

TECH & AI CASE STUDY - TELECOM - 2026

Smart Glasses and Remote Experts That Raised First-Visit Fixes 27%

Based on a delivery engagement with Crestwave Telecom

71% to 90%
FIRST-VISIT FIX RATE

-38%
REPEAT TRUCK ROLLS

-29%
TIME TO RESOLVE

\$2.1M
ANNUAL SAVINGS

A fillable practice edition: the full story, 8 actions,
6 reflections and a 90-day plan - work it with your team.

Free - no email required
emersontechnology.com

MAKE THIS PRACTICE BOOK YOURS

Work it, do not just read it

This practice book turns the Crestwave Telecom case study into a working session for your team. Read the full story first - what happened, what was built and what it changed. Then tick the 8 actions you can commit to, write short answers to the 6 reflections, and finish with a 90-day plan. Every field in this PDF is fillable: open it in Adobe Acrobat Reader, Chrome, Edge or macOS Preview, type directly into the boxes and save.

YOUR NAME

ROLE

COMPANY

TEAM / DEPARTMENT

DATE

EMAIL (OPTIONAL)

MY GOAL FOR THIS PRACTICE SESSION

- 01

The story - What happened at Crestwave Telecom - before, during and after the project.
- 02

The results - The numbers that changed, plus industry benchmarks from public research.
- 03

The 8-action checklist - Tick boxes as your organization completes each step. Owner and date fields included.
- 04

The 6 reflections - Fillable questions that pressure-test your own roadmap.
- 05

My 90-day plan - Three fillable phase cards that turn this case study into your roadmap.

RUN IT AS A 90-MINUTE TEAM SESSION

25 min READ Read the story together. Ask everyone to note the one number that surprised them most.	40 min PRACTICE Work the 8-action checklist and the 6 reflections. Assign an owner and a date to every action you commit to.	25 min COMMIT Fill in the 90-day plan. One goal per phase, one number that tells you it worked. Book a review date before you leave the room.
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THE STORY

What happened, and why it worked

01 The Company

Crestwave Telecom maintains fiber and legacy transport networks across three states with 420 field technicians, serving retail customers and wholesale carriers whose business-fiber commitments carry penalty clauses when restorations slip. The company's field operation is where its brand actually lives: when a circuit goes down for an enterprise customer, the technician who climbs the pole or enters the vault is Crestwave to that customer. Network reliability commitments are contractual, customers are sophisticated, and the difference between a two-hour restoration and a two-day one is measured in both credits and churn.

Beneath the operation sat a demographic time bomb the leadership team could date precisely. Two aging equipment lines — legacy transport platforms still carrying substantial traffic — were understood deeply by exactly 12 senior experts, and those experts were retiring fast. The company's training programs could teach the current network well enough, but the failure modes of the old platforms lived in experts' heads as pattern recognition built over decades, and every retirement ceremony was also a knowledge transfer that never quite happened.

Crestwave did not have a staffing problem; it had a knowledge-availability problem showing up as field statistics.

02 Where Things Stood

Before Emerson Technology engaged, the first-visit fix rate had stalled at 71% — below the mid-70s average that Aberdeen Group field-service benchmarks have long reported, and structurally stuck because the missing visits clustered on exactly the equipment the newest technicians understood least. When a tech hit an unfamiliar fault on the aging lines, the escalation cycle took one to three days: photographs taken by phone and texted to whoever might know, phone tag across shifts and schedules, then a second truck roll costing \$180 to \$400, plus SLA credits to wholesale customers when restoration windows slipped. Repeat visits ran 21% of all jobs — one in five trucks driving back to fix what the first visit could not.

The human mechanics of escalation were as costly as the statistics. Experts were interrupting their own scheduled jobs to answer calls, which made them reluctant participants in a process that consumed their productivity; technicians hesitated to escalate at all because the phone-tag ritual was demoralizing and often unresolved; and the knowledge exchanged in each escalation evaporated when the call ended, so the same fault taught the same lesson to one technician at a time. Every delayed restoration risked penalties on business-fiber commitments, and the aging equipment lines were precisely where delays concentrated.

