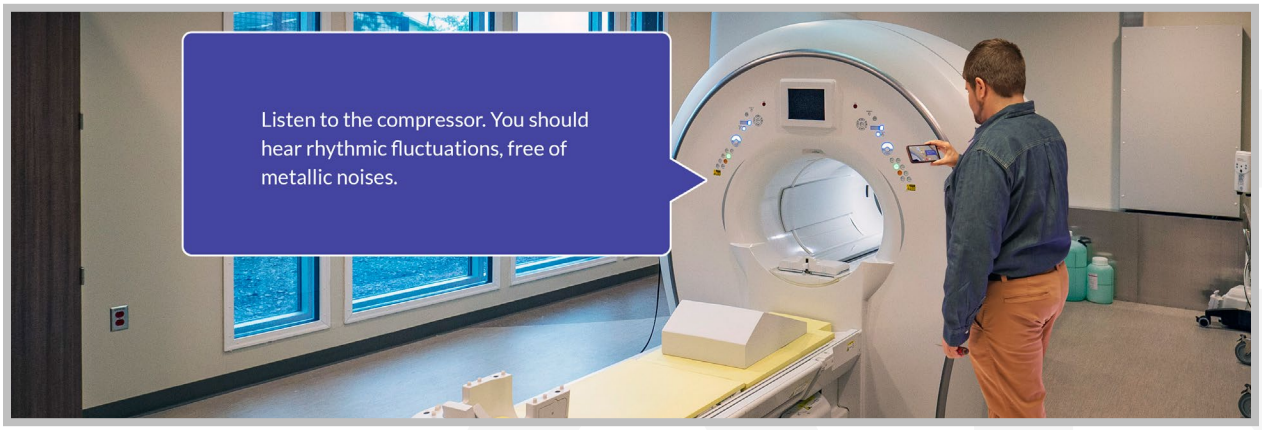
- Excessive traveling
- Solving the same problems at the same customer site over and over – it feels like Groundhog Day.
- Going to unsafe facilities while their friends all work from home
- Trying to work smarter while their leaders are holding improvements back for fear of failing
- Trying hard to satisfy their customers without getting new tools

These days, everyone knows how many open positions exist at their organizations. Employers are working extra hard to fill the gaps and hire and train the right people. Yet, when service engineers speak to customers, they often hear complaints about the timeliness and quality of service. This situation is attributable in large part to labor shortages. AR helps remedy that situation. Studies show that AR can improve customer satisfaction by 30%.

KEY POINT

AR's ability to improve technician efficiency and customer satisfaction without creating additional stress is good for morale and the technician's mental health.

As customer satisfaction increases, so too does technician morale. Also, AR is not a replacement or substitute for onsite technicians, and they are now beginning to understand this. Since AR helps them facilitate remote support fixes and be more efficient on the job, they become less stressed and more productive. Technicians who support a high volume/densely populated customer base and respond to multiple service requests per day appreciate this outcome. AR helps improve the mental health of service personnel by reducing job stress and anxiety.

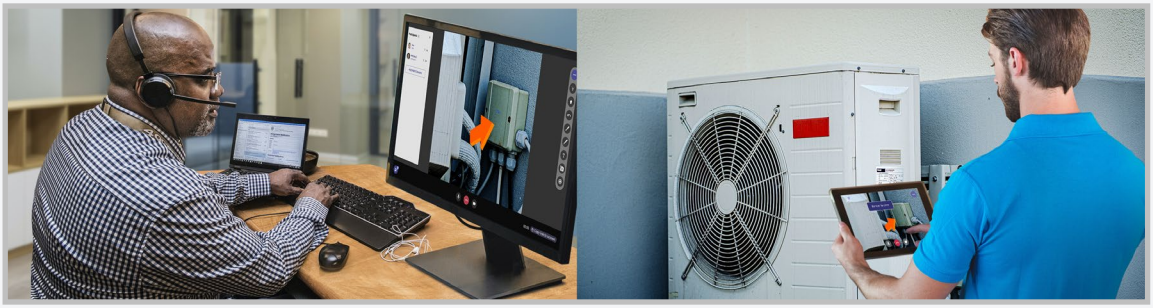


Augmented Reality Use Cases

Below, we provide three use cases that highlight the value of AR in supporting a densely populated install base.

