The Next Frontier:
Industry Leader Perspectives in an
AI-Driven World

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Introduction

Across boardrooms and shop floors, in design labs and data centers, a key trend is emerging. Artificial Intelligence (AI) is increasingly the decisive force reshaping how we engineer products, design experiences, and deliver value to customers.

This is an era defined by the intersection of imagination and intelligence, with technology as an active collaborator.

This book, **The Next Frontier: Industry Leader Perspectives in an AI-Driven World,** is a collection of reflections and viewpoints on this transformation. It brings together the collective wisdom of industry leaders and visionaries who are helping define what it means to lead in an AI-first world.

Across these pages, you will hear voices that are bold yet grounded. Leaders who are asking not only, “What can AI do for us?” but more importantly, “What should we do with AI?” They speak of factories that “see” defects before humans do, of software that learns to code itself, of design ecosystems where sustainability is an engineering parameter, not a policy statement.

But they also speak of the need for balance - for judgment, ethics, and human ingenuity to remain at the heart of every machine-led decision.

The last few years have shown us how true progress comes not from adopting every new algorithm, but from reimagining the systems that govern how we create, scale, and deliver. We feel that AI will not replace engineers, designers, or innovators, but will elevate them. It will multiply what we can achieve when creativity meets computation, when domain depth meets digital dexterity.

Amidst this age of exponential change, thought leadership has never been more critical. We need voices that do not merely predict the future, but help build it - responsibly, inclusively, and sustainably. That is the purpose of this book, to share the experiences of those who are shaping the contours of this new industrial era, where AI becomes the fabric of how industries continue to operate and become truly future-ready.

Welcome to The Next Frontier - a journey into an AI-driven world, powered not just by data, but by human-led vision and excellence!

AI in the **Boardroom:** Leading with Strategy, Resilience, and Human Capabilities

If I was asked to pick the one defining theme for 2025, it would be that Artificial Intelligence (AI) is no longer a niche project – it is THE strategic lever.

But the way organizations continue to capture value from AI, increasingly, depends less on technology. We are increasingly witnessing a sustained refocus on organizational leadership, literacy, and lead times for AI adoption and implementation. The momentum is clearly toward an accelerated pathway from pilots to full scale deployments – where the AI helps customers drive productivity, resilience, and superior business outcomes.

Aarti Shah

Independent Director

From hype to hard work

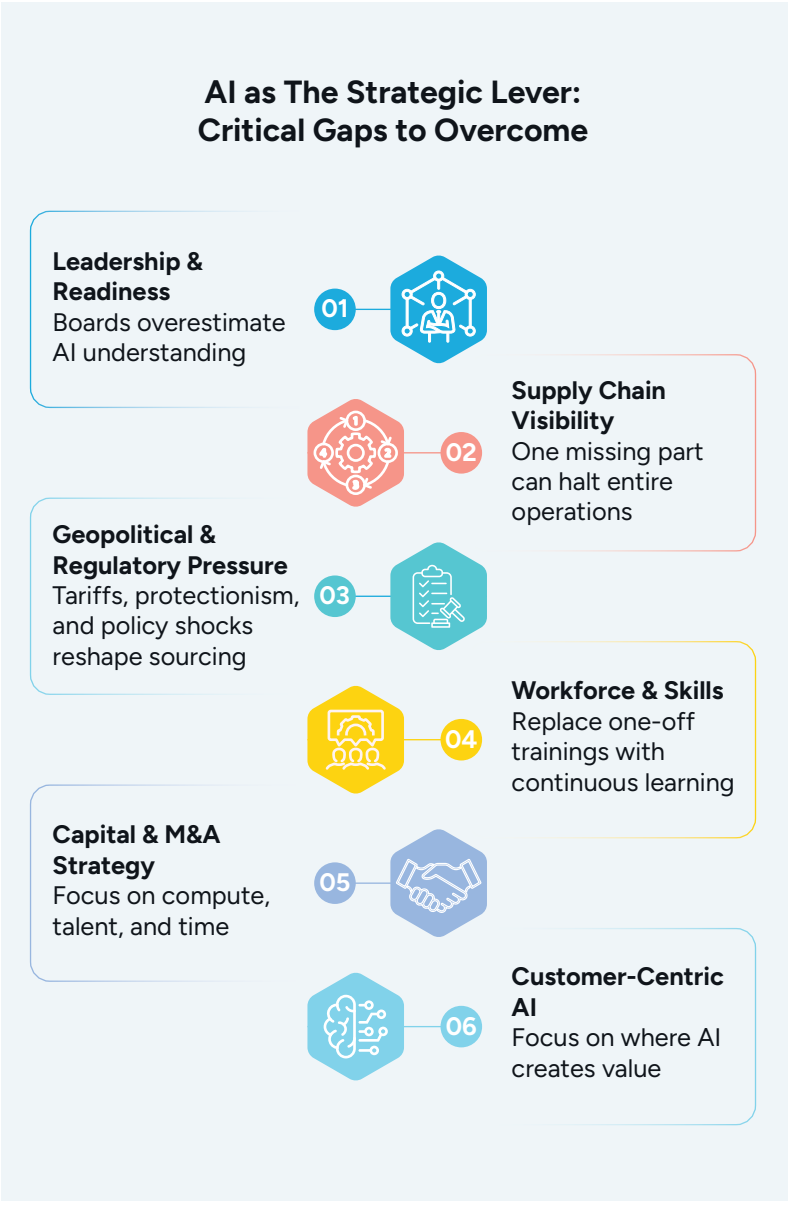
First, the obvious. The technology sector has been the outlier this year — not only in innovation but also in terms of increased investments and market valuation. We have all seen chipmakers and platform companies dominate headlines, and recent data continues to underscore the centrality of the AI-related firms to the market's performance for 2025. This concentration and momentum are the real drivers of corporate strategy.

Yet the promise of AI is not without uncomfortable gaps.

A key area is leadership and organizational preparedness. I often hear executives and boards talk about generative AI as if it were magic. But ask for five concrete examples of how it changes decisions, and you will often get only thin or vague answers. In advisory conversations, I often press the leadership teams — are you allocating enough time to stress-test assumptions, or merely outsourcing the thinking to consultants? My experience, echoed across organizations, is that boards and management must do the hard work themselves to make the base of the business strong. This mirrors recent analysis showing that organizational readiness across leadership, operating model, data, and adoption practices is the biggest determinant of AI value capture. What we need is a clear mandate for constant assessments and skilling to address the gap.

Second, AI's benefits are closely tied to the real world of suppliers, parts, and logistics. We can look at a simple health-care image to make the point. For a moment, imagine everything in production is fine except for the tiny spring in an auto-injector or the last syringe in a pharma kit — a part you never tracked beyond a Tier-2 supplier. That single missing piece can become a bottleneck and halt an entire product flow.

Boards need visibility not just into immediate suppliers but suppliers of suppliers — a lesson that has been driven home repeatedly in recent global disruptions.



Third, region-by-region governance and cultural differences matter more than ever. Geopolitics, shifting tariff regimes, and ongoing uncertainties around market access are increasingly reshaping how companies choose and manage suppliers. Rising protectionism, export-control measures, and the risk of sudden policy reversals add another layer of vulnerability, especially for firms dependent on overseas manufacturing hubs. These pressures often push organizations to focus as much on supplier resiliency and continuity planning as on regulatory compliance.

At a practical level, though, the outcome is largely convergent. Whether a company is responding to statutory reporting obligations, geopolitical exposure, or purely commercial risk, the core requirement remains the same – to map, monitor, and govern deeper layers of the supply chain. This means building transparency beyond Tier-1 suppliers, understanding country-level dependencies, and developing mitigation strategies that can withstand both policy shocks and operational disruptions.

Fourth, the workforce story is the single most under-invested leg of the AI era. Reports and surveys across 2024–25 underscore what I see in company after company – employees are willing, while organizations often are yet to consistently equip their mid-management and leaders with the skills and context to apply AI safely and effectively. Upskilling at scale, and not as a one-off course, is essential. Organizations and the leadership need to sponsor programs that teach practical use cases, validation practices and risk awareness, for otherwise, pilots will stay as pilots.

Fifth, we are entering an era of strategically targeted capital deployment. Companies with deep pockets are buying compute power, acquiring niche capabilities and accelerating M&A to buy time and talent. That puts pressure on mid-sized suppliers who cannot match that CapEx — and it reshapes partner strategies for engineering services companies.

In practice, this means advising clients on selective M&A and helping them adopt "productivity with AI" narratives which they can justify to customers facing tighter budgets.

Finally, thinking about where to apply AI matters more than how much you buy. One of my favorite practical questions to ask teams is "What promise do we make to our customers about productivity and cost?"

If your promise is credible — that you will make the customer measurably more efficient — they will want more of your services even in tight times. That commercial lens separates academic curiosity from boardroom value.

The way ahead

The consensus across boardrooms is clear – AI is a business necessity. Organizations that want to enhance, expand, and retain their niche in the market need it not just as a technology upgrade but as the core to their AI-enabled strategy, embedded across business lines and core G&A functions. The shift from GenAI to more agentic, autonomous systems will only raise the bar for leadership judgment, governance, and disciplined execution.

As current trends hold, companies that pair clear governance with thoughtful investment, faster learning cycles, and genuine humility from leaders will be the ones that turn disruption into sustained advantage. AI adoption will reward companies that stay strategic, resilient, and deeply human in how they build and deploy it and leave behind those waiting for certainty instead of shaping it.

Welcome to the era of AI in the Boardroom!

The AI Agenda - by Aarti Shah

- Leadership judgment and AI literacy as the primary drivers of value
- Scaling AI beyond pilots for measurable productivity, resilience, and cost efficiency
- Leveraging AI to deliver deep, end-to-end supply chain and risk visibility
- Institutionalizing continuous AI upskilling across boards, leaders, and mid-management
- Deploying capital selectively through AI-led M&A, compute investments, and capability builds
- Anchoring AI initiatives to clear customer outcomes – looking beyond experimentation or hype

AI in Focus with Aarti Shah

“The Boardroom Futurist”

01 If AI were a new member on your board, would you make it the strategist, the risk officer, or the intern still learning corporate politics?

Co-strategist.

02 You often say leadership, not tech, will decide who wins with AI. What is the one leadership trait that no algorithm can replicate?