Meanwhile the retirements continued. Each departing expert took a library of failure-mode intuition that no course captured, and the remaining experts absorbed more escalations, which accelerated their own burnout. The training organization could not keep pace because the knowledge kept leaving the company faster than it could be written down. Aberdeen's benchmarks say each percentage point of first-time fix is worth measurable revenue and cost; Crestwave was nine points below average and sinking on the equipment where those points cost the most.

03 The Challenge

The challenge was to make 12 retiring experts available to 420 technicians at the moment of need — without turning those experts into a call center, and without a hardware rollout the field would quietly abandon. The escalation problem had three interlocking failures to fix at once: access (a technician needs an expert in minutes, not days), capture (the resolution must become knowledge the next technician can find), and adoption (the workflow must live inside tools the field already uses, or it dies at the truck door).

The constraints were practical and unforgiving. Rural coverage areas mean bandwidth cannot be assumed, so any video-based assist had to survive LTE conditions that would defeat consumer tools. Head-mounted cameras inside customer premises and public infrastructure raise privacy and legal questions that had to be answered before the first pilot, not after the first complaint. And the economics had to work in the field-service currency that matters: truck rolls and SLA credits, with industry analyses from IFS commonly estimating the fully loaded cost of a field-service truck roll between \$150 and \$500 depending on distance, skill and equipment — a range that made even modest reductions in repeat visits a seven-figure opportunity.

04 Discovery and Diagnosis

Emerson Technology began with a three-week discovery sprint built around the escalation log. The team reconstructed several months of repeat visits and escalations, confirming what the service director suspected: failures clustered on the two aging equipment lines, the same lines where expert knowledge was concentrated, and the same lines where technician tenure was lowest. The analysis priced the escalation cycle honestly — truck rolls at \$180 to \$400 each, SLA credits on delayed business-fiber restorations, and the expert-hours consumed by phone tag — and found that the 21% repeat-visit rate was not a training failure in general but a knowledge-availability failure in specific places. Aberdeen Group's benchmark that average first-time fix rates sit in the mid-70s framed the target: Crestwave was not chasing an unrealistic number, only the industry norm it had fallen below.

The field research shaped the hardware and workflow decisions early. Technicians tested several wearable options and were blunt about what they would not wear: heavy units, poor battery life and anything requiring a separate login became truck-door equipment. The team also ran bandwidth trials across the rural LTE footprint, finding that a point-of-view video session was feasible only with aggressive throttling and adaptive quality. Finally, the legal review preceded everything: camera consent indicators, recording notice and retention windows were defined with counsel before the first pilot, because field crews will not wear cameras around ambiguous privacy rules for long. Deloitte has predicted that AR wearables will become standard frontline industrial tooling as enterprise-grade hardware, connectivity and remote-expert workflows mature together — the diagnosis concluded that Crestwave's bottleneck was not the hardware market but the workflow design around it.

05 The Solution

Emerson Technology equipped field technicians with enterprise Android smart glasses and built a remote-assist service around them, with Python services on AWS handling session routing, transcription and search. The architecture has three layers.

The hardware decision

The glasses were chosen by the people who would wear them: tested with real crews for comfort, weight, battery life and prescription compatibility, because equipment that gets left in the truck cannot improve any metric. The devices are enterprise Android units that pair with the technician's existing work-order app, and the assist flow lives inside that app — one tap from the job the technician is already working, with no separate device logins, because friction between disconnected tools is exactly where adoption dies. Bandwidth throttling keeps sessions alive on rural LTE, degrading gracefully to lower frame rates rather than failing, so the assist works where the network actually is rather than where a diagram says it should be.

