

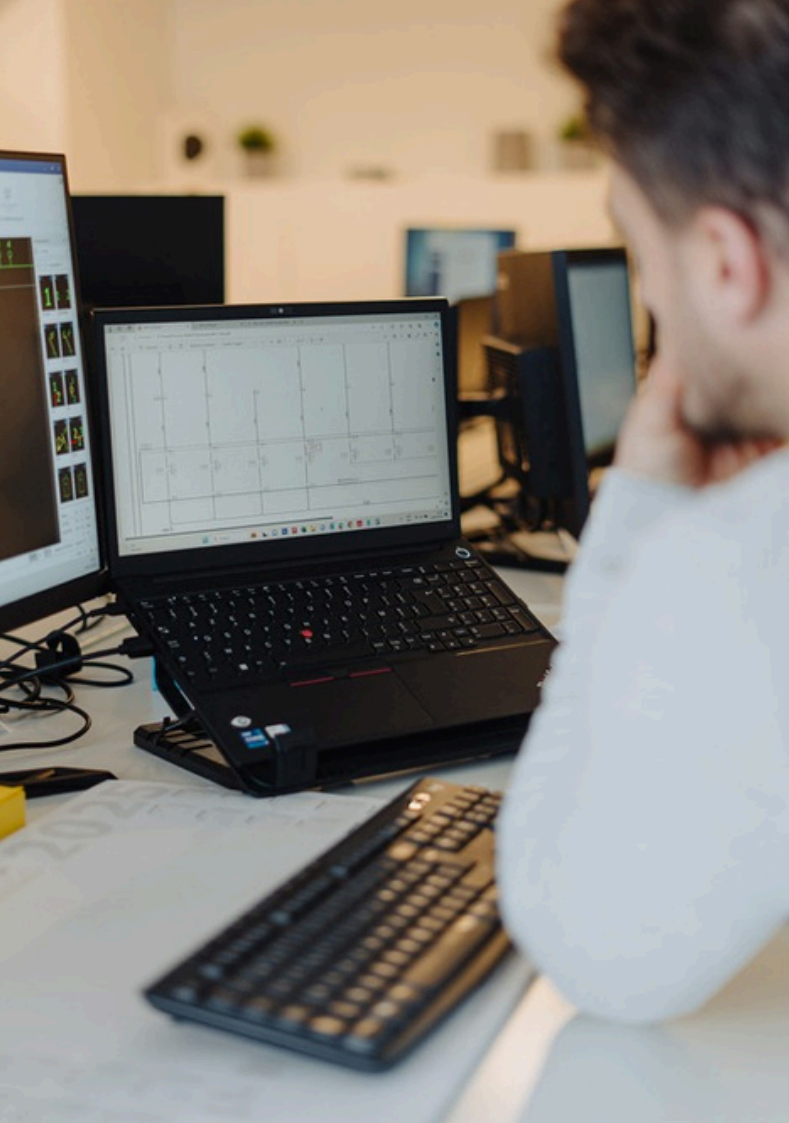
A black and white photograph of a technician wearing a hard hat and safety vest, standing in a server room aisle and looking at a tablet. The server racks are on both sides, and the floor is tiled. The lighting is dim, with some light coming from the end of the aisle.

# **Time Always wins: Why Remote Assistance via AR is a Gamechanger**



**Cabinet  
Manager**

LIGHTSTREAM



# Maintain trust

Design and digital maintenance  
of your industrial machinery.  
The hand on the shoulder of  
your maintenance technicians.

**We breathe Volts,  
eat Ampères for  
breakfast, radiate  
Lumen and can't  
Resist a Watt.**



LIGHTSTREAM

[Lightstream.be](https://lightstream.be)

# Preface

If you've ever stood in a production hall during an unplanned shutdown, you know it instantly: time becomes your most expensive commodity.