Giving purpose to what we do – it is a uniquely human trait to be able to motivate and inspire your team.

03 If you could use AI to simplify one classic boardroom ritual — quarterly reviews, budget wars, or slide decks — which one would you hand over first?

To summarize the hundreds of pages of pre-reads and board briefing books.

04 You have spoken about seeing innovation up close at places like the MIT Media Lab. If you could bring one “lab idea” straight into the corporate world tomorrow, what would it be?

AI literacy.

05 AI or EQ — which do you think CEOs will need more of in 2030, and why?

EQ, and beyond that, they will also need SQ (spiritual quotient). Human to human touch will matter even more. To love and care for all is what nourishes the soul and makes us human.

06 Finish the sentence: The real power of AI in business lie not in the data — it is in…

the applications of AI to deliver superior business outcomes and scale for significant societal benefits.

Is AI the Multiplier That We Hoped For?

We are witnessing a trend across private equity boards, startup war rooms, and advisory calls where hypotheses meet real capital and even harder timelines. While we are deep into an AI buildout, the way that organizations seek to capture value will be defined far more by targeted execution in high impact use cases, rather than just broad-based application measured in isolated instances.

The impact will be visible across supply chains, power and data-infrastructure, workforce strategy, and a disciplined approach to capital allocation.

Atish Gude

Independent Board Member
and Strategic Advisor

The AI wave is real — and it is capital-hungry

Stories about good money chasing AI are not rumors. Across cloud providers, chipmakers and platform companies, capital expenditure on compute and data centers is scaling aggressively even as returns continue to lag in the short term.

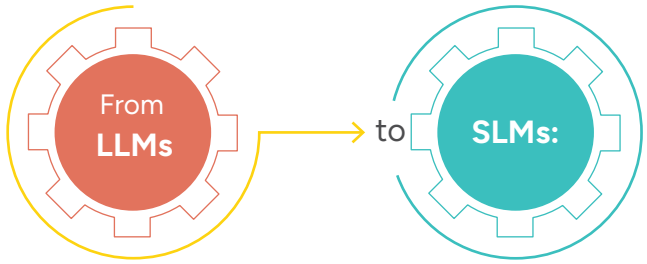
For investors, the scenario indicates two things. One, existing valuations continue to be high because revenues have not collapsed. And two, capital is being deployed faster into infrastructure build-up and in mergers and acquisitions.

In turn, this leads to an obvious strategic question. Do we try to out-spend competitors for scale, or pick specific, differentiated pockets to deploy AI against owned data to build defensibility?

My bet is on the latter.

From LLMs to SLMs: the enterprise differentiation problem

At scale, generic large language models (LLMs) are powerful, but they are not the endgame for every enterprise use case. The real commercially-viable bet, in my view, will be small, domain-specific models — SLMs — built on proprietary data and tuned to narrow targeted workflows. This is where meaningful differentiation and defensible value lands. Imagine healthcare payors building policy-specific models, field service firms embedding models into edge devices, or a robotics company tuning models for tactile control.



The Differentiation Shift

True enterprise value lies in Small, domain-specific Language Models (SLMs), tuned on proprietary data

Examples:

Healthcare payors
Policy-specific

Field service
Embedded edge AI

Robotics
Models for tactile control

Focus now:
Build data-centric platforms before scaling SLMs

Practically, most organizations do not yet have the data engineering, labeling discipline, or use-case definitions to roll SLMs into production. And that is why my advice to portfolio CEOs is simple. The time now is to focus first on data-centric platforms that let you operationalize small models where they matter the most.

What we need to remember here is that AI at present is a compute-and-power business. The Middle East, for instance, is aggressively positioning itself as an AI and data-center hub, with high-profile projects and public–private commitments scaling in capacity and bringing chip supply decisions to the fore.

These moves, however, could form the basis of where the workloads live, who controls latency, and where edge applications can be profitable. For firms deciding where to invest in cloud or edge capacity, the geopolitical and infrastructure realities are becoming central to any AI thesis.

What we need to remember, however, is that not all data-center locations are equal. Power availability, cost economics and local policy on exports or security can materially change a project's unit economics.

For investors, that means modelling electrified land and power sourcing into every major infrastructure decision now.

Supply chains, 5G and the limits of optimism

AI's promise is only as useful as the real world it inhabits. My favorite metaphor illustrating this is that of a billion-dollar production line which can come to a stand-still from the want of a single untracked spring by a tier-2 supplier.

What Boards today need then is deep visibility, since a missing part or geopolitical tariff can wipe out the best-laid automation plans. That lesson has practical resonance as firms re-examine sourcing and localization amid tariff uncertainty.

Again, some much anticipated enablers — think private, in-building 5G for industrial autonomy — have been slower to commercialize than the pundits expected. Analysts now show private 5G adoption accelerating but still with real deployment friction – we should expect more patience and selective pilots over the coming days.

Talent, governance and ethical AI — the human delta

The workforce and governance are, unfortunately, often the least-invested in but most-critical parts of the AI stack. We continue to see a global talent squeeze in specialized roles, and firms that win will be those that pair automation with pragmatic labor strategies, invest in reskilling, create engineering productivity platforms, and design operating models that scale validated use cases and rely on isolated pilots.

Regulation, again, is not a future worry – it is arriving now. Europe's AI rules and global conversations on explainability mean that Boards need to focus on baking ethical AI, auditability and regulatory readiness into every deployment roadmap. The companies that treat these elements as compliance checkboxes will be left behind; those that build them into product design will gain trust and market access

What I am telling CEOs today

As the scenario evolves, remember to be judicious with your capital – buy or build where you can secure data and a path to an SLM advantage. And focus on strengthening your supply-chain visibility, multiple levels deep. There is a clear need to invest in power and data-center economics where it matters regionally, combined with upskilling and governance as board-level priorities, not HR projects.

The era ahead, then, is not a single technology story. If we can get the operating model right, only then will AI be the multiplier that we all hoped for.

The AI Agenda - by Atish Gude

- Allocate AI capital selectively by prioritizing a few high-impact, defensible use cases
- Build domain-specific SLMs on proprietary data to create differentiation
- Factor power, electrified land, and data-center economics into AI strategy
- Strengthen multi-tier supply-chain visibility
- Pair AI-driven automation with workforce reskilling and productivity platforms
- Embed ethical AI, auditability, and regulatory readiness by design

AI in Focus with Atish Gude

"The Pragmatic Futurist"

01 If your morning coffee were an AI model, would it be a general-purpose LLM or a perfectly tuned SLM that knows just how you like it?

An SLM that knows how to grind, tamp, add water, and preserve the crema!

02 If AI were a new asset in your portfolio, would you treat it as an overhyped unicorn, a cautious mid-stage bet, or a long-term compounding play?

As a long-term compounding play, as very few AI models will deliver good value out of gate. The models must be consistently improved, new data must be captured and fed to the models and in many cases, the non-AI processes must be constantly improved.

03 Private 5G, robotics, automation — you have seen them all promise transformation. If one technology had to make its "comeback tour" in 2026, which would you bet on?

I believe that 2026 will be a year where automation will make a significant jump in adoption. As access to qualified labor and the cost of that labor increase, companies will turn more toward automation.

04 In your view, power and electrified land are the new oil. If you were to name the next "Silicon Valley," would it be built around silicon chips, electric grids, or clever regulations?

Power is the ultimate "oil" that drives the next generation of data centers. Creating cost effective power supplies is therefore both a physical world problem and a technology problem. "Silicon Valley investments" (VC and PE) will take a big jump towards power generation technology.

05 Should AI came knocking for investment, would your first question be about the compute bill, the data moat, or the ROI in ethics?

The first question will always be about the use case, but the very next question has to be about data. The best data models will always be built upon the highly proprietary data that each company owns, i.e., their own data moat.

06 If you could automate one classic boardroom ritual to save human time, what would it be the slide deck, the budget war, or the talent review?

I think AI can help synthesize all the previous discussion and learnings to help Board members stay up-to-date toward making better decisions. It will be about scaling the next frontiers of decisions.

AI in the Emerging Business Landscape

Often, my conversations with peers and partners around AI focuses on a clear premise – what it does for people who build things?

Early on, we heard promises — faster design cycles, smarter factories, and transformative products and experiences.

Lately, I have been asking a more pointed question. What does AI do to change how we work, and how does that change the relationship between buyers and providers of engineering services?

Michael Regelski

SVP, R&D, Intelligent Power Management Solutions
and CTO, Electrical Sector,
Eaton Corporation

Here are three grounded, practical truths that I have arrived at.

1. AI is an engineer-multiplier - but the math matters

When I asked several leading software companies what they had seen in developer productivity, their response was that engineers trained to use AI tools are essentially getting the output of adding a junior engineer to the team. This translates into a material uplift in throughput (roughly in the 25–50% range, depending on measurement).

If true, we will no longer need a hiring spree to get extra capacity, the future will belong to a disciplined AI enablement program.

Independent studies support the broad point that AI is boosting developer productivity in meaningful ways. Leading software and technology majors are publishing field studies showing measurable lifts as organizations incorporate AI into real engineering workflows.

The outcome then is obvious. If everyone in an ecosystem captures the same per-person productivity gains, the old revenue model for engineering services – billed hours and headcount growth – will no longer map cleanly to value.

This scenario forces us to rethink commercial models and value propositions, with premium outcomes, platform enablement, and bundled IP becoming the key levers to sustain growth when cost per unit delivered declines.

2. "Vibe coding" and agentic tools make software creation accessible — but not free of strategy

You might have seen the headlines: new "vibe coding" tools let non-specialists describe an app in plain language and get a working prototype back in hours, not weeks. The Wall Street Journal recently covered this trend, highlighting how enterprises and professionals are leveraging new AI builders to create business apps quickly.

The outcome? Democratized creation, accelerating the commoditization of routine software tasks.

But democratization does not automatically destroy value. It changes where value accrues. The differentiators become domain expertise, integration complexity, certification and safety for mission-critical systems, and the ability to productize AI-enabled IP.

In other words, the "what" becomes easier. And the "why" and the "how," rooted in customer intimacy & deep domain knowledge, become far more important.

What does AI do to change how we work, and how does that change the relationship between buyers and providers of engineering services?