The remote-assist session

A technician facing an unfamiliar fault taps once, and a duty expert joins a live video session from the technician's point of view, drawing annotations and diagrams that appear pinned to the actual equipment — the expert sees what the technician sees, which ends the photographs-and-guessing ritual entirely. Sessions run over a WebRTC

stack tuned for rural LTE, and a dedicated duty rotation schedules experts to cover assist hours rather than expecting interruptions between their own jobs, which is what made response times predictable and trusted. Every session is recorded, transcribed and indexed, with consent indicators active and retention rules applied automatically per the policy defined with legal before the first pilot.

The knowledge engine

The recorded, transcribed sessions are indexed into a searchable knowledge base that future technicians can query by fault code, equipment line and symptom — today's escalation becomes tomorrow's self-service answer, compounding the program's value quietly over time. The index grows at the pace of real operations: every resolved fault adds exactly the failure-mode intuition that used to retire with the experts, captured in the language of the equipment rather than the language of a courseware author. Search is embedded in the work-order flow alongside the assist button, so a technician checks the knowledge base before spending an expert's time, and the loop closes — fewer escalations for known faults, more expert availability for the genuinely novel ones.

06 The First 90 Days

Weeks one and two were spent where the rules were made: camera consent indicators, recording notice and retention windows agreed with legal, and the duty-expert rotation staffed so that expert availability was a schedule rather than a favor. Weeks three through six ran the first equipment-class pilot — the aging transport line with the worst repeat-visit rate — routing only those escalations through remote assist, because proving one lane beats piloting everywhere at once. The pilot produced its proof quickly: an unfamiliar fault that would previously have taken a day of phone tag was resolved in nineteen minutes with annotations pinned to the actual shelf, and the recorded session became the knowledge base's first entry.

Weeks seven through ten scaled the pilot to more regions and hardened the operational details: session routing tuned so the duty expert assignment respected equipment specialization, transcription quality reviewed against telecom vocabulary, and the weekly metrics report established — fix rates, repeat visits and session counts by region and equipment class, published every Monday. That weekly visibility is what quickly turned skeptics into demand: technicians whose first-visit fix numbers improved on paper became the program's advocates at the crew level, and regions not yet in the pilot began asking when the glasses would arrive. Weeks eleven and twelve extended the knowledge base with structured review — experts flagged recorded sessions worth promoting into formal training content — and prepared the chainwide rollout plan.

The adoption rule for the transition was set by the field leadership: no technician would be measured on glasses usage, only on outcomes, and every expert whose session prevented a truck roll would have that resolution counted as real production in their metrics. Otherwise the best people quietly avoid the extra burden, and the program starves precisely where it should feast. By day 90, expert participation had become a point of professional pride, the retiring experts were recording sessions as a deliberate part of their handover, and the rollout to all 420 technicians was scheduled with demand exceeding the hardware supply.

07 The Results

Six months after the chainwide rollout, the field's core statistics had been rewritten. First-visit fix rates rose from 71% to 90% — a 27% relative improvement — and repeat truck rolls fell 38%, attacking the 21% repeat-visit rate at its source. Mean time to resolve escalated faults dropped 29% because live sessions replaced days of phone tag. The company estimates \$2.1M in annual savings from avoided truck rolls and SLA credits, and recorded expert sessions now form a growing training library that the retiring experts themselves helped create. Technician satisfaction scores for the glasses ran higher than management expected.

METRIC	BEFORE	AFTER
First-visit fix rate	71%	90%
Repeat truck rolls	-	-38%
Time to resolve	-	-29%
Annual savings	-	\$2.1M

The changes that will outlast the metrics began with twelve people nearing retirement. The knowledge that was leaving the company with each retirement is now arriving in the knowledge base with each session, reversing the direction of flow that made the training problem unwinnable. Experts describe the duty rotation as career-extending rather than burdensome — their expertise multiplies across 420 technicians instead of draining into one phone call at a time. Wholesale customers noticed the restoration improvements before the internal dashboards did, and the SLA credit line item has shrunk correspondingly. Crestwave now fields escalations in minutes on equipment where the industry standard remains days, and the twelve experts whose retirement triggered the program have become its most credible salesmen — because the library their sessions created will outlast every one of their last days.