At LightStream, we've spent years working in the trenches of electrical engineering and technical documentation. We've seen how downtime stretches budgets, wears out teams, and puts enormous pressure on both safety and decision-making. We've also seen how the gap between experience and execution is growing. Technicians are being asked to manage increasingly complex installations, often without the right context, support, or tools

That is why we built CabinetManager. Not as just another document management platform, but as a real-time problem-solving assistant for technicians. And today, we take that mission a step further.

This whitepaper introduces a powerful evolution: **Remote Assistance via Augmented Reality**. The idea is simple but transformative. Instead of calling for help and describing the problem, what if you could let someone see through your eyes? What if your service partner, remote expert, or senior colleague could guide your hands in real time, without needing to be on-site, and without needing to guess?

That is what we've built.

And it is not a gimmick. During "Troubleshooting the Game" at Hannover Messe, we proved that technicians with access to the exact same information resolved issues ten times faster when using our AR solution versus paper, and twice as fast as with a tablet. The difference? Context delivered hands-free, exactly when and where it is needed.

This is bigger than a productivity boost. It is the foundation for new business models, global support strategies, and a safer, more resilient workforce. Whether you are an industrial site manager, an OEM, or a service provider, Remote Assistance via AR offers a future where expertise is no longer limited by distance or device.

We are proud to develop this with our technology partner Aaltra and to bring it to life on the Apple Vision Pro platform.

I hope this whitepaper sparks ideas, questions, and action. Because if there is one thing I have learned in the field, it is this:

**You can't stop the clock during downtime. But you can fight it with the right tools.**



Dylan Caufrier  
Founder Lightstream

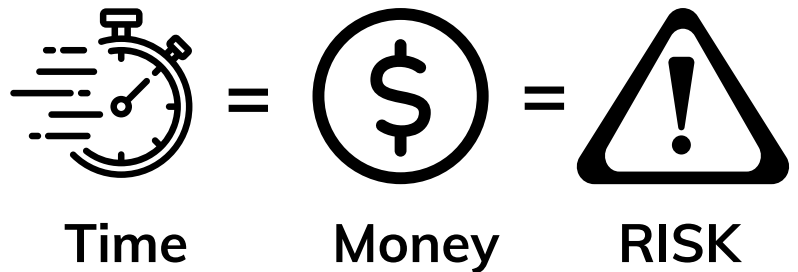
Dylan Caufrier  
Founder & CEO, LightStream

# Time = Money = Risk

When it comes to unplanned downtime, one constant always matters: time. Every minute a production line is idle, you lose revenue, efficiency, and control. In modern industries with high production volumes and tight margins, downtime costs escalate rapidly.

► 10 minutes of downtime? That could already mean thousands of euros/ dollars in lost production.

► An hour? Easily tens of thousands.



But the issue runs deeper than just financial impact. Time pressure creates stress for workers, increases the likelihood of human error, and lowers workplace safety. That's exactly why Remote Assistance via Augmented Reality (AR) is no longer a luxury, it's a necessity.

## The Three Pillars of Fast Problem Solving: Experience, Skills, and Context



Every fast and safe intervention on the shop floor requires three elements:

### Experience

Aging workforces worldwide are draining experienced technicians from the market. A Deloitte study projects that by 2028, about 4.6 million new jobs will be created in manufacturing, yet 2.4 million (over 50%) may go unfilled.

### Skills

Installations are becoming more complex. Twenty years ago, we were working with simple PLCs. Today, IT and OT are fully integrated in production environments: remote sensors, edge computing, cybersecurity, AI-driven maintenance algorithms. No technician can master every aspect.

According to Korn Ferry's 'Future of Work' report, by 2030, over 85 million skilled jobs could go unfilled globally. This gap could cost the world economy \$8.5 trillion over the next decade, that's \$1.62 million per minute.

### Context

Even the best technician can't do much without the right documentation: manuals, fault history, component data. Access to that information, at the right time, in the right place, is crucial.

# But What If That's Not Enough?

Sometimes, experience isn't sufficient. Sometimes skills fall short, or context is missing. Then what? There's only one option: call for help. And that's exactly where the process often breaks down.