USE CASE #1

Training a New Field Service Engineer



One high-value use case for AR is onboarding new field service technicians to a new company, division, or product line. The traditional way is to provide classroom training, and after new employees display a predetermined level of competence, they visit customers with an experienced technician. As a result, two people make the trip to a customer with these likely outcomes:

- If the call is billable, the customer worries he is paying for both people.
- No matter what happens, the customer believes the visit would have been shorter, and the problem solved faster if the experienced field service engineer did not have to spend so much time training the new person.
- If the call requires two or more trips, the trainee doesn't learn enough to justify the significant investment in time, especially if it involves locating a rarely used part.
- If everything goes well, the trainee likely did not do much troubleshooting work since the senior engineer was motivated to create an elevated level of customer satisfaction by repairing the product quickly himself.

With AR, the new employee, whether a permanent or gig worker, can be dispatched to a job. This is because a remote technical support person can coach the onsite person and resolve the issue with minimum wasted time or energy.

USE CASE #2

Solving Unusual or Unique Problems

Few field service executives don't have a personnel story about spending a great deal of time, effort, and money trying to solve problems in which the solution was crazy, unexpected, and not due to an issue with a part or the product.

Historically, one classic problem is when the product "won't power up." The agent in the call center will ask the customer, "Is it plugged in?" And the answer is always: "I just checked, and it is." Eventually, the call center dispatches a service technician. When he arrives at the customer's location, he quickly determines one of two things: either the equipment was not plugged in or connected, but the circuit breaker was activated, so there was no power going to the product. Today, the first-line call taker using AR will ask to see every connection from the product to the switch panel without making the customer feel untrusted.

Another version of this scenario involves remote support for desktop equipment. When a user calls the internal help desk and reports a problem with her software, the help desk engineer will frequently use a remote access program to see exactly what is on the desktop monitor. He has the end-user do a few tasks, watch what shows up on the screen, and eventually fix the problem or run more diagnostics. And sometimes, he feels like something else is going on, but he cannot put his finger on it. When he asks the end-user to join an AR call with her phone or tablet and aim the camera at the keyboard, he may see something the end-user is doing that does not show up on the screen. For example, the support person may say, "Hold the shift key down for 10 seconds while you push the return key once," and when he views the process, he discovers the end user got confused and held the return key down for 10 seconds while hitting the shift key once.

And finally, a true story from the annals of Xerox field service involving the dispatch of a field engineer to fix a large production printer in a suburb of Phoenix. After spending over one hour trying to pinpoint the problem, the field engineer called the support center and asked the engineer to start an AR call. As the field engineer slowly panned his tablet over the machine, the support technician saw something that looked out of place and told the field engineer to move closer to the printer. Eventually, the support technician spotted something that did not look like a part of the printer. The field engineer moved in more and quickly realized that a small lizard had become caught between two moving parts. The field engineer removed the lizard, restarted the printer, and continued running the print job.

Sometimes a second pair of eyes sees something that the first person overlooks!

USE CASE #3

Supporting Product Variability

These days, it is common to see an OEM servicing more than its company's products and third-party service providers servicing multiple brands. This situation occurs because the investment in all the infrastructure required to create and maintain a high-quality service team is a burden for many OEMs. Therefore, manufacturers outsource their service to another OEM or third party that has made a strategic decision to provide multivendor services. This strategy allows an OEM to sell its product to customers based on unique features and low cost. The OEM then establishes service credibility by outsourcing service to a more trusted player in the market.

Another cause of this expanding variety of products is M&A activity where service organizations are combined post-merger. The new organization sets out to cross-train the best people. In the past, it would focus on onsite coaching. But, now we know that AR is a more cost-effective solution.

Finally, when an industry leader picks up another OEM's products to service, the former company's field support team quickly needs to learn the new products or product family. Without AR, this assimilation task could be a high-risk proposition. AR allows them to learn the new products without a significant decline in their overall productivity. The best way to manage this situation is for a small number of field engineers in a region to spend a few days a week working on the new products and the rest of the time working on their original product base.