08 What Your Business Should Do

Crestwave's playbook carries to any field-service organization, and it begins with focus. Start with one equipment class: pick the fault family causing the most repeat visits and route only those escalations through remote assist first, because proving one lane beats piloting everywhere at once. Choose glasses technicians will wear — test wearables with real crews for comfort, weight, battery life and prescription compatibility, since equipment that gets left in the truck cannot improve any metric. Staff a dedicated remote-expert desk, scheduling experts to cover assist sessions rather than expecting interruptions between their own jobs, because a named duty rotation is what makes response times predictable and trusted. Embed assist in the work-order flow, launching sessions directly from the job the technician is already working with no extra logins, because friction between disconnected tools is exactly where adoption dies.

Then treat the knowledge as the product. Record sessions into searchable knowledge — transcribe and index every assist session by fault code and equipment line, so today's escalation becomes tomorrow's self-service answer and the program's value compounds quietly over time. Set camera consent and retention rules with legal before pilot day, agreeing on consent indicators, recording notice and retention windows, because field crews will not wear cameras around ambiguous privacy rules for long. Track first-visit fix weekly, reporting fix rates, repeat visits and session counts by region and equipment class, since weekly visibility is what quickly turned skeptics into demand here. Reward experts for remote resolutions, counting prevented truck rolls as real production in their metrics — otherwise your best people quietly avoid the extra burden. The context rewards movers: Aberdeen Group benchmarks average first-time fix rates in the mid-70s, IFS research estimates each truck roll costs \$150 to \$500 fully loaded, and Deloitte predicts AR wearables will become standard frontline industrial tooling as hardware, connectivity and remote-expert workflows mature together — every point of first-visit fix you leave on the table is revenue and cost leaking through a truck door.

Before the hardware order goes out, sit with the questions Crestwave's leadership had to answer honestly. What is your first-visit fix rate today, and do you trust how it is measured? How many of your senior experts could be reached by a field tech in under five minutes right now? What do repeat truck rolls cost you annually once SLA credits and customer frustration are included? Which retiring expert's knowledge worries you most, and when is their last day? Would your crews accept head-worn cameras if privacy rules were explicit and enforced consistently? If escalations resolved in minutes instead of days, which service commitments could you confidently

tighten? Take these through with your team using the action checklist in this practice book, and revisit them each quarter as your equipment ages and your expert roster changes.

REAL-WORLD PROOF & BENCHMARKS

Aberdeen Group field-service benchmarks have long placed average first-time fix rates in the mid-70s, making each percentage-point gain worth measurable revenue and cost. - Aberdeen Group

Industry analyses commonly estimate the fully loaded cost of a field-service truck roll between \$150 and \$500, depending on distance, skill and equipment. - IFS field-service research

Deloitte has predicted that AR wearables will become standard frontline industrial tooling as enterprise-grade hardware, connectivity and remote-expert workflows mature together. - Deloitte

THE PRACTICE PAGES

The 8-action checklist

Work through the list with your team. Tick each box as your organization completes the step, and fill in an owner and a target date so every action has a name and a deadline.

☐**1. Start with one equipment class**

Pick the fault family causing the most repeat visits and route only those escalations through remote assist first. Proving one lane beats piloting everywhere at once.

OWNER

TARGET DATE

STATUS

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☐**2. Choose glasses technicians will wear**

Test wearables with real crews for comfort, weight, battery life and prescription compatibility. Equipment that gets left in the truck cannot obviously improve any metric.