- **AI is an engineer-multiplier** - but the math matters
- **"Vibe coding"** and agentic tools make software creation accessible - but not free of strategy
- **Agentic AI** are reshaping back-office and product adjacencies - real money is already moving here

3. Agentic AI will reshape back-office and product adjacencies — real money is already moving here

We are seeing venture and corporate capital flow into Agentic AI companies, comprising systems designed not just to assist but to autonomously execute complex business tasks. AppZen's recent growth funding is an example, where investor confidence in autonomously executing finance workflows is large enough to attract major rounds. This signals genuine commercial traction for autonomous agents in the enterprise.

Why this matters for engineering organizations is that the same pattern – automation of routine decisions, coupled with human oversight – can be applied across the product lifecycle, from idea discovery to virtual prototyping, to supplier negotiation, and aftermarket servicing. The difference between a cost-saving bolt-on and a new revenue stream is in packaging the automation as a product or service that customers will pay for repeatedly.

Putting it together: what leaders need to do now

If AI is both a multiplier and a commoditizer, leaders in engineering services and manufacturing should prioritize three practical moves:

01

Operationalize AI to raise the bar on outcomes, not just outputs. Train teams on toolchains and measure outcomes (cycle-time, failure rate, service revenue per engineer) rather than lines of code or hours billed. The focus must shift to client outcomes that are hard to replicate.

02

Revisit commercial models. When engineering labor becomes more productive industry-wide, competition will pressure margins. Protect value by developing reusable product IP, outcome-based contracts, and platform services that embed your unique domain expertise.

03

Invest in problem discovery and agentic workflows. AI is not only a tool for executing tasks faster, but can surface unmet needs. We should invest in systems that identify real customer pain points and convert them into product opportunities — the same dynamic that created the smartphone revolution when someone solved a latent need in a new way.

Understanding AI in action

AI is not a single lever, but rather, a set of forces that will redraw how we organize work, package value, and compete. For those of us building physical products and the systems that make them, the choice is straightforward – be deliberate about how you adopt AI, focus it on outcomes that matter to customers, and convert the productivity gains into differentiated offerings.

If you do that, only then AI will no longer be a threat to your business. It will, instead, be the engine of your next phase of growth, the one that ensures true differentiation.

The AI Agenda - by Michael Regelski

- Move from isolated AI pilots to enterprise-wide enablement by embedding tools into everyday engineering workflows and measuring impact on outcomes
- Redefine value creation beyond headcount and billed hours by shifting toward outcome-based models, platform services, and reusable IP
- Compete on deep domain expertise, integration capability, and safety-critical execution as AI democratizes routine software creation
- Productize agentic automation across the engineering lifecycle to create repeatable, revenue-generating services rather than one-off efficiencies
- Use AI to systematically discover unmet customer needs and translate insights into new solutions, offerings, and growth opportunities
- Build trust through strong governance, human-in-the-loop engineering, and responsible AI practices that keep accountability and customer outcomes at the center

AI in Focus with Michael Regelski

“The Engineer’s Multiplier”

01 If AI were a new engineer on your team, would you make it a coder, a strategist, or a coffee-fetcher?

All three. I would start with coffee-fetcher to automate repetitive processes, then as it gains trust – will come coding. Finally, AI will move to strategy and architecture, building on the trust gathered over time.

02 You have said AI boosts productivity by 25–50%. What is one thing humans still do 100% better?

Humans understand context and customers better than AI ever will. This is because humans have the power of observation, see the work the customer does, and contextualize how they are doing the job. Unless you bring all this – seeing, observing and believing – the depth will be missing.

03 ‘Vibe coding’ sounds interesting. What is your favorite “vibe” when experimenting with new tech?

Building a utility app - something that will increase productivity.

04 If you had to explain “agentic AI” to your grandmother, how would you do it in one line?

As my personal therapist.

05 As AI reshapes engineering, what is the one skill young engineers should learn that is not technical?

Understand the customer, understand how to communicate – businesses are built on relationships. Understanding people and relationships will always be valuable.

06 If AI could run your back-office for a day, what is the first thing you would automate — and the one thing you would never let it touch?

I would automate anything repetitive and manual – that adds no value, while keeping it away from handling customers and relationships. The need is to understand context.

Navigating the **AI-Enabled** Transformation in **Agribusinesses**

Amidst growing geopolitical volatility, seismic industry consolidations, and rapid advances in artificial intelligence, agribusiness worldwide are rethinking not only scale and risk but also how technology can augment and reshape operations. The challenge is an operational reality that is being addressed across large-scale mergers and acquisitions, heavy engineering programs, and early-stage but meaningful AI experiments across facilities and operating centers.

These are the key themes shaping agribusiness strategy in an increasingly AI-defined world.

Decio May

SVP Global Operations,
Bunge

Growth by integration — the new industrial scale

A decisive example of industry-scale reconfiguration is the Bunge–Viterra merger, which formally closed in mid-2025 and created a single, integrated agribusiness with far greater origination, storage and processing reach. That scale matters, affecting options for sourcing, risk mitigation and downstream integration, and raises both new opportunities and complexities for technology and data architecture.

Commodity cycles continue to remain central. While exceptional crops in core producing regions can depress prices and compress margins, emerging policy signals such as higher renewable fuel volume obligations (RVOs) in the U.S. can drive new, material demand for renewable vegetable oils and biodiesel inputs. The Renewable Fuel Standard updates and related RVO proposals have especially created a meaningful policy tailwind for companies serving biofuel supply chains.

From experiments to production: where AI is already useful

The most pragmatic path to value begins with facility-level problems where rich sensor data, operators' knowledge and routine tasks intersect. Early priorities that are already moving beyond pilots include:

01

Operational visibility hubs, with consolidated operating centers that harmonize data from multiple sites and give analysts a single pane to interpret facility performance and improve decision-making.

02

Predictive maintenance and computer vision, with experimentation in predictive upkeep and visual inspection across pockets of production deployment for autonomous monitoring systems.

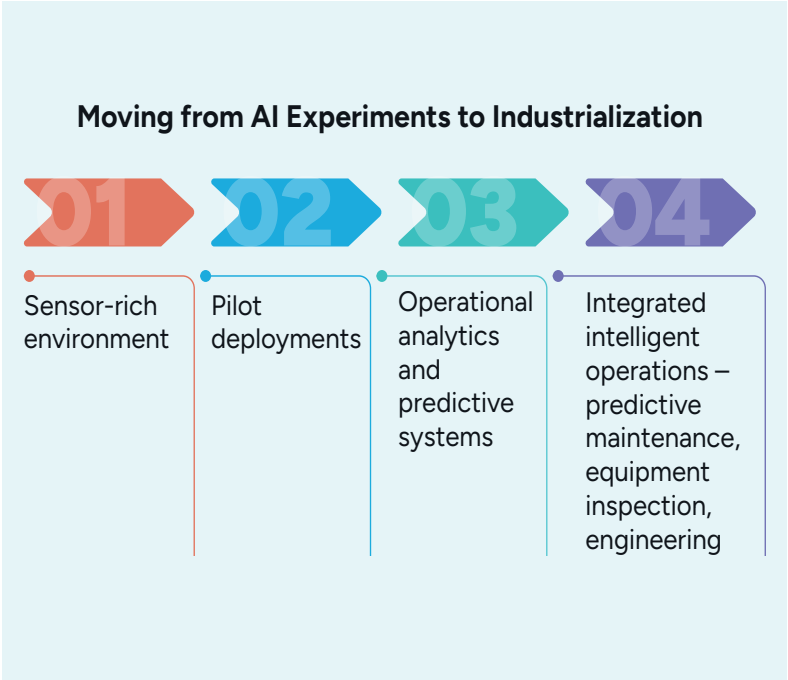
03

Knowledge access for engineers, with small, domain-focused language-model efforts – internal "assistant" tools that surface past fixes and processes for younger engineers – to illustrate immediate productivity upside by shortening the learning curve.

The AI question — investment, scope, and culture

How much to invest in foundational data platforms, models and Industry 4.0 devices is an open debate, but it is unavoidable. The correct approach balances near-term operational wins (predictive maintenance, operating-center analytics, and decision support) with medium-term bets on scalable LLM-driven knowledge systems and robotics that augment operator workflows. Deciding this requires fast experiments, rigorous ROI gates and disciplined change management, especially for a newly integrated company where systems and processes must be harmonized.

Wider technology market dynamics further underscore the pace of change, with platform firms powering AI infrastructure having posted record quarters – a signal of both a massive demand for compute power and a rapid acceleration of capabilities available to industry. The upshot is clear – tools that were once the purview of labs are now economically accessible, but success requires focused problem selection, disciplined data foundations, and engineering literacy at scale.



Enabling pragmatic ambition

I feel that the immediate need is for is operational integration and stabilization — absorbing scale without losing responsiveness. Simultaneously, we should pursue targeted AI and automation bets that improve throughput, reduce unplanned downtime, and focus on surfacing institutional knowledge.

When those two agendas move in lockstep — engineering excellence paired with pragmatic AI — the agribusiness organization will be better positioned across fuel, feed and food. This will be irrespective of whether the strategic emphasis ultimately shifts deeper downstream or remains anchored in processing and origination.

The path forward, therefore, is less about futuristic visions and more about disciplined execution on a set of high-value, measurable problems.

The AI Agenda - by Decio May

- Stabilize operations and harmonize processes before scaling AI across your organization
- Prioritize high-impact, facility-level AI use cases with proven ROI
- Develop engineers who blend AI fluency with deep plant understanding
- Build a trusted data backbone to enable reliable, resilient, and scalable automation
- Standardize best practices to accelerate repeatability and reduce friction
- Evolve AI from assistant to active control-room optimizer over time

AI in Focus

with Decio May

“Engineering the Future of Agribusiness”

01 You often emphasize that true advantage lies where AI meets engineering judgment. What’s the one skill every “AI-equipped engineer” of tomorrow must master beyond code?

Understand the basics of how the facility / processing works and be able to connect with the shop floor teams for insights that help make the models more assertive

02 If AI were a new hire in your grain terminal, would you make it the control-room analyst, the reliability engineer, or the apprentice still learning the rhythms of the plant floor?

