

AN INDUSTRY BRIEFING FROM GRAIL

What's Changing on Your R&D Floor

Your R&D floor is a stack of five engineering groups, and AI lands differently on each. Siemens TIA Copilot is in production. Schneider EcoStruxure AI is shipping into your customers' commissioning cycles. Your scorecard is firmware release velocity and silicon headcount, and neither is the 2026 question. A briefing for CTOs, CPOs, and Heads of R&D at mid-market European industrial automation firms.

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FOR

European mid-market industrial automation technology and product leaders

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Every CTO at a mid-size European industrial automation vendor has had the same Monday. Your VP Firmware walks through the roadmap. New drive family in Q4. Safety module revision in Q3. CODESYS-based application-engineering library expansion all year. Your CFO forwarded a Siemens investor update on the way in: "TIA Copilot in production at Audi and Bosch mid-size divisions; sixteen-percent TIA Portal productivity lift." Your VP Product mentions the CDO's Industry 4.0 Q2 budget ask came in at €4.8M for a horizontal AI rollout. Your Head of Service Platform was in your office Friday asking for a ringfenced €1.2M for a service-diagnostic data graph across the top fifty installed-base customers. You told him it might have to wait a quarter.

You have run this function for fifteen years. The pattern used to be simple. Hire strong firmware architects. Hold the IEC 61508 line. Ship the next drive generation. Meet the board on firmware release velocity and silicon headcount. The business was understandable.

Something changed. What used to take fifty control engineers now runs on five, and the same compression is landing on application-engineering tooling at the platform clock. Siemens TIA Copilot is production in 2025. Schneider EcoStruxure AI is production in 2025. Rockwell, ABB, Mitsubishi are each within twelve months. Your application-engineering depth — the library reusability, the commissioning automation, the HMI generation — used to be one of your differentiators. That layer is inside the absorption path of every big-vendor platform your mid-size customers run on.

You are not running one R&D function. You are running five engineering groups on one hurdle rate, and three of them sit inside the Siemens and Schneider absorption surface. Firmware and silicon are narrowly inside. Control software is inside. Application-engineering tooling is deeply inside. Your service-diagnostic platform is outside, because it runs on your installed base, which the absorbing platforms do not have. Your integration-and-commissioning work sits half inside, half outside. Fund them as one pool and the absorption clock eats the pool. Fund them as two budgets with two hurdle rates and the compounding layer survives.

This briefing covers what is happening in your sector, what it means for the R&D function you run, and the three questions your team should answer before the next Q2 board cycle.

The big vendors are absorbing the application layer you used to differentiate on

Siemens TIA Copilot, built with Azure AI, is in production release during 2025. Schneider Electric's PLC Code Generation Copilot inside EcoStruxure reduces development time thirty to fifty percent. Rockwell, ABB, Mitsubishi are each shipping their versions within twelve months. Every mid-size customer on a Siemens, Schneider, Rockwell, ABB, or Mitsubishi stack will have AI sitting inside their own application-engineering environment by the end of 2026. The tooling you spent fifteen years differentiating on — library reusability, HMI generation speed, commissioning script quality, documentation depth — is what those platforms are absorbing first. Your depth on those layers was real. Your depth on those layers was also exactly what the big vendors shipped the AI into.

The moat your firm ran on for a decade has moved. The application-engineering layer commoditises inside the absorbing platform over the next twenty-four months. A capability that used to take your 40-engineer application team three years to build can be rebuilt by the platform's AI in twelve to eighteen months, delivered to the customer inside the TIA Portal or EcoStruxure workspace they already run. Your feature edge on application tooling was never going to hold against a big vendor's platform absorption. What can hold is the layer underneath the model and the layer beside it: what requires silicon iteration, IEC 61508 and IEC 62443 compliance, vision algorithms trained on your imaging hardware, motion-control loops tuned against twenty years of customer edge cases. And the data layer the absorbing platforms cannot replicate: the telemetry, operating data, and maintenance histories from your installed base. Those compound. They take years to build and they cannot be bought.

Your application-engineering feature shipped in 2024 is on an eighteen-month absorption curve. Your service-diagnostic data graph across your installed base is the asset Siemens and Schneider cannot replicate without your customers.

The sector's speed mismatch is the third force. Siemens ships platform-level AI on a quarterly cadence now. Schneider ships platform-level AI on a quarterly cadence now. Your firm ships a product generation every twenty-four to thirty-six months and your CDO's Industry 4.0 roadmap was approved in 2023. You cannot pivot at platform speed on platform terms. What you can do is identify which of your engineering groups sits outside the absorption surface, stop defending the groups that sit inside it, and ship the moat the absorbing platforms cannot. The firms already moving are the ones where the CTO walked into Q1 with two R&D budgets, not one. The ones still running a horizontal AI rollout across all five engineering groups are funding Siemens's absorption from inside their own P&L.