The classic approach, calling the on-duty technician or helpdesk, is slow and inefficient. The person on the other end can hear what's happening but can't see it. Video calls via smartphone can help, but they tie up one hand. Often, you need two people, one to hold the phone, the other to work.

## Case: Troubleshooting the Game – How AR Makes the Difference on the Shop Floor

During Hannover Messe 2025, we wanted to show not only what CabinetManager can do but also how much of a difference it makes in real-life conditions. So we created an interactive challenge at our booth: **Troubleshooting the Game**.

Visitors were invited to solve the problem illustrated by a signal light on the column. Imagine the starting point: you're a new technician, You've just stepped onto the shop floor. Your experienced mentor was meant to guide you through your first real maintenance task but he's just been called away to handle something urgent elsewhere. Suddenly, you're left alone. Then a fault occurs.



Each participant received the exact same information about the installation, delivered in three formats:

- 1. Classic paper binder with schematics, manuals and procedures
- 2. CabinetManager on tablet with digital schematics, manuals and procedures, installation history
- 3. CabinetManager in Augmented Reality via Apple Vision Pro—hands-free, with all information in view

### The Results



#### Tool used



#### Average resolution time

Paper documentation	10 minutes
CabinetManager on tablet	2 minutes
CabinetManager via AR	Less than 1 minute

With paper, participants had to flip through a thick binder, find the correct page, interpret it, and then locate the relevant component.

With the tablet, they could navigate more quickly and click through directly to what they needed. This already produced a huge improvement.

But CabinetManager AR on Apple Vision Pro changed the game completely:

- Schematics appeared directly in their field of view.
- Procedures at hand, in their field of view.
- Their hands were completely free to work.
- At any moment, they could bring up reference data without putting anything down.

## The takeaways

What this challenge clearly demonstrated is how **ergonomics** and **workflow** are critical in technical interventions:

- Hands-free work is not a luxury. It's a performance multiplier.
- Friction between thought and action (like putting down tools to check instructions) adds more delay than we realize.
- Technician confidence rose visibly when they could access everything instantly and without interruption.

The result demonstrates a **tenfold** improvement over paper-based workflows and a **50%** gain over tablet use, using identical information.

This underscores the critical role of interface and ergonomics in operational efficiency.

AR-enhanced support enables faster, safer, and more consistent technical execution across the board.

## Human Error and Downtime: The Hard Numbers

Recent studies show that **23% of all unplanned downtime is caused by human error** (ABB, 2020). The average manufacturer experiences **800 hours of downtime per year**, or more than 15 hours per week (ServiceMax, The True Cost of Downtime).

The financial impact is staggering. Industrial manufacturers lose up to **\$50 billion annually** due to unplanned downtime, with costs reaching **\$20,000 per minute** in some sectors (Gartner).

Links:

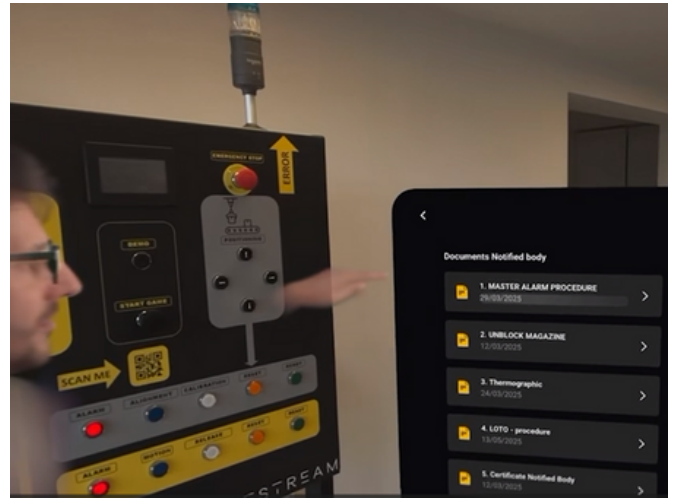
- ABB: <https://new.abb.com/news/detail/64023/abb-study-human-error-is-responsible-for-23-of-unplanned-downtime>
- Servicemax: <https://www.servicemax.com/resources/whitepaper-the-true-cost-of-downtime>
- Gartner: <https://www.gartner.com/>



# How Remote Assistance via AR Works

CabinetManager's new Remote Assistance module allows technicians to:

- **Share their field of view** live with an expert via Apple Vision Pro.
- **Receive hands-free instructions** while continuing to work.
- Both the technician and the expert can simultaneously view the live context, interacting with the same information, creating **a single source of truth** for fast, aligned decision-making.