The control room analyst, to help drive better costs and yields, besides pointing out the key opportunities in the facility

03 You have spoken about “AI-equipped engineers who speak the plant language.” What is the one phrase or principle from that “language” that AI still struggles to understand?

Engineers that look only at data without understanding the process could produce misleading management information and direction

04 Between data and domain — which do you think drives more transformation power in the next decade of agribusiness, and why?

Appropriate use of right and trustworthy data as the core for driving transformation over the years to come

05 You have mentioned the rise of knowledge assistants for engineers. What is the one thing those assistants have taught you about how people use data in the field?

Sharing knowledge and standards at scale, learning from own mistakes, and developing new solutions are fundamentals for operational excellence

06 If you could teleport one technology from the lab straight into the crushing plant tomorrow, what would it be — and what bottleneck would it break first?

AI algorithms controlling the entire facility – understanding online variations, driving stability while maximizing yields at minimum cost to break run rate capacities and current performance bottlenecks

Rethinking Engineering with **Practical AI** for Resilient, Productive Mobility

Worldwide, mobility is being defined by two converging forces – systemic uncertainty in supply chains and an inflection in how software and AI will reshape engineering work. Practical leadership in this scenario means treating AI not as a novelty but as an execution lever, a next-gen toolkit to increase resilience, compress time-to-solution, and move engineering up the value chain.

Joachim Fetzer

Chief Technology & Innovation Officer,
Marelli

Resilience as a design principle

Recent supply-chain shocks demonstrate how single-source dependence can quickly cascade into lost capability. In many electronic subsystems – displays and panel components, for example – production is heavily concentrated in China. Building multi-sourcing into the product architecture (dual or triple design) prevents "stop-the-line" outcomes.

We need to focus on designing the periphery so that alternative microcontrollers and vendor stacks are plug-compatible at the system interface and keep software modular so variants can be produced regionally without creating separate long-lived SKUs. This approach can minimize geopolitical exposure while often improving cost leverage with suppliers

Prioritizing engineering productivity with targeted AI

The most immediate and measurable value from AI has been on the software-engineering side. Embedding coding assistants - GitHub Copilot and similar tools - into daily workflows can accelerate routine coding, improve developer throughput, and minimize cognitive load, particularly on repetitive or boilerplate tasks. Internal rollouts have shown sustained productivity gains when paired with CI/CD practices and a SW component catalog that encourages reuse rather than re-inventing building blocks.

Consequently, the business model shift is clear. Time-and-materials for staff augmentation will continue to shrink as platform-driven engineering and AI orchestration grows. The differentiator here is the ability to design architectures (hardware, software, systems and algorithms) and to deliver linguistic-first interfaces – translating system intent into well-structured specifications and algorithmic components.

Preparing for this scenario requires new competencies across systems architects fluent in algorithmic tradeoffs, teams that can write and curate software component catalogs, and engineers who understand how to decompose problems suitable for multi-agent / agentic AI orchestrations rather than ad-hoc prompt-based coding.

Select problems where AI earns a place in production

Not every AI idea is equally valuable. Priorities that have proved repeatable are:

01

Code productivity and test generation across production validated throughout the business,

02

Computer vision for process control and inspection, which is often mission-critical in manufacturing lines, and

03

Agentic workflows for test case and regression automation, with early deployments reporting ROI when tied to strict CI/CD gates.

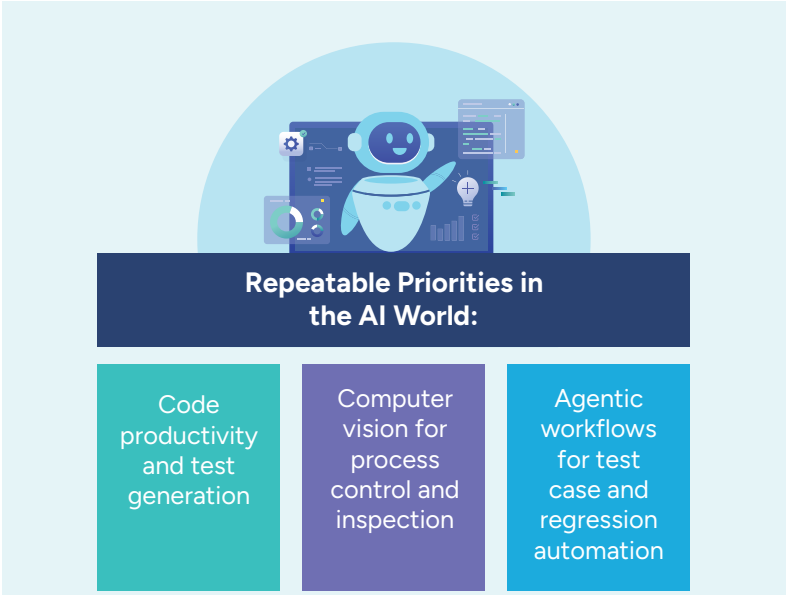
Conversely, some hype areas (e.g., autonomy for complex open-road driving, generalized generative design for continuous-process plants) would require more maturity before broad production adoption.

Public episodes involving large autonomous fleets reinforce the need for conservative, test-driven deployments. Experience indicates that even mature, commercial fleets have continued to face recalls and tight regulatory scrutiny. Safety must clearly govern the rollout cadence.

Balancing ambition with financial and ecosystem realism

Investment cycles in AI are large and visible, with major partnerships and multi-billion-dollar capital commitments reshaping the supplier landscape. That said, prudent leaders will continue to separate macro headlines from product and process choices, following proven productivity levers first, then sequence larger infrastructure bets (model hosting, private LLMs, or agent platforms) behind clear ROI gates.

And while recent news about major infrastructure investments by platform vendors illustrates how quickly the economics of computing can change, it also heightens the risk of exuberance if adoption is not disciplined.



Why disciplined curiosity wins the day

I am convinced that the most productive path is neither maximal conservatism nor blind rush. It is disciplined curiosity – move fast, make small sprints and experiments with strict success criteria, scale only what demonstrably improves throughput or reduces downtime, and institutionalize the learning so product architecture and supply-chain choices become repeatable.

In this way, AI becomes a multiplier for engineering judgment rather than a substitute for it, equipping and upscaling teams toward higher-value system design, algorithmic thinking and resilient product architectures.

The outcome, you ask ?

Faster delivery, lower operational risk and a clearer route to capturing the economic upside of the next technology cycle.

The AI Agenda - by Joachim Fetzer

- Engineer productivity first, with AI as your scaled execution lever
- Build for resilience with AI-enabled dual and triple design as a system principle
- Move up the value chain – shift from time-and-material to algorithmic and system-level engagements
- Standardize software and hardware components to enable multi-agent and CI/CD acceleration
- Choose AI domains where value is proven, and avoid the hype
- Execute with disciplined curiosity – fast sprints, clear success criteria, and controlled scaling are key

AI in Focus

with Joachim Fetzer

“Engineering with Disciplined Curiosity”

01 If AI joined your engineering team tomorrow, would you place it at the architect’s desk, the testing bay, or the CI/CD command center?

At the testing bay because here I can expect scalable throughput improvements.

02 You often talk about “resilience by design.” What is the one engineering decision that most often separates robust systems from brittle ones?

From a supply chain perspective, it is single source design versus multi source/dual or triple design because resilient supply chains are the key challenge for the coming years.

03 If AI could eliminate a single engineer’s pain point - debugging, documentation, or integration testing -which one would you offload first?

Documentation - because this is often neglected and is easy to solve with AI.

04 You have described “disciplined curiosity” as the ideal mindset. What is the last small experiment that surprised you with its real-world impact?

The rolling out of CI/CD globally after proofing its capabilities in a sprint.

05 From code writing to AI orchestration, engineering roles are shifting fast. What is the one skill every young engineer must build to stay relevant?

To stay curious and learn new things vigorously.

06 Between code assistants and agentic workflows, which do you believe will reshape engineering productivity faster - and why?

Agentic workflows, because the technology allows widespread automation of engineering tasks.

Resilient Medical Technologies With AI: Lessons from the Front Lines of Product, Regulation, and Operations

The global MedTech sector is at a junction of high-stakes engineering, stringent regulations, and fast-moving innovation. Recent trends indicate that this intersection can both amplify risks and unlock opportunities across supply-chain shocks and tariffs, heightened regulatory scrutiny, and the need to embed AI into workflows rather than merely into features.

Drawing on experiences and frontline examples, the path forward appears clear. MedTech majors need to continue investing in data foundations, simplifying technology landscapes, and leveraging AI to improve overall effectiveness and not just efficiency.

Jose Lima

SVP, Head of Global Quality Operations,
Philips

From global supply chains to regional resilience

Manufacturing strategies that prioritized cost and "local of local" footprints are being re-tested as tariffs and geopolitical pressure continues to reshape supply economics. Several leading organizations in the domain find themselves occupied in relocating capacity, re-validating manufacturing sites and absorbing added regulatory audits – a costly and time-consuming reality in a regulated field.

The lesson is clear. Resilience must be engineered in.

This translates to shorter, better-instrumented value streams and supplier relationships designed for speed and compliance rather than fragmentary point solutions. For instance, rapid shifts of product to different regions have resulted in added regulatory approvals and audits, increasing complexity and spending.

Using data lakes to connect the product lifecycle

Large capital equipment lives through design, manufacture, installation, and field services. Too often, these are disjointed parts of the whole, with manufacturing defects, installation feedback and field complaints sitting in separate silos. This prevents effective root-cause discovery and continuous improvement.

A practical pivot is underway, involving the consolidation of data into a single lake and tying process signals (production, installation, service) into analytics pipelines so that AI can point to specific causes and prioritize remediation. This is, however, not a short project, with industry experts estimating multi-year work to catch up. It is, however, the foundation that turns AI from being a novelty into a reliable decision partner.

Simplifying tooling and design capability stacks around outcomes

Buying tools to fix one problem at a time creates fragmentation for internal teams and suppliers alike. Multiple, poorly integrated interfaces increase supplier friction and create brittle processes. The need, instead, is to define the value stream first – data management, supplier workflows, regulatory traceability – and then select a compact set of tools that can be integrated, governed, and measured against business outcomes.

Where capital investment in software is slow, outcome-aligned fee-based services can bridge capability gaps faster and more predictably.