Summary of AR Use Cases

- **Training New Hires**
- **Solving Unusual or Unique Problems**
- **Supporting Product Variability**

Recommended KPI's for AR

As a rule, key performance indicators (KPIs) should link to your desired business outcomes. Unfortunately, finding one KPI set that universally applies to all AR platforms or installations isn't easy. Instead, consider using two sets of KPIs—one for when you first implement an AR platform and the other as you use AR on an ongoing basis. You can move from the first set to the second when you feel the time is right and then add others that suit your business needs.

Start-up KPI's

- AR adoption rate: the percentage of calls that used AR
- AR satisfaction rate:
  - For three groups – customer, support technician, field engineer
  - When the ticket is closed, ask the person from each group, "Did the use of augmented reality improve your experience on this call? Yes, not sure, or no?"
  - Percentage of responses for each group answering "Yes."
- AR effectiveness rate: the percentage of all closed tickets where you did not need to roll a truck or dispatch a field engineer.
- Track and compare the satisfaction rate vs. the effectiveness rate. Make sure customers are happy even if there is no onsite visit as long as the problem is solved.

- ✅ **AR Adoption Rate**
- ✅ **AR Satisfation Rate**
- ✅ **AR Effectiveness**

Ongoing KPI's

- Continued tracking of the effectiveness rate.
- Value of AR: the period cost savings minus the period cost of AR. This should be a positive number.
- Overall service CSAT. Expect an improvement in CSAT over time of up to 50%.
- First-time fix rate: users report an improvement of up to 50%
- Reduction in training costs: the total annual savings of up to 40% year-over-year for the same number of students.

- ✅ **AR Effectiveness**
- ✅ **Value of AR**
- ✅ **Overall C-Sat**
- ✅ **First Time Fix**
- ✅ **Reduction in Training Costs**

A Unique Solution

CareAR® Assist offers a solution to overcome the challenges of supporting a densely populated install base. The platform is geared to a quick adoption rate and a brief time-to-value for your organization and customers. CareAR Assist has a substantial number of features that make it not only easy to use but also desirable for field service engineers and technical support engineers to use with customers. Here are a few of these features:

- CareAR is a Xerox company with the resources and history of a global imaging product leader.
- More than 100,000 worldwide enterprise users.
- Supported by a wide variety of devices: desktop Mac and Windows computers, mobile devices using iOS and Android, and smart glasses.
- The product is easy to install, learn, and go-live with.
- Because Xerox has a long history of producing equipment that creates high-quality images, the video fidelity on smartphones, tablets, and desktops means users will not get tired if they use it for hours. It works well across low-latency and challenged “field-based” networks.
- Patented technology anchors annotations on 3D objects, so the arrows and instructions do not move if the phone or tablet moves.
- Images and recordings from live sessions are automatically saved into the appropriate ticket or knowledge base for proof of work completed as well as data collection and analysis.
- Seamless integration is available for ServiceNow cases and ServiceNow performance analytics.

Conclusion

Field service organizations are increasingly using AR platforms to make expertise available to technicians and end-users trying to repair equipment. The three primary reasons are to:

- empower agents to see what their customers see for remote troubleshooting;
- enhance technician efficiency and close the skills gap using remote visual assistance and guidance; and
- enable IT staff to improve employee productivity and uptime by resolving incidents remotely.

Because of the sizeable number of unique features and its experience supporting customers with a highly dispersed, densely populated install base, Xerox's CareAR is an effective platform for helping to move field service further along on its digital transformation journey.

About Blumberg Advisory Group, Inc.

Blumberg Advisory Group, Inc. is a leading research and consulting firm in Field Service Industry and a pioneer in helping companies manage service as a strategic profit center. Blumberg is uniquely qualified to position its clients strategically to meet current challenges and new growth opportunities through their relationships and experience. Blumberg works to improve its clients' profits through strategic service, assisting in developing and implementing profitable business strategies based on the principle that service is managed best as a separate, strategic, and profitable business.
Learn more: **www.blumbergadvisor.com**

About CareAR

CareAR, a Xerox company, is the leader of Service Experience Management (SXM). We make expertise accessible instantly for users through remote, live visual augmented reality (AR) and AI interactions, instructions, and insights as part of a seamless digital workflow experience. CareAR sets the benchmark for the SXM category by bridging skills gaps, accelerating knowledge transfers, providing greater operational efficiencies, and enhancing customer outcomes and safety. Learn more at : **https://carear.com**

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