In collaboration with our development partner Aaltra, we conducted a live demo to showcase the possibilities.

A “Master Alarm” fault was resolved entirely remotely, simulating the technician and the expert were over 50 kilometers apart. During troubleshooting, a secondary issue surfaced: the HMI screen had lost communication. The root cause? A loose RJ45 cable in the switch.

Thanks to AR, the remote expert could quite literally see through the technician's eyes. The expert immediately spotted the unplugged cable, guided the technician through the fix, and restored full system functionality, without anyone needing to travel.

**No delays. No travel time. No guesswork.**

You can find the movie on our dedicated YouTube channel. The link is included in the article where you downloaded this whitepaper.

This scenario illustrates exactly how field service engineers and maintenance teams can benefit from AR-powered support, whether they're across the plant or across the country.

# New Business Models and Strategic Advantage

The true potential of Remote Assistance via Augmented Reality (AR) goes far beyond faster troubleshooting. It opens the door to entirely new ways of working, scaling expertise, and delivering value, not just on the shop floor, but across your entire service and support organization. Below are four strategic advantages that illustrate how AR support transforms operations and unlocks competitive edge:

## Global Knowledge Sharing



Imagine your technician is standing on the factory floor in Poland, faced with a component failure they have never encountered. Your top specialist, however, is in Belgium or Mexico. Traditionally, support would involve back-and-forth phone calls, emails, or travel time, delaying resolution and increasing costs.

With AR-powered Remote Assistance, **location no longer matters**. Your best people can be available anywhere, anytime. They can see exactly what the field technician sees and guide them in real time. This not only improves response time, but also **ensures that critical knowledge is applied where it's needed most**. You keep expertise centralized, yet accessible across geographies.

## New Service Models



For OEMs and machine builders, AR opens up **new revenue streams**. Remote Assistance can be integrated as part of a **subscription or premium service package**, offering clients proactive and on-demand support.

Instead of dispatching field engineers for every issue, costly, slow, and often unnecessary, you can offer virtual interventions as a first line of service. This model reduces cost-to-serve, increases customer satisfaction, and offers **scalable, high-margin** services that differentiate your offering in a competitive market.

## Training and onboarding



Every new hire comes with a learning curve and every mistake can be expensive. With AR, **you shorten that learning curve significantly**.

Trainees can be coached step-by-step by remote experts while performing real tasks. They don't need to remember everything on day one, contextual guidance is available at every step. This builds confidence, improves safety, and speeds up integration. **Less shadowing. Faster ramp-up. Real experience, with support at hand.**

This is especially powerful in sectors with aging workforces, where institutional knowledge is at risk of disappearing. With AR, you can **turn your senior experts into real-time mentors**, no matter where they are.

## Consistency & Quality



No matter how skilled your workforce is, outcomes can vary based on who's performing the task and how familiar they are with the equipment. AR ensures **every technician has access to the same standard of knowledge and guidance**, delivered consistently in real time.

This leads to **more consistent results, fewer errors, and improved compliance** with procedures and safety protocols. And when your brand depends on reliability and quality, that consistency becomes a true strategic asset.



# To conclude

## Remote Assistance Isn't the Future – It's Now

The skills gap is real. The pressure on technicians is increasing. Installations are more complex than ever.

And downtime is already prohibitively expensive. But we don't have to wait for better talent or simpler systems.

With CabinetManager's Remote Assistance module, combined with AR and Apple Vision Pro, you bring expertise directly to the worksite. Visually. Hands-free. Scalable across the globe.

The difference between downtime and performance? **Just a few minutes.**

Dylan Caufrier.