Embedding AI into workflows, not just into models

High-performance imaging is a perfect case in point. Clinical teams appreciate superior image quality, yet workflow friction – patient throughput, report latencies, and installation complexities – often dictates purchasing decisions. AI's real value emerges in this scenario when it helps reduce time-to-diagnosis and operational friction. Examples under development include AI-assisted ultrasound triage to accelerate diagnosis and scanner-embedded AI that streamline acquisition and reporting.

These efforts illustrate a shift from *"AI as a feature" to "AI as an operating capability."*

At the same time, successful product innovation can make most persistent operational challenges disappear. For instance, Helium-free MRI technology is a practical innovation that reduces site complexity and lifetime operating cost. Philips' BlueSeal helium-free MRI portfolio demonstrates how engineering choices can remove dependencies (helium handling and related infrastructure) and enable easier deployment, while being capable of being paired with AI-enabled workflow tools to further optimize total cost of ownership.

Confronting regulation by raising the bar on quality systems

Regulatory focus in MedTech continues to intensify, with high-profile remediation programs continuing to reshape vendor behavior globally. These developments are a reminder that compliance is not a checkbox, but rather, a constant part of engineering.

Investing in stronger engineering standards, clearer traceability, and proactive regulatory intelligence (including AI to flag relevant rule changes) can help reduce downstream remediation costs and create competitive advantage. Recent regulatory actions and consent decrees underscore the cost of lagging behind and the business imperative to accelerate remediation where needed

Practical priorities for MedTech leaders, then, include:

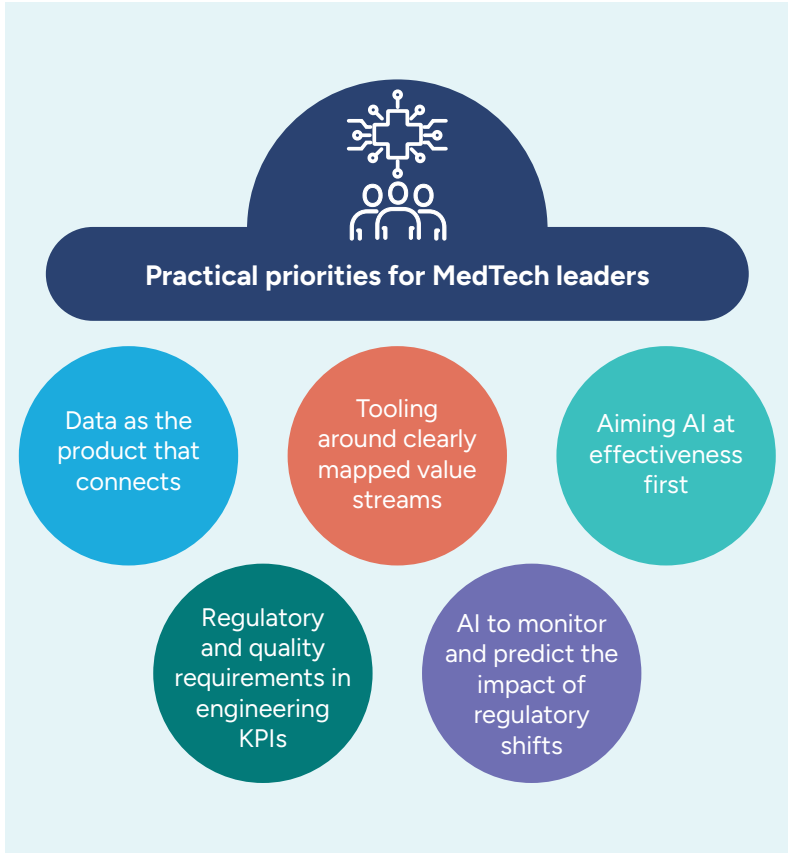
1. Treating data as the product that connects design, manufacture and field service. Start small with high-value use cases (e.g., escape detection, predictive installation failures) and scale.

2. Rationalizing tooling around clearly mapped value streams. Prefer composable stacks and managed services where speed-to-outcome is important.

3. Aiming AI at effectiveness first. Reduce cycle time, improve diagnosis throughput, and lower escape rates, and then optimize for efficiency .

4. Embedding regulatory and quality requirements into engineering KPIs.

5. Leveraging AI to monitor and predict the impact of regulatory shifts.



Accelerating progress

The choice in healthcare today is between repeating expensive remediation cycles or investing in data foundations, simpler capability stacks, and AI that measurably improves effectiveness.

The latter path is hard work, and asks for rigorous discipline, a willingness to simplify, and pragmatic partnerships. But it also yields resilient products, faster patient care, and sustainable business performance. The industry is moving in that direction, and the immediate ask is to unlock integration and governance – initiatives that can turn potential into production.

The AI Agenda – by Jose Lima

- Ensuring predictive quality as the first AI priority
- Treating data as the connective tissue of the product lifecycle
- Embedding AI into workflows, and not just into products or models
- Engineering resilience across supply chains and operations
- Simplifying technology stacks around value streams and outcomes
- Leveraging AI as an early-warning system for regulation and compliance

AI in Focus with Jose Lima

“The Resilience Architect”

01 If you could program one AI capability into every MedTech organization overnight, would it be predictive quality, regulatory intelligence, or supply chain self-healing?

It would be predictive quality without a doubt, since patients and customers demand the highest level of quality from our products.

02 When AI is embedded into workflows instead of just into products — what is the first signal you look for to show that it is working?

AI is the key to simplifying the workflow within hospitals so that patients can be treated in a timely manner. The key metric is a reduction in time-to-treat.

03 We have seen how helium-free MRI and AI-driven imaging are changing operations. If you could remove one other “invisible friction” in healthcare technology tomorrow, what would it be?

The pre-screening process. Too many times, patients see the doctor just to get a prescription for the next step versus receiving treatment.

04 The MedTech boardroom often balances between compliance and innovation. Which side do you think AI tilts the scale toward — and how do you keep it from tipping too far?

AI adoption will tip it toward innovation, simplifying the compliance review processes and allowing for more focus on innovation.

05 In a world where regulations evolve faster than product cycles, should we expect AI to become the auditor, the advisor, or the early-warning system?

I see it as an early warning system that is always monitoring the key regulatory and quality elements to identify changes and alert in a timely manner.

06 Complete the sentence: The future of MedTech will belong to the companies that treat data not as an asset, but as...

a competitive advantage.

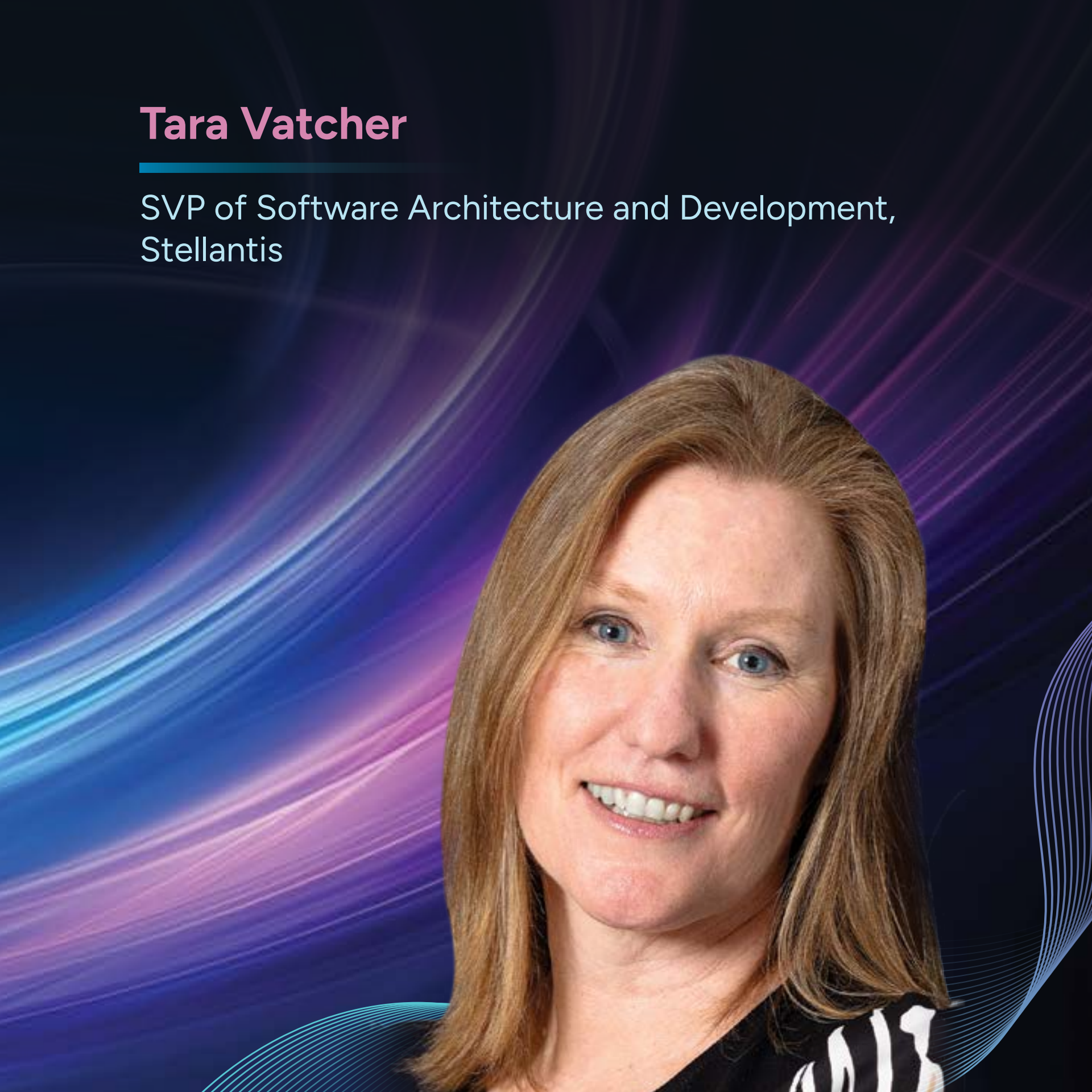
Turning Tools into Strategy:

How AI is Shaping Automotive Product Development Journeys

The growing adoption of Artificial Intelligence (AI) in automotive is increasingly a strategic lever – helping redefine product delivery, cost control, and scale. As the journey accelerates, the urgent questions are not only which models to use, but rather about how AI can become an integral part of engineering tools and refine processes and supplier relationships so that software-led features reliably reach customers across dozens of brands.