OWNER

TARGET DATE

STATUS

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☐**3. Staff a dedicated remote-expert desk**

Schedule experts to cover assist sessions rather than expecting interruptions between their own jobs. A named duty rotation is what makes response times predictable and trusted.

OWNER

TARGET DATE

STATUS

--	--	--

☐**4. Record sessions into searchable knowledge**

Transcribe and index every assist session by fault code and equipment line. Today's escalation becomes tomorrow's self-service answer, compounding the program's value quietly over time.

OWNER

TARGET DATE

STATUS

--	--	--

☐**5. Embed assist in the work-order flow**

Launch remote sessions directly from the job the technician is already working, with no extra logins. Friction between disconnected tools is exactly where adoption dies.

OWNER

TARGET DATE

STATUS

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☐

6. Set camera consent and retention rules

Agree with legal on consent indicators, recording notice and retention windows before pilot day. Field crews will not wear cameras around ambiguous privacy rules for long.

OWNER

TARGET DATE

STATUS

☐

7. Track first-visit fix weekly

Report fix rates, repeat visits and session counts by region and equipment class every week. Weekly visibility is what quickly turned skeptics into demand here.

OWNER

TARGET DATE

STATUS

☐

8. Reward experts for remote resolutions

Recognize duty experts whose sessions prevent truck rolls, counting those resolutions as real production in their metrics. Otherwise your best people quietly avoid the extra burden.

OWNER

TARGET DATE

STATUS

AFTER THE CHECKLIST: OUR TOP 3 PRIORITIES

From the eight actions above, write down the three you will start first - and the single number you expect each one to move. Three priorities with owners beat eight without any.

PRIORITY 1	PRIORITY 2	PRIORITY 3
NUMBER IT SHOULD MOVE	NUMBER IT SHOULD MOVE	NUMBER IT SHOULD MOVE

THE PRACTICE PAGES

Reflections for your team

Use these questions in your next planning session and type short answers into the boxes. The gaps you find are usually the fastest wins.

Q1. What is your first-visit fix rate today, and do you trust how it is measured?

Q2. How many of your senior experts could be reached by a field tech in under five minutes right now?

Q3. What do repeat truck rolls cost you annually once SLA credits and customer frustration are included?

Q4. Which retiring expert's knowledge worries you most, and when is their last day?

Q5. Would your crews accept head-worn cameras if privacy rules were explicit and enforced consistently?

Q6. If escalations resolved in minutes instead of days, which service commitments could you confidently tighten?

THE PRACTICE PAGES

My 90-day plan

Finish the session by committing to a plan. Three phases, one goal each, one number that tells you it worked. Bring this page to your next leadership review - or to a free consultation with Emerson Technology, and we will pressure-test it with you.

Days 1-30 Focus: audit and alignment

PRIMARY GOAL**KEY ACTIONS****HOW WE MEASURE SUCCESS****OWNER**

Days 31-60 Focus: build and prove

PRIMARY GOAL**KEY ACTIONS****HOW WE MEASURE SUCCESS****OWNER**

Days 61-90 Focus: scale and measure

PRIMARY GOAL

KEY ACTIONS

HOW WE MEASURE SUCCESS

OWNER

Tip: save a copy per team so each group keeps its own answers. Revisit the reflections every quarter - the questions stay the same even as the numbers move.

BOOK THE REVIEW BEFORE YOU CLOSE THE BOOK

Plans without a review date drift. Before you close this practice book, agree on when you will come back to these pages, who will run that session, and when you will check the numbers again. If you want an outside pair of eyes, bring this page to a free consultation with Emerson Technology and we will pressure-test the plan with you.

REVIEW DATE	REVIEWED BY	NEXT CHECK-IN
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Ready for a transformation like Crestwave Telecom's?

Emerson Technology designs and builds the data, AI, cloud and automation systems behind results like these. On a free consultation call we will map this exact playbook to your business - your data, your constraints, your numbers.

Book a free consultation

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