Your R&D floor is feeling it every day

Your build engine. Your control engineers are shipping more application-engineering output per week than they have in a decade. Your safety-rated firmware team holds the IEC 61508 line and cannot take the same tool-layer compression. Your VP Firmware cannot tell you whether the review bar that worked in 2020 holds against agent-generated control code. Ninety-five percent of corporate AI deployments produce no measurable P&L impact, and the gap between what the tools ship and what your build engine actually absorbs is widening every quarter the review discipline is not redesigned.

Your platform and data. The absorbing platforms — Siemens TIA Copilot, Schneider EcoStruxure AI, Rockwell FactoryTalk — are where the tool-layer AI lives. You cannot win that fight on their ground. You can buy the build-side discipline from the tool layer where your customers accept it, and redirect the compounding capital into the layer the absorbing platforms cannot follow: the service-diagnostic data graph built from your installed base's telemetry, data rights renegotiated across the next twenty-four months of customer renewals, integration depth published as structured metadata for your top fifty customer installations. A Siemens TIA Copilot cannot replicate that. Siemens does not have your customers' specific operating data.

Your product thesis. Your board asked for the firm's three-sentence thesis last quarter. Your answer was the one from the 2023 strategy offsite. Your rate card assumes the application-engineering layer is still a margin-bearing differentiator. Siemens ships AI into it inside their own platform now. That is a capital-allocation question about which of your engineering groups sits outside the absorption surface, not a pricing question you can solve in a commercial meeting. Your CFO and commercial leader need a joint document with you before the first outcomes-priced service contract lands from an absorbing platform inside your installed base.

Your R&D bench. Your senior firmware architects carry the debug instinct behind every motion-control library your firm ships. Two of them retire in 2028. Your senior vision engineer carries twenty years of edge-case judgment on your sensor portfolio. The embedded-systems junior pathway at European universities has thinned every year since 2018. No routine work, no training ground, no senior bench in 2030. OpenAI and Anthropic resumed junior hiring in late 2025 specifically to pair juniors with seniors on judgment-intensive work. The firm that cuts application-engineering headcount for this year's margin has a cheaper function in Q4 and no mid-tier bench for the next product generation.

Your board-level authority. Thirty percent of European AI-strategy ownership sits with the CIO, twenty-three percent CDAO, twenty-one percent CAIO, one percent COO. You are not on the list. Your CDO was hired in 2023 to run an Industry 4.0 roadmap that predates the TIA Copilot release curve. Every month without a written CTO-CDO-CEO boundary, the compounding-capital question drifts further from the seat that can defend it. Your Q1 boundary agreement lands before the next CDO budget request, not after.

The moat that matters in 2029 is not in the application layer

Your sector is repricing from the platform down because Siemens TIA Copilot and Schneider EcoStruxure AI are absorbing what used to be your application-engineering differentiation. Your function is compressing because what used to take fifty control engineers now runs on five, and the review bar that worked for fifty cannot hold the volume five produce with agents. Same force, two altitudes. There is a third thing happening that most mid-market industrial CTOs have not named yet.

The moat that matters in 2029 is not inside the application layer. It sits in silicon below it and in the service-diagnostic data graph beside it. The application feature you ship this quarter is on an eighteen-month absorption curve. What does not commoditise: the silicon you iterate, the vision algorithms trained on your imaging hardware, the motion-control loops tuned against twenty years of customer edge cases, the safety-rated firmware, and the operating data from your installed base. A big-vendor platform cannot replicate that layer at platform scale because they do not have your customers' plants. You do. The window closes at the rate Siemens and Schneider ship their AI into your mid-size customers' commissioning cycles.

In the late 1990s a generation of independent software-layer players defined the sector. Wonderware on HMI and SCADA. Intellution. Citect. By 2015 every one had been absorbed into the big vendors or was competing inside their platforms. The mechanism was not that independents shipped worse software. It was that the big vendors' platforms absorbed the software layer at a price independents could not match. A handful survived by moving up the data-asset curve. The 2026 version is the same mechanism at a faster clock.

You can tell which camp a firm is in from a single question. Is your R&D budget funding application-engineering tooling as if it is still a differentiator worth defending against Siemens, or is it funding silicon depth and the service-diagnostic data graph at a level the absorbing platforms cannot follow? Most mid-market industrial incumbents cannot answer. The ones that can have already made the shift.

You have eighteen to twenty-four months. The CTOs who claim the authorship of this decision in Q1 author the decade. The ones who wait inherit a seat narrowed to firmware uptime and a scorecard that stopped mattering the quarter TIA Copilot shipped into their biggest customer's plant.