Tara Vatcher

SVP of Software Architecture and Development, Stellantis



Treating AI as a tools problem first, and then as an algorithm challenge

For automotive majors looking at AI as a separate initiative, the most practical route often is to embed AI capabilities inside existing tool chains across requirements capture, code generation, verification, and release orchestration. When AI is leveraged to augment these areas, it reduces cycle time and amplifies scale, especially for organizations supporting many marques and regional variants.

In my experience, AI should be seen as an enhancement for development such as 'an addition to tools,' used to speed implementation and standardize processes across brands and offerings.

Industry studies back this approach. Controlled experiments and industry analyses show generative AI can materially accelerate developer tasks, in some cases halving completion time for coding activities when paired with process change and governance.

Prioritizing production readiness: computer vision, ADAS and OTA

Computer vision and ADAS are clear examples where laboratory models become valuable only after hard systems work. In this case, we are looking at sensor fusion, low-latency inference, validation across driving contexts and robust update mechanisms. For auto majors, computer vision and cockpit/ADAS tech are priorities to get into production in the near term.

Auto OEMs are shifting from prototypes to production stacks — investing in on-vehicle compute, edge model deployment and the over-the-air (OTA) plumbing needed to keep models fresh. OTA capability, therefore, is now a core architecture decision for enabling iterative model improvements after vehicles are sold. It helps manage safety patches and feature rollouts without dealer visits, with market forecasts predicting rapid OTA market growth as connected and electric vehicles proliferate

Engineer productivity equals business velocity

Improving developer productivity should be treated as a business KPI, not merely an HR win. For automotive majors, engineer productivity is a strategic area, leveraging tools and automation that let teams "shift left" and find defects earlier. This directly affects time-to-market for high-value features such as ADAS updates or cockpit enhancements.

Multiple independent analyses find that well-designed generative AI tooling and integrated platforms can boost throughput and expand what individual engineers can do — but the lift is greatest where organizations redesign processes to take advantage of the tools (integration, governance, and retraining).

The lesson? Invest in platform-level improvements rather than sprinkling point solutions across.

Commercial and sourcing implications: be selective and demonstrate value

Vendor consolidation and cost pressure are two of the key factors that change buyer behavior. Services firms need to clearly demonstrate domain understanding, proactive value recommendations and the ability to scale across a global product portfolio. The focus is on selectivity, taking on work that aligns with core strengths and delivering modular solutions or toolkits that buyers can adopt as repeatable services.

For suppliers, this implies two practical moves:

01

developing modular, reusable products (toolkits, validated AI pipelines, OTA packaging) that reduce integration costs, and

02

cultivating deep domain credibility so recommendations anticipate the customer's strategic needs instead of reacting after money is committed.

Smaller, focused providers often win on the strength of a clear point of view — and customers reward that clarity.

Governance, safety and deployment choices matter – especially in safety-critical domains

For safety-sensitive features, hybrid and on-premise deployment models are frequently preferred to reduce exposure of proprietary data and to meet regulatory, validation and liability requirements. We cannot adequately highlight the importance of security and regional deployment models as a factor in commercial decisions and program design.

In practice, this means investing in model validation frameworks, traceability for training data, and robust CI/CD for ML that integrates with traditional vehicle validation cycles. OEMs and Tier-1s moving from pilots to production are prioritizing these controls while also building the OTA and edge capabilities that let models evolve safely in the field.

Big bets: leaders start here

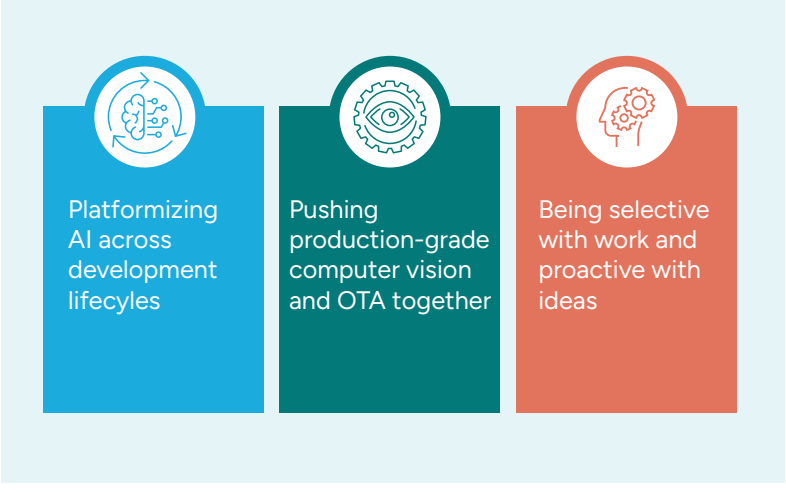
1. **Platformize AI across the dev lifecycle.** Convert tool-level experiments into integrated pipelines that connect specs, code assistance, automated test generation and deployment.

2. **Push production-grade computer vision and OTA together.** Treat sensing, inference and update delivery as one system — validate end-to-end before scaling.

3. **Be selective with work and proactive with ideas.** Offer modular solutions, defend recommended approaches, and surface efficiency opportunities before customers ask.

AI's value will be decided in the trenches: by how tools reshape daily engineering work, how reliably models run in vehicles, and how vendors partner around durable, repeatable solutions.

The way forward, therefore, blends tool investments, disciplined governance and a hard focus on production readiness — a combination that is turning promising AI pilots into fleet-worthy features.



The AI Agenda – by Tara Vatcher

- Treat AI as a tooling upgrade, not a standalone program
- Use AI to unlock real engineer productivity, not vanity pilots
- Move ADAS and computer vision from experimentation to production discipline
- Make OTA a core architectural capability, not an afterthought
- Scale AI across platforms through standardization, not reinvention
- Anchor AI adoption in strong governance and deployment choices

AI in Focus with Tara Vatcher

“Turning Tools into Strategy”

01 In automotive, where does AI earn its credibility faster — in the cockpit, in ADAS, or under the hood?

I think AI earns credibility across all domains and would be leveraged as such. Especially in ADAS, where the models/algorithms are complex and there is a clear need for enhanced recognition of artifacts.

02 If AI were added to your toolchain tomorrow, would you put it in coding, testing, or release orchestration first — and why?

I would add it to coding and testing as parts of the overall product development enhancements. AI is a key enabler for accelerated and enhanced software development journeys.

03 Over-the-air updates have redefined the idea of ‘done.’ What is the one lesson that traditional engineering can learn from the OTA mindset?

One lesson for traditional engineering is the need to focus on the ability for sustained addition of new features to products, even long after release. This enables a longer product life of your product and continued customer value – metrics that would be increasingly in focus across the spectrum.

04 When you look at the rise of generative AI in product development, what is the bigger challenge — governance, integration, or adoption?

The biggest challenge will be governance. AI needs to be reliable and accurate, underscoring the need for effective governance in place to enable key check points.

05 If you could automate one recurring bottleneck in the automotive development lifecycle today, what would it be — validation, traceability, or vendor onboarding?

One bottleneck is validation (although not limited), making it a natural focus for automation. The ability to automatically generate validation test cases and ensure that one covers all possible scenarios will both ensure and enhance the quality of the product.

06 Complete the sentence: The real power of AI in automotive is not in the model — it is in...

the ability for the organization to scale with it.

Engineering Intelligence in the **Age of AI**

For decades, technology – mechanization, computing, digitization, and cloud – progressed in waves. The current AI wave is increasingly coming to represent a foundational shift in how products are imagined, built, and experienced.

Across global engineering-led enterprises, this shift toward AI is the next chapter – redefining technology architecture but also business models, workforce roles, and customer expectations.

I feel that transition can be framed through the lens of **Engineering Intelligence** – a convergence of engineering depth, software capabilities, and AI-driven decisioning – enabling intelligent products, autonomous processes, and next-gen manufacturing systems. As an approach, it is grounded in real-world engineering outcomes where AI is embedded into the product development lifecycle (PDLC) rather than being bolted-on afterward.

Amit Chadha

CEO & Managing Director
L&T Technology Services

AI as the next foundational disruption

The arrival and adoption of computers reshaped enterprise productivity. Mobile technology redefined customer engagement. And today, AI is poised to become equally pervasive as an omnipresent layer across engineering, manufacturing, and services.

In the coming three to five years, AI will likely become as embedded in daily operations as the current digital technologies, redefining roles, workflows, and the whole value creation journey. What distinguishes this moment is the breadth of AI's influence, which is no longer limited to analytics or automation. Physical and multimodal AI, agentic systems, edge intelligence, and generative models are converging toward creating autonomous engineering ecosystems truly capable of learning, adapting, and self-optimizing.

For engineering services firms, this creates both urgency and opportunity. AI is a net positive force, one that enhances differentiation, accelerates innovation, and expands the scope of what engineering organizations can deliver.

From engineering services to technology solutions

The traditional engineering services model focused on execution excellence – delivering design, development, and sustainment capabilities at scale. But as AI becomes intrinsic to products and operations, successful organizations need to evolve toward becoming technology solution providers.

This structural transformation involves:

- Developing IP and patents that directly influence customer outcomes,
- Creating reusable platforms and toolkits that accelerate delivery,
- Integrating software, hardware, and AI into unified offerings, and
- Prioritizing domains where engineering depth drives maximum impact.

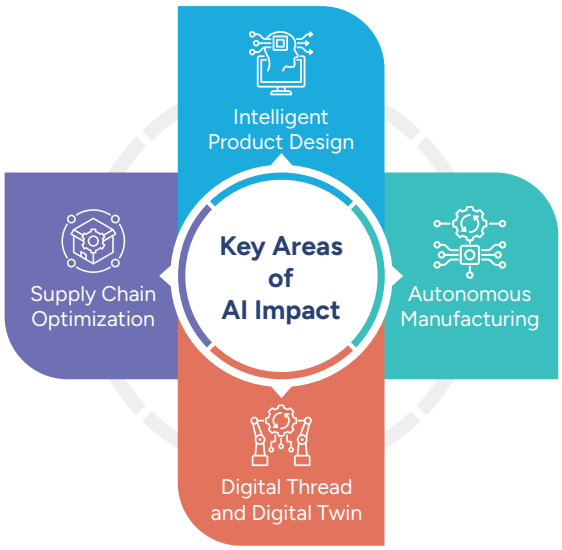
This approach calls for deeper technology expertise, sharper domain focus, and stronger partner ecosystems. It also requires a cultural shift, transitioning from delivering tasks to solving real-world business problems for the client.

