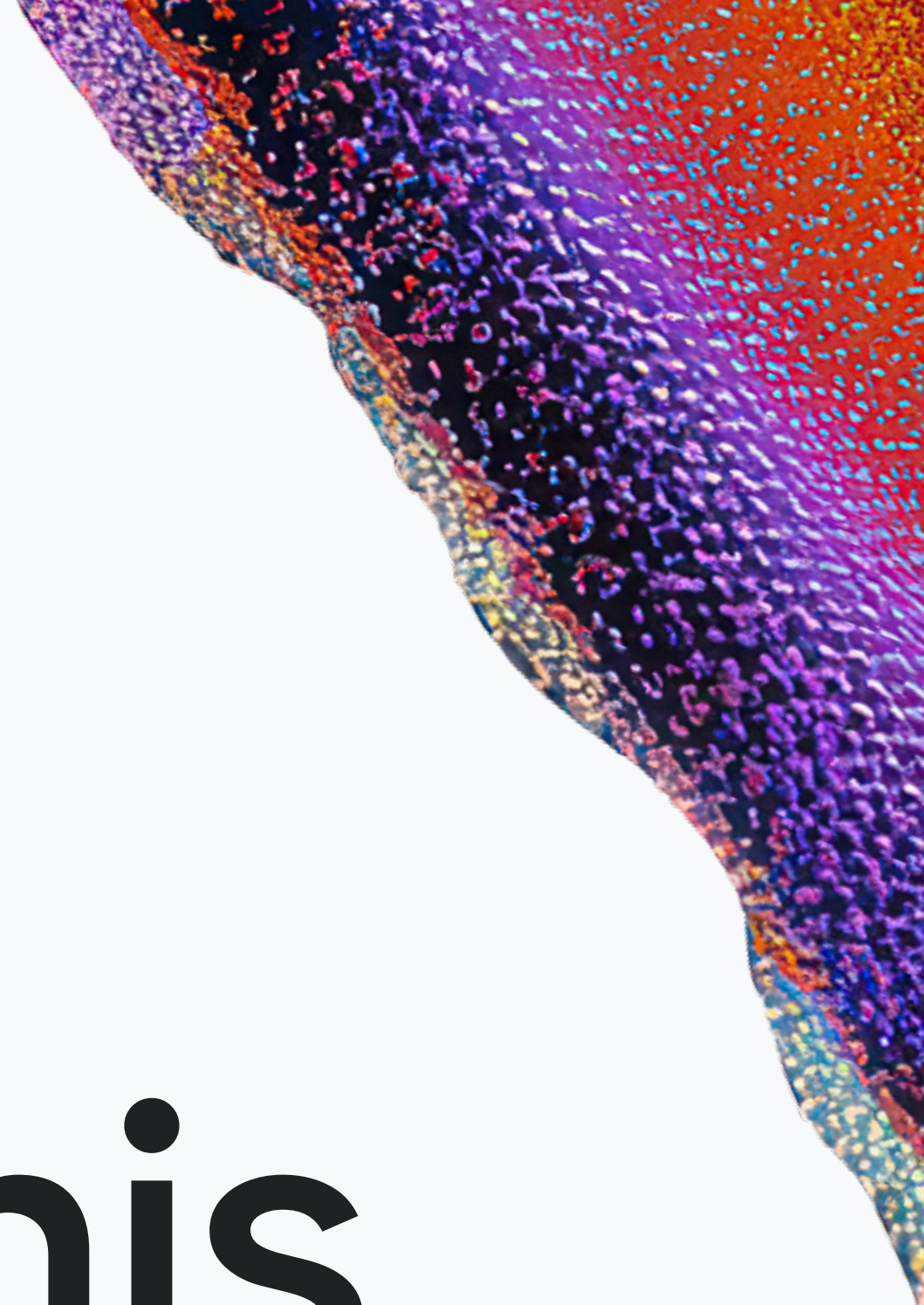




AI agent trends 2026

Manufacturing

 Interactive report



About this report

This report provides key insights for business leaders to shape their AI agent strategy for 2026 and beyond. Within each trend, you will find real-life examples, technical resources, and customer stories to share with your teams for deeper learning.

These trends were identified using a blend of qualitative and quantitative data, including internal Google Cloud and Google DeepMind interviews with AI leaders, customer case studies, and insights from [The ROI of AI in Manufacturing 2025](#) report (based on a global survey of 517 executives in manufacturing and automotive), with analysis using NotebookLM and Google AI Studio.