What most firms are doing. What the winners are doing instead.

Every industrial automation CTO has had the AI conversation. Most are making the same four decisions. A smaller group is making different ones.

THE DEFAULT PATH

Horizontal AI rollout across all five engineering groups

One hurdle rate. Application, control, firmware, service, integration funded as one pool. Absorption clock eats the pool.

Let the CDO lead the AI thesis

2023 Industry 4.0 roadmap. CIO owns the stack within eighteen months. CAIO hire arrives. CTO seat narrows to firmware uptime.

Ship AI features free into the existing hardware rate card

Customer service-attach value rises. ARPU flat. Siemens lands the outcomes-priced service contract into your top-twenty installed base first.

Cut application-engineering headcount for the Q1 margin win

Cheaper function this quarter. Empty senior bench by 2029. External firmware architect hire at a premium the firm cannot absorb.

THE WINNERS' PATH

Map the five groups by absorption surface, fund separately

Two budgets, two hurdle rates. Application-tooling bought from the layer. Silicon and data ringfenced and defended.

Route AI capital through the M&A hurdle, author it yourself

Q1 CTO-CDO-CEO boundary in writing. Compounding capital defended separately against backlog pressure.

Stand one outcomes-priced service contract on protected P&L

Joint Pricing Architecture Document with CFO and commercial leader. Hardware unit sales hold. Outcome-priced service wins net-new.

Pair juniors and seniors with agents on judgment work

Senior architects encode retirement-risk tacit knowledge. Embedded-systems junior pipeline rebuilt from 2026 intake.

Same R&D floor. Same twelve months. Opposite outcomes. The difference is whether the CTO authors the capital allocation or signs the requisition.

Build Velocity. Product Defensibility. R&D Capital Allocation.

Three questions every industrial automation CTO is tracking. The third is the crux. The first two are how you earn the right to answer it.

01 · BUILD VELOCITY

Is our engineering speed shipping IEC-rated production, or demos that fall over in commissioning?

Siemens reports fifty-percent programming time savings. Schneider reports thirty to fifty percent on PLC development. Your application-engineering team is shipping more output per week than ever. Your review bar cannot hold agent-generated control code at volume. Buy what the tool layer carries safely. Hold the safety-rated line where IEC 61508 is binding. Own the review discipline that makes agent-generated output actually ship.

02 · PRODUCT DEFENSIBILITY

What does our product do that Siemens TIA Copilot and Schneider EcoStruxure AI cannot absorb?

The application-engineering layer absorbs into the big vendors' platforms over the next eighteen months. What does not absorb: your silicon, your vision algorithms, your motion-control loops tuned against twenty years of customer plants, your safety-rated firmware. And the service-diagnostic data graph across your installed base. Siemens cannot replicate that without your customers. The window closes at platform-release cadence.

03 · R&D CAPITAL ALLOCATION

Is our R&D budget one instrument or two?

Plateau capital ships the next firmware release and the next drive generation at lower unit cost. Compounding capital builds the 2029 moat: silicon depth, service-diagnostic data graph, integration depth for your top fifty installations. On one hurdle rate the first wins every quarter. On one scorecard the second does not exist. The CTO who walks into the board with one budget runs the same programme every mid-market peer is running.

What the firms winning this play are actually doing

Four concrete moves any industrial automation CTO can start this quarter. Each addresses one sub-function.

1 **Build engine: buy the tool layer where it holds safety, own the review bar where it does not**

Siemens TIA Copilot and Schneider EcoStruxure AI ship most of the application-engineering substrate now. Buy what the tool layer carries on non-safety paths. Redesign the review discipline for agent-generated control code: two senior reviewers on safety-rated subsystems, architectural decision records on every agent-generated change, evaluation against physical rigs not simulation alone. The dashboard is review depth against agent output volume.

2 **Platform and data: build the service-diagnostic data graph before Siemens ships into your base**

Three programmes stacked over eighteen months. Data rights renegotiation across your next twenty-four months of installed-base renewals. A model-agnostic service-diagnostic graph ingesting SCADA telemetry, maintenance histories, and firmware-over-the-air signals across your top fifty customers. Integration depth metadata your service and application teams walk into customer conversations with. This layer compounds because the absorbing platforms do not have your customers.

3 **Product thesis: pick silicon, vision, motion, and safety where you win on all three dimensions**

For fifty years cheaper-faster-better was pick two. Where AI collapses the right cost, you can ship all three at once. Your silicon and vision hardware let you simulate a product generation in days. Your motion-control library ships judgment no platform AI can shortcut. Write the outcomes-priced service contract with your CFO and commercial leader before an absorbing platform ships one into your base.