Most importantly, it calls aligning engineering innovation with measurable reliability, cost efficiency, and enhanced speed-to-market outcomes.

Engineering Intelligence in practice

As a concept, Engineering Intelligence is not about abstract AI experimentations and plans. The focus is on driving production-grade engineering systems that perform under real-world constraints, delivering outcomes across physical, operational, regulatory, and safety-driven environments.

This is where deep domain expertise becomes a decisive advantage. Actual hands-on knowledge across design, manufacturing, quality, and compliance enables engineering organizations to identify where AI delivers scalable value and where its application needs to be carefully engineered. Consequently, the key areas of impact include:



- **Intelligent product design,** involving embedding AI from concept stages to enable hyper-personalization and faster iteration cycles,
- **Autonomous manufacturing,** leveraging AI for planning, scheduling, and predictive operations,
- **Digital thread and digital twin,** creating connected ecosystems across product lifecycles, and
- **Supply chain optimization,** with AI for resilience, sourcing, and demand responsiveness.

Through sustained investments in applied AI and digital engineering innovation, engineering organizations can evolve from building products to building intelligence into products.

The workforce transformation paradigm

As the rate of AI adoption accelerates across industries, the next phase of the transformation will involve engineers working alongside automation systems, intelligent agents, and copilots across daily workflows. The development lifecycle, across software, mechanical, and systems domains, will need to be redesigned to integrate these capabilities.

Consequently, organizations that want to empower their engineers in focusing on problem-solving and not process management will need to:

- Ensure reskilling and retraining at scale,
- Build internal AI toolkits alongside external partnerships, and
- Shift toward agile, smaller, outcome-driven teams

Leadership will play a key role here. The future operating model will require us to focus on why, managers to define what, and engineers to determine how. This redistribution of decision-making will accelerate innovation and responsiveness.

The message for the workforce in the AI world is clear – embrace change, invest in learning, and engineer the transformation rather than resist it.

Scaling AI beyond proof of concepts

Across industries, the rate of AI adoption continues to be uneven. Mobility, MedTech, and Tech ecosystems are advancing quickly, while process industries and certain manufacturing segments are still transitioning from pilot programs to scaled deployment. This diversity highlights the fact that scaling AI requires engineering rigor, not just digital ambition.

The next 12–18 months, therefore, will likely see acceleration across five intersecting forces:

1. AI and agentic systems becoming production-ready
2. Industrial automation addressing labor gaps in global manufacturing
3. Software-defined machines and products creating new revenue streams
4. Advances in compute and storage enabling AI at scale
5. Supply chain realignment driving data-driven decisioning

Organizations that continue to align engineering, AI, and domain expertise across these forces will unlock the key to the future.

The AI Agenda - by Amit Chadha

- Embed AI by design and integrate intelligence at the concept stage of products and processes
- Prioritize domain-led AI, with a focus on areas where engineering depth amplifies AI outcomes
- Develop reusable platforms across next-gen toolkits and accelerators for scalable deployment
- Reskill the workforce to let your engineers collaborate with AI agents and automation
- Strengthen ecosystems and leverage partnerships for speed, innovation, and scale
- Operationalize responsibly and balance innovation with safety, compliance, and reliability

AI in Focus with Amit Chadha

The Engineering Intelligence Architect

01 If Engineering Intelligence were a product, would it be software, hardware, or a living ecosystem?

An ecosystem — where software, hardware, and AI continuously learn from each other and improve outcomes.

02 Boardroom conversations on AI — hype or hard economics?

Hard economics – reliability, speed, cost, and revenue impact. The future will belong to organizations who realize this early on and make the transition in time.

03 AI in engineering: productivity tool, design partner, or decision authority?

A design partner first, productivity accelerator always, and decision authority only where the trust is earned.

04 What shifts first in engineering organizations — tools, talent, or mindset?

Mindset. Tools and talent follow once leadership believes that transformation is non-negotiable.

05 In your opinion, what is the most underestimated barrier to AI at scale?

Integration with real-world engineering constraints – safety, compliance, and reliability.

06 One capability every engineering enterprise must build in the next three years?

Production-grade applied AI embedded across the lifecycle.

From Buzz to Balance:

What Three Years of AI Have Taught Us About Digital Engineering

Three years ago, artificial intelligence was everywhere. It was the buzz in every boardroom, the headline at every conference, and the promise that was supposed to redefine the way we engineered, manufactured, and delivered value.

Today, as I look across the global automotive and industrial landscape, I find myself asking a simple question: What have we really learned?

Because while technology has accelerated at a breathtaking pace, progress - the kind that is sustainable, scalable, and human - often takes longer. And perhaps that is the most important lesson of all.

Monique Danielou

Group R&D Transformation Vice President,
FORVIA

Agile in an uncertain world

The last few years have reminded us that we operate in a world where change is the only constant. Tariffs shift overnight, materials become restricted, and policies can alter entire supply chains with a single signature.

As a result, we now build "what-if" scenarios into our operations. What if the steel tariff changes again? What if supply from a key region dries up? What if customer models shift toward a new regulation next quarter?

Being agile means having multiple paths ready — operationally, digitally, and strategically. It is not enough to think fast; we must engineer for agility. That is the real differentiator in this new world of digital engineering.

Sustainability is now an engineering parameter

Another area where I have seen real change is in sustainability.

Sustainable design is increasingly a pillar of product development. We look not only at what a part does, but what it consumes — in energy, material, and lifecycle cost. The focus is on embedding more recycled materials, optimizing for weight reduction, and leveraging AI to simulate how these choices affect performance before production even begins.

Digital engineering gives us that visibility — the ability to test sustainability virtually before investing physically. It turns what was once a corporate responsibility into a true engineering parameter.

The cost war and the complexity trap

Everyone is talking about AI, but I think one of the most powerful realities shaping our industry right now is not digital — it is economic. The cost war, especially driven by new entrants from China, has put enormous pressure on suppliers.

What this means is finding smarter ways to deliver value without compromising on innovation or quality. One of those ways is reducing fragmentation. Electrification and digitalization have multiplied the number of product variations, and today, we need far more programs to achieve the same production volume we had before.

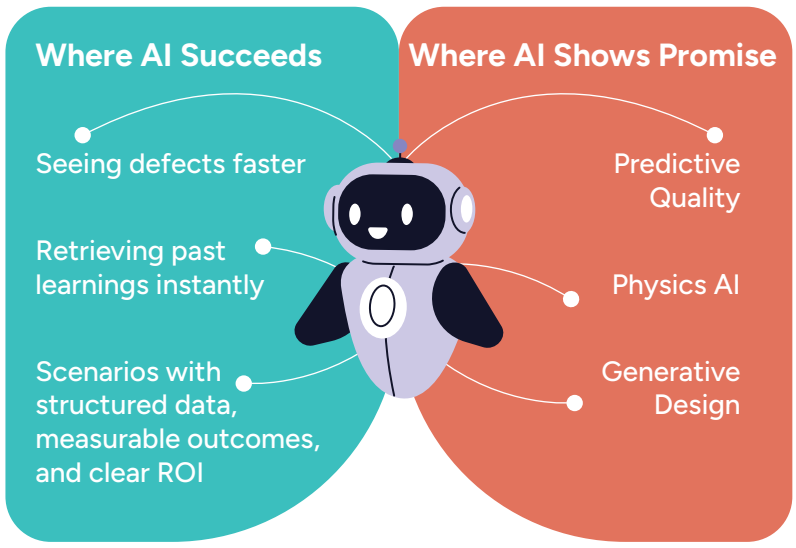
And hence the shift toward **modular and reusable design** — what I like to call the "Lego approach" to engineering. Reusing validated components, standardizing architectures, and applying AI-driven design optimization allows us to balance complexity with efficiency.

The goal is simple – do more with less but do it intelligently.

Where AI is mature — and where it shows promise

Not every AI initiative delivers the expected impact. I have seen AI succeed in some areas — and struggle in others.

AI can help factories "see" defects faster and enable teams retrieve past learnings instantly. These are areas where data is structured, outcomes are measurable, and the ROI is clear.



In other areas — such as anticipating quality issues upfront, simulating physical systems with AI, or using AI to generate early design options — we are still in exploration mode. The technology is powerful, but adoption takes time, culture, and clarity of use cases.

Engineering the human interface

In digital transformation, the real challenge is not technology, but rather, how technology connects with people. Digital tools are not an end in themselves – they are levers to strengthen collaboration, accelerate decision-making, and create sustainable value.

And why is human interface strategic?

Because innovation is not just about deploying technical solutions. It is about aligning technology with real user needs, anticipating organizational impacts, and driving adoption. Successful transformation is built on three pillars: clarity of objectives, team engagement, and seamless interactions.

The most valuable partners are not those who deliver tools quickly, but those who help us ask the right questions before specifications are even defined. They guide us in turning uncertainty into opportunity, creating ecosystems where engineers, business teams, and customers co-build solutions.

Our ambition must be clear:

- **Put people at the center** of design and integration processes,
- **Create intuitive interfaces** that simplify complexity and foster collaboration, and
- **Develop a digital culture** where technology amplifies creativity and collective performance.

Digital transformation is not a race toward smarter machines. It is a movement toward more agile, interconnected organizations. Progress is measured by our ability to learn together, share knowledge, and turn data into strategic decisions.

And human interface is at the core of this enhanced competitiveness paradigm. Investing in this dimension means investing in the success of our transformation and the sustainability of our leadership.

Looking back to move forward

After three years of experimentation and excitement around AI, it is time to draw clear conclusions to guide the next decade. Here are the three key lessons:

- **Adoption outweighs ambition.** AI that is not embedded into daily processes remains a promise, not a reality. Value comes not from prototypes, but from large-scale usage.
- **Data is the strategic engine.** Without reliable, contextualized, and well-governed data, even the most advanced algorithms fail. Data Maturity is now a core competitiveness factor.
- **Reflection is imperative.** We have spent years predicting the future of AI, but too little time analyzing its past. Understanding what worked – and why – is essential to avoid mistakes and capitalize on successes.