[illegible]

[illegible]

# Gain time

## Manage all documents

Have real-time access to up-to-date technical information

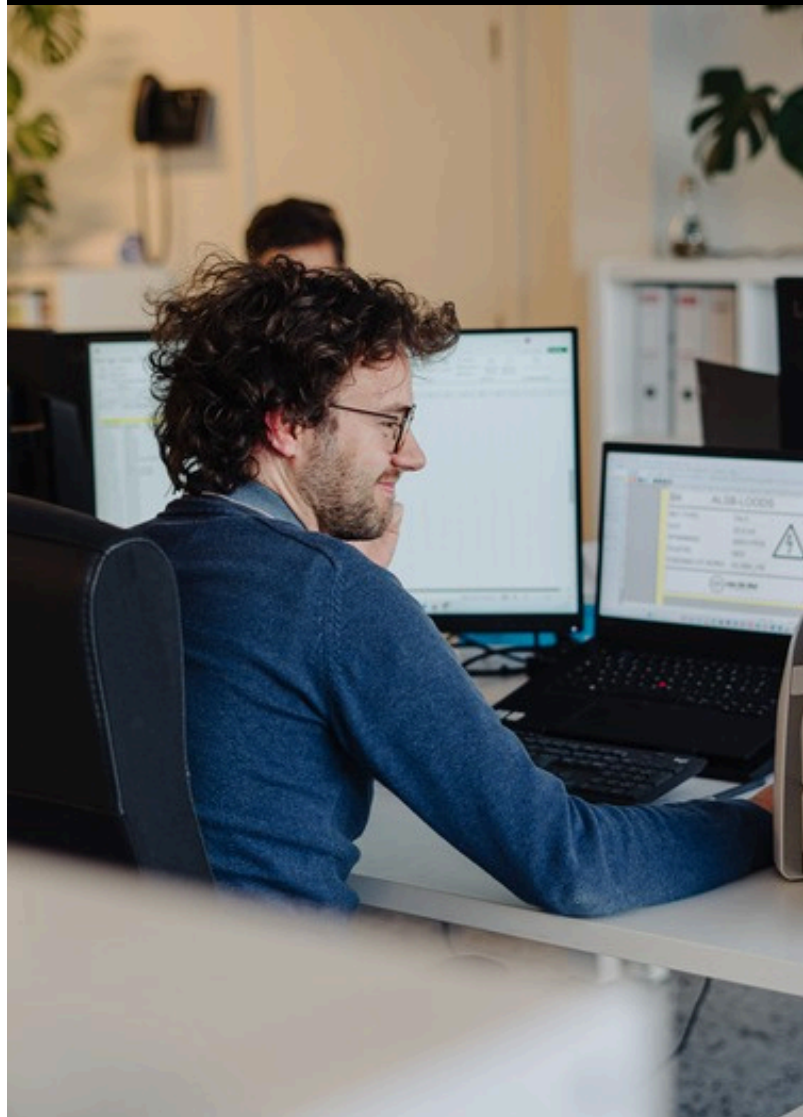
Cabinet Manager ensures a cost-efficient and secure workflow:

- Scan the QR code on the technical installation. Via personal login you get access to the necessary information. No information overload, only information that is relevant to you.
- From plans, inspection reports and manuals to emergency contacts: everything is available digitally at one place.
- Adjustments are visible in real time to colleagues and technical partners.
- Share quick fixes and insights through the Frequently Encountered Problems feature and help your colleagues solve problems faster.
- The software is available in 5 languages so that everyone in your international team can find their way around quickly.
- Log in easily via tablet, smartphone and desktop. You don't need an app for that. Handy!

**cabinetmanager.be**



**Cabinet  
Manager**



CabinetManager is a product  
from Lightstream bv.

Businesspark "New Westral"  
Steenweg Deinze 150  
9810 Nazareth, Belgium

[info@cabinetmanager.be](mailto:info@cabinetmanager.be)  
+32 479 29 63 65  
[cabinetmanager.be](http://cabinetmanager.be)