Ask the report

Want to dig deeper into the trends? NotebookLM is ready to help—simply click the icon for an interactive version of this report.

AI agents are redefining business value in 2026

The ceiling for human achievement has been lifted.

While headlines focus on the distant future of Artificial General Intelligence (AGI), the decisive shift for manufacturers is happening right now. That shift is agentic AI. This is AI that moves beyond answering questions to understanding a goal, making a plan, and taking actions across applications to achieve it with extensive human guidance and oversight.

Due to this capability, AI is one of the first technologies that applies to every single person, in both our personal and professional lives. Its power lies in its ability to augment human capacity with better recall, faster data processing, and enhanced reasoning across the manufacturing floor, commercial teams, and R&D teams. However, the true transformation will unfold when manufacturers use these agents to bridge the gap to the end-users—gathering the feedback needed to spark a “design flywheel” of continuous product improvement and value.

In this report, we explore five key AI agent trends shaping manufacturing in 2026. Unlocking the value of these trends requires more than simply adopting new tools. It also demands that leaders question old assumptions and drive the cultural change necessary to thrive in this new, agentic AI era.

What are AI agents?

Agents are systems that combine the intelligence of advanced AI models with access to tools so they can take actions on your behalf, under your control.

| I/O, May 2025

| Keynote by Sundar Pichai, CEO, Google

5 AI trends shaping manufacturing in 2026

1 Agents for every employee

Empowering individuals to achieve peak productivity



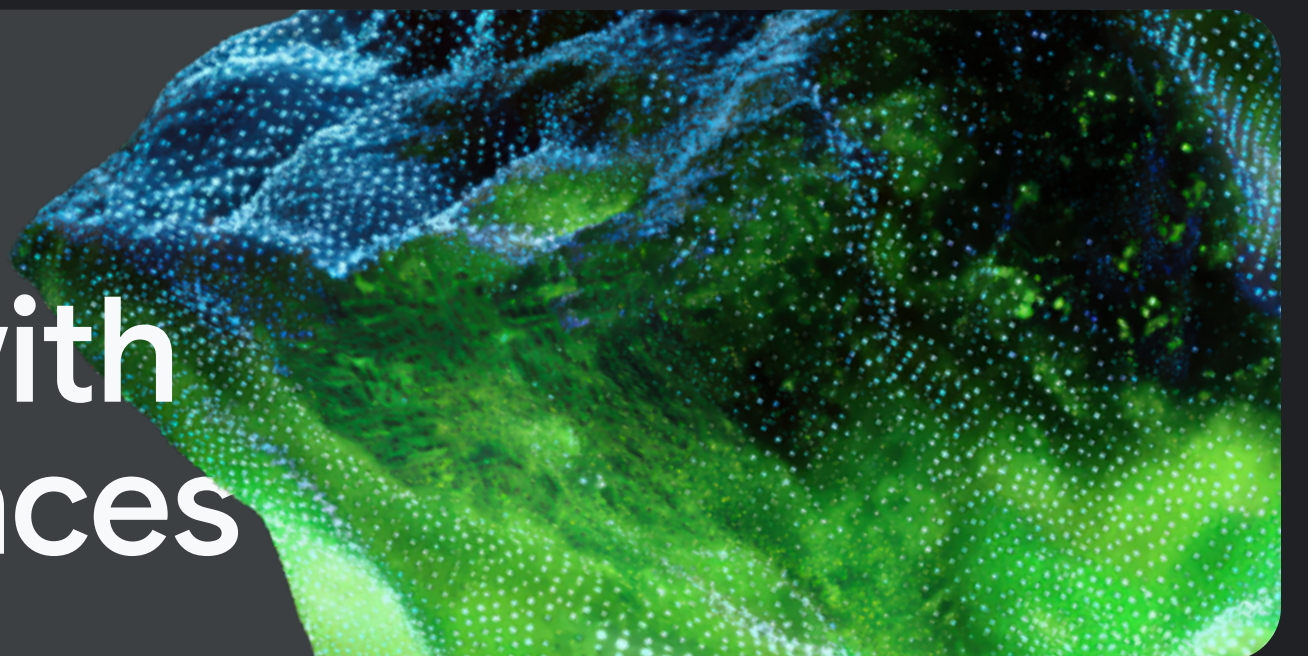
2 Agents for every workflow

Running your business with grounded agentic systems



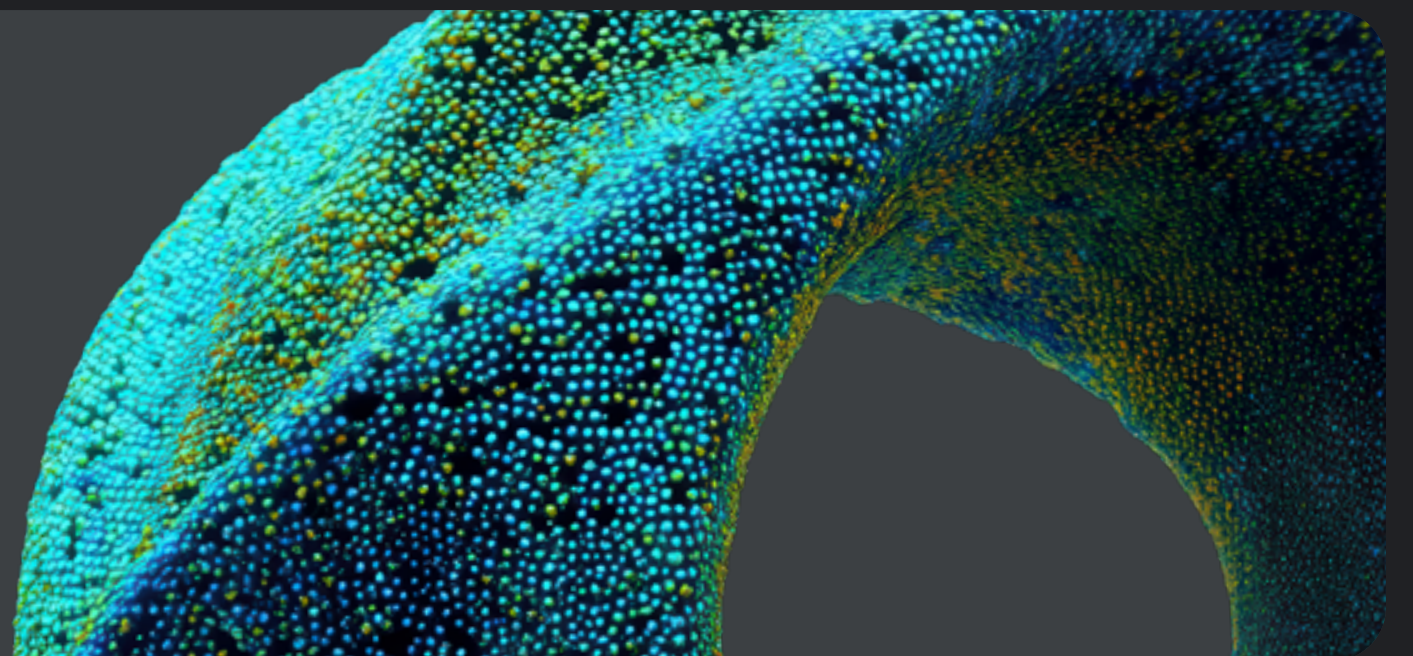
3 Agents for your customers

Delighting customers with concierge-like experiences



4 Agents for security

Advancing security from alerts to action



5 Agents for scale

Upskilling talent will be the ultimate driver of business value





Agents for
every employee

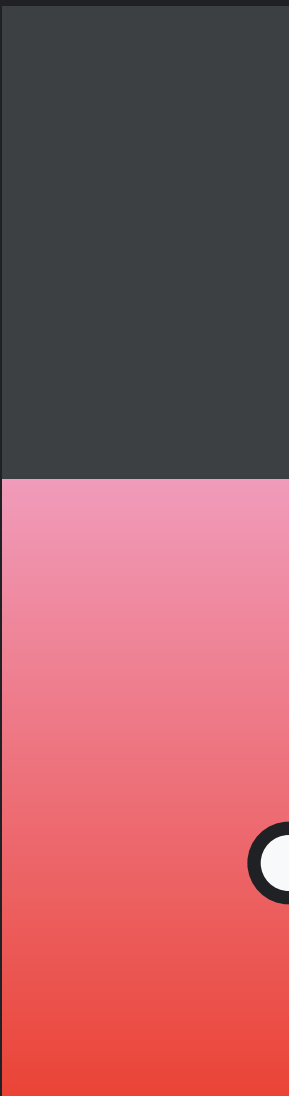
Empowering individuals to achieve peak productivity





The most significant business shift of 2026 isn't just about efficiency; it's a fundamental, employee-centric transformation.

This new agentic model is designed to expand the potential of every individual, turning them into the primary engine for innovation and growth. For example, employees will be increasingly able to state a desired outcome, and the computer—using LLMs and agents—determines how to deliver it.