4 **R&D bench: encode senior tacit knowledge before the retirement wave hits**

Your senior firmware, control, vision, and service architects carry two decades of debug instinct each. Forty percent are within five years of retirement. Run a senior-and-agent pairing programme: each senior pairs with a named junior and an agent on judgment-intensive design work for six quarters. The junior's career curve compresses from five years to eighteen months. By 2029 you have a mid-tier bench the competition cannot hire away.

The only firm that joins R&D authorship to working infrastructure

The mid-market industrial automation CTO has four places to go. None can do what we do.

The big industrial-transformation practices ship standardised Industry 4.0 frameworks scaled across a sector book. Cost structure requires reusability. Your seat is idiosyncratic against specific absorbing platforms. Governance theatre the board will not fund twice.

The hyperscaler vertical-industries teams price the engagement as enablement for cloud consumption. Every build-or-buy decision routes through their pricing for three years.

The big-vendor software-platform arms have a quote on your desk. Siemens, Schneider, AVEVA, Rockwell. They are the absorbing platforms your moat sits against. They cannot honestly advise on which of your layers to harden against themselves.

An in-house or fractional CDO or CAIO splits the seat. Two-thirds of newly-appointed CAIOs spend year one compiling AI inventories. Your 2023 CDO runs an Industry 4.0 roadmap that predates the TIA Copilot release curve.

The four options you have already looked at. None can run the capital-allocation conversation the seat requires. GRAIL is the fifth.

WHAT YOU GET

Senior advisory that speaks firmware-and-silicon, not transformation-deck

Working infrastructure your team uses the same week

Custom agents built on your stack, your customers, your installed base

The start of a service-diagnostic data graph your platform owns

No vendor lock-in at any phase of the engagement

WHY IT MATTERS

Founded by operators who have carried product-and-engineering seats

Business first, technology second

Three weeks from first meeting to working infrastructure

Your team keeps the infrastructure, you own the IP

Every next step earned by what just shipped, never assumed

Three sessions with your R&D leadership. Working infrastructure from week one.

We start with your R&D leadership team because the change cannot outrun their personal understanding of what is possible. Three workshops. Each delivers standalone value. Each earns the right to the next.

WORKSHOP 01

How to think

Walk through what is happening across the absorbing platforms and inside your R&D floor. Build the first piece of infrastructure in the room: a capital-allocation agent that takes your real R&D budget, maps it across your five engineering groups by absorption surface, and runs the alternatives analysis against the named absorbing platform your installed base sits closest to. Your leadership leaves with a shared view and the first working artefact in hand.

WORKSHOP 02

Your R&D infrastructure

A half-day build. Your VP Firmware, Head of Control Software, Head of Service Platform, and Head of Application Engineering each leave with five to ten pieces of working infrastructure tuned to their group. Review-bar audit agent for agent-generated control code. Service-diagnostic data graph prototype. Silicon-plus-vision simulation harness. Data-rights renegotiation playbook. Infrastructure your team uses the same week.

WORKSHOP 03

Ready to run

Refined infrastructure from real use. The board document that splits the R&D budget into two instruments with two hurdle rates and two kill criteria. The boundary agreement with the CEO and CDO on who authors the AI thesis. The joint Pricing Architecture Document with your CFO and commercial leader. The eighteen-month moat build plan.

Three weeks. No IT project. No board approval needed to start. The infrastructure your R&D floor is already running on when we finish.

For your next R&D review

The questions where your R&D leadership cannot agree on an answer are the ones worth an hour on the agenda. Ask these honestly.

Is your R&D budget today one instrument or two? If one, what does the board see that splits plateau from compounding, and what is the kill criterion on each?

Name the absorbing platform closest to your installed base. Siemens TIA Copilot, Schneider EcoStruxure AI, Rockwell FactoryTalk, ABB, or Mitsubishi. What is their release cadence, and when does their next AI capability ship into your top twenty customers? If you cannot name the timeline, that is the first thing the briefing changes.

If your senior firmware architect or two senior control engineers retired in 2028, how many months would it take the replacement team to reach the same debug instinct on your core motion-control library?

Siemens and Schneider report thirty to fifty percent time savings on PLC development. Your application-engineering output is up. Where did the freed hours go, and is your review bar still the one you want the foundation layer trained on?

Heidrick's February 2026 data: thirty percent CIO, twenty-three percent CDAO, twenty-one percent CAIO, one percent COO, zero percent CTO-CPO on the AI-strategy-ownership list. Is your Q1 boundary agreement with the CEO and the CDO written, or is it waiting until after the next Industry 4.0 budget ask lands?

If any of these produces a disagreement in your R&D leadership, that is the conversation worth having before the board asks.

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