It is time to move beyond the hype cycle and enter a phase of maturity. This means conducting a true strategic audit: Which initiatives created value? Which failed? And what conditions are necessary for success going forward?

The next wave of AI will not be defined by more tools—it will be shaped by our ability to:

- **Align AI with business priorities**, rather than technology for technology's sake,
- **Invest in data governance and ethics**, to build trust and performance, and
- **Develop skills and organizational models** that drive adoption and impact.

The future of AI does not depend on a new algorithm- it depends on our ability to turn experience into sustainable strategy. That approach will determine who leads and who follows in the decade ahead.

The AI Agenda – by Monique Danielou

- Leverage AI to engineer agility, enabling rapid “what-if” decisions across supply chains, tariffs, regulations, and operations
- Apply AI to reduce cost and complexity through modular, reusable, and standardized engineering architecture
- Treat sustainability as a core engineering parameter, using AI to optimize materials, energy use, and lifecycle impact upfront
- Prioritize AI where ROI is proven, across quality, computer vision, and knowledge reuse, while maturing advanced use cases pragmatically
- Scale AI into everyday engineering and factory workflows, because value comes from adoption, not pilots
- Put people at the center of AI by insisting on clean data, clear business ownership, and tools that engineers can use

AI in Focus with Monique Danielou

“From Buzz to Balance”

01 Three years into the AI boom — what’s one buzzword you wish we could delete from LinkedIn/social media forever?

I would like to delete “AI will replace humans.” History proves the opposite: technology transforms work, it does not erase it. The real story is augmentation, not replacement.

02 If your factory could talk, what do you think it would complain about the most?

“Stop the silos. Give me a clean digital thread.” Its pain points? Fragmented data and decision bottlenecks. The cure: end-to-end connectivity and pragmatic workflows that empower speed.

03 You call sustainability an ‘engineering parameter’ now — if AI had a carbon footprint, what would its biggest emission be?

Wasted compute. Oversized models and unnecessary request burn energy. The fix: right-size models, used only when needed, with a green footprint. Smarter AI is Frugal AI.

04 Not every AI project delivers the expected impact — what is the best “lesson learned the hard way” you have seen?

“No business owner, no impact. Bad data, zero value.” Without a committed business sponsor, adoption fails. Without clean, accessible data, even the smartest model is worthless. Design for deployment from Day One and kill fast if value is not clear.

05 If you had to describe the current state of AI in one emoji — what would it be, and why?

🚧 *AI is powerful, but it is not finished. The hype phase is behind us, now comes the hard work of scaling, cleaning data, and embedding AI into real workflows. The foundations are being laid — governance, sustainability, and adoption — because the next chapter is not about more tools, it is about making them deliver real impact.*

Recalibrating Engineering with AI: **Practical Lessons** from the **Field**

The last 18 months have shown how AI is reshaping the way engineering engagements are planned, executed and commercialized. Across industries, the conversation has shifted from “if” to “how fast” and “how responsibly.”

While the growing adoption of AI may have crowded out many previous priorities, has it really become the central lever for productivity, resilience, and new product capabilities?

Stefan Juraschek

Board of Advisors,
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AI as the productivity engine - not just a gadget

Generative and assistive AI tools are moving beyond single-task automation toward redefining complete development lifecycles from requirements drafting, specification checks, to code generation, and testing and verification. This trend lines up with large-scale productivity studies showing measurable boosts when GenAI is paired with end-to-end process change. Early adopter case studies and consultant reports suggest double-digit productivity gains for software teams when tools are integrated thoughtfully.

In practice, this shows up as faster RFQ/estimate cycles (rough, high-confidence answers in hours instead of weeks), and automated test suites that find issues earlier in the pipeline – changes that materially shorten sales cycles and development lead times.

From automotive to defense: use cases that scale

AI's most visible gains now are in software-intensive domains, including connected vehicles, smart factories, autonomous systems and predictive maintenance. In automotive, real-time object recognition and on-vehicle intelligence are moving from lab prototypes into production stacks – a trend supported by recent technical literature on real-time detection models and industry rollouts.

Defense and aerospace are emerging as high-growth areas for AI investment. Governments and prime contractors are accelerating their AI spending for command-and-control, intelligence fusion and autonomous sensing.

Market analyses further project a significant expansion in AI-for-defense budgets over the coming years. These investments create adjacent commercial opportunities across software engineering, systems integration and secure, on-premise model deployments – all already in high demand.

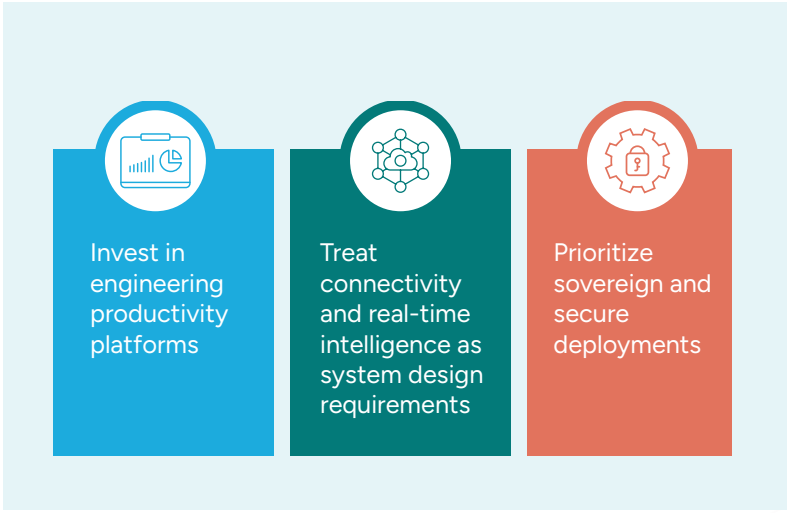
In short, companies with automotive and semiconductor know-how are finding overlapping requirements with defense and aerospace programs.

Three immediate bets for leaders

1. **Invest in engineering productivity platforms, not point tools.** Codify AI into the development lifecycle from specifications generation to deployment so that small efficiency gains can compound into measurable throughput improvements. Consulting reports and field pilots indicate that integrated GenAI programs outperform ad-hoc tool trials.

2. **Treat connectivity and real-time intelligence as system design requirements.** Object recognition, low-latency decisioning, and secure vehicle-to-cloud links must be designed in from day one as retrofitting is often costly. Research on automotive object detection and in-vehicle systems underlines the engineering work required to make recognition robust, especially in remote settings.

3. **Prioritize sovereign and secure deployments for sensitive domains.** Many industries prefer on-premises or hybrid model architectures to avoid data exposure, a strategic choice that affects commercialization paradigms and partner selection, especially in cross-industry AI adoption scenarios.



Technology realities: what is working and what is not

Analogous to the introduction of LFP batteries into the EV mass market, the associated shifts in production capacities, and the move towards robust sourcing are examples of domain-level changes that interact with AI adoption. This shows how a technological trend (competitive cell chemistry) can change market and product strategies.

Similarly, AI is changing value chains with the associated processes and procedures in engineering and capital allocation. Market reports predict continued growth for the adoption of AI applications, while AI investments in industry and defense are rising massively in parallel.

It is, however, important to be realistic here. Generative AI tools are not a plug-and-play substitute for expertise. The most sustainable advances come when AI complements subject matter experts and organizations invest in data hygiene, secure model provision, and governance.

Governance, ethics, and the “common problems” to solve together

Across sectors, a few challenges problems continue to recur. This includes secure handling of proprietary data, model validation for safety-critical systems, and clear lines of accountability when AI assists decision-making.

In this scenario, it is necessary that we realize that AI is neither magic nor a mere productivity add-on. It is the scaffolding for a new engineering operating model – one that demands investments in people, processes and platform thinking. The near-term winners will be those who treat AI as an enterprise capability and integrate it into engineering systems, secure their data estate, and prioritize use cases where measurable impact can be realized quickly.

The result?

A fundamentally different way of turning technical knowledge into trusted, field-ready products that would recalibrate our approach to engineering as a discipline.

The AI Agenda – by Stefan Juraschek

- Embed AI across the entire engineering lifecycle to compound gains in productivity, quality, and time to market
- Clean, validated data is more strategically valuable than incremental compute power
- Prioritize platform-level AI integration over point tools so that small automation gains can scale into measurable throughput improvements
- AI adoption must be designed around real-time intelligence, connectivity, and system-level integration from the outset
- Sensitive and safety-critical industries require sovereign, secure, and (often) on-premise AI deployments as a foundational architectural decision
- The future belongs to teams that treat AI as a force multiplier for expert judgment, and not a replacement for domain knowledge or accountability

AI in Focus

with Stefan Juraschek

“Recalibrating Engineering with AI”

01 If AI is not a gadget but a productivity engine, what is the one habit that engineering leaders must break to make it true?

AI will completely change the engineering value chain. We need to leverage AI-driven engineering as an opportunity for efficiency and quality, and not as a threat.

02 In your experience, where does AI save the most time — in discovery, in validation, or in rework?

Repetitive, manual tasks such as quotation preparation, requirements management, documentation, coding, simulation, and test management are the areas where AI will save the most time.

03 Automotive, defense, and aerospace are all racing to scale AI. Which of these industries do you think will set a new benchmark for responsible adoption?

Because of its significant demand for engineering capacities, combined with the high pressure to optimize the development process, automotive will lead, followed by defense and aerospace.

04 If you had to choose between doubling compute power or doubling clean, validated data — which would you pick?

Clean validated data is more difficult and more important – doubling compute power is easier to achieve.

05 Battery technologies and AI are reshaping design economics. Which trend do you think will more fundamentally change how we build?

AI has a much greater impact on the entire value chain than perceived. Its impact is not only on the market and the product, but rather, on the entire product creation process, which will change significantly with growing AI adoption.

06 Complete the sentence: The future of engineering belongs to teams that treat AI not as automation, but as...

a supporting and engineering tool for the efficient processing of recurring tasks – significantly reducing time to market while increasing quality at the same time.

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Team LTTS Customer Advisory Council

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