56%

of manufacturing executives in organizations that use gen AI have AI agents in production,¹ deploying them across a wide range of use cases²

Of those:

- 54% use agents for quality control
- 48% use them for production planning
- 47% use them for supply chain and logistics

¹ Google Cloud, [The ROI of AI in Manufacturing](#), 2025 (Manufacturing executives: n=517; Questions: (1) How are AI agents leveraged across the enterprise? (2) How many AI agents does your company currently have deployed in production across your organization?)
² Google Cloud, [The ROI of AI in Manufacturing](#), 2025 (Manufacturing executives whose organization is leveraging agentic AI: n=292; Question: What use cases has your company deployed AI agents for?)



In 2026, AI agents will democratize expertise on the factory floor. By surfacing real-time insights for every operator, we are moving from siloed knowledge to shared intelligence—creating a force multiplier that empowers every employee to lead with expert-level precision.”



**Praveen
Rao**

Director, Manufacturing, Global
Strategic Industries, Google Cloud

KOENIG & BAUER



As AI agents take over repetitive tasks, our focus shifts from ‘doing’ to ‘orchestrating.’ We are becoming the trainers, designers, and strategic interpreters of these new systems. This redefines productivity and frees up our most valuable asset—our human intelligence and creativity—to focus on innovation, strategy, and empathy, creating a powerful new form of collective intelligence.”

Sandra Wagner

CEO, Koenig & Bauer



A new integrated working model

In this new model, every employee—from the shop floor to the top floor—becomes a human supervisor of agents.

Their primary job is no longer to perform every mundane task personally, but rather to orchestrate a team of specialized AI agents to achieve a goal. This model is about more than just delegation; it's about augmentation. The real power comes from giving every employee agents grounded in the company's own enterprise context—its internal systems, knowledge bases, customer data, and past work—to elevate the impact of their efforts.

The employee's core function becomes providing strategic direction. Their new responsibilities are to:

Delegate mundane or repetitive tasks

Identify which operational tasks are best suited for an agent and assign them.

Set goals

Clearly define the desired outcome for the agent.

Outline strategy

Use their human judgment to guide the agents and make the final, nuanced decisions on complex “edge cases” that AI can't.

Verify quality

Act as the final checkpoint for safety, quality, and accuracy.

What is grounding in AI?

It is the process of anchoring an AI model's responses to a specific, verifiable set of facts—its “ground truth.” For an enterprise, this ground truth is its own internal data.

[Learn more](#)



How it works

The 10x shop floor operator

A shop floor operator’s job used to be burdened by constant scramble of tackling manual errors, safety hazards, and slow training. In 2026, they can orchestrate a system of specialized AI agents to achieve their goals, rather than performing every task personally.

With agents dedicated to specific tasks, the shop floor operator can multiply their output by focusing on standard enforcement, defect mitigation, and auditing.

Analyze the real-time telemetry and historical inspection data to identify root causes of defects

Thinking...

◆ Data sources gathered ▾

◆ Compiling data and trends...
I now have raw data. Now I need to process it to create the table structure and calculate variances.

⚙ Processing raw data

📊 Processing DataFrame

◆ Executing calculations...
The table is now generated with all the required calculations. The percentage columns are still showing full precision, I need to round them to one decimal place. Also, the output format for percentages is not quite right as it is not standardized across the sources. I will fix this in the next step. I also need to extract raw data for .csv generation.

◆ Re-run calculations...

🛡 Ask anything, search your data, @mention, or /tools

+

🔍

📄

◆

➤

May display inaccurate information, so double-check responses

An example of a Gemini Enterprise app home page (agent shown is built by a user)

Google Cloud

9

The shop floor operator's specialized agent system

Their new role involves orchestrating three specialized agents that bridge the gap between human intuition and machine precision:

Digital work instruction agent

Transforms static standard operating procedures (SOPs) into interactive, visual guides. For example, by syncing with real-time machine data, it can deliver step-by-step instructions tailored to specific error codes or custom production runs, ensuring safety and precision on the first pass.

Data capture and traceability agent

Pulls information directly from sensors, logs, and component images to create a real-time audit trail. For example, it can link the equipment usage history to the enterprise resource planning (ERP) and manufacturing execution system (MES), limiting the need for manual data entry.

Real-time quality control agent

Serves as an automated error-proofing (poka-yoke) system. For example, it can sift through real-time telemetry and historical inspection data to identify root causes of defects before they impact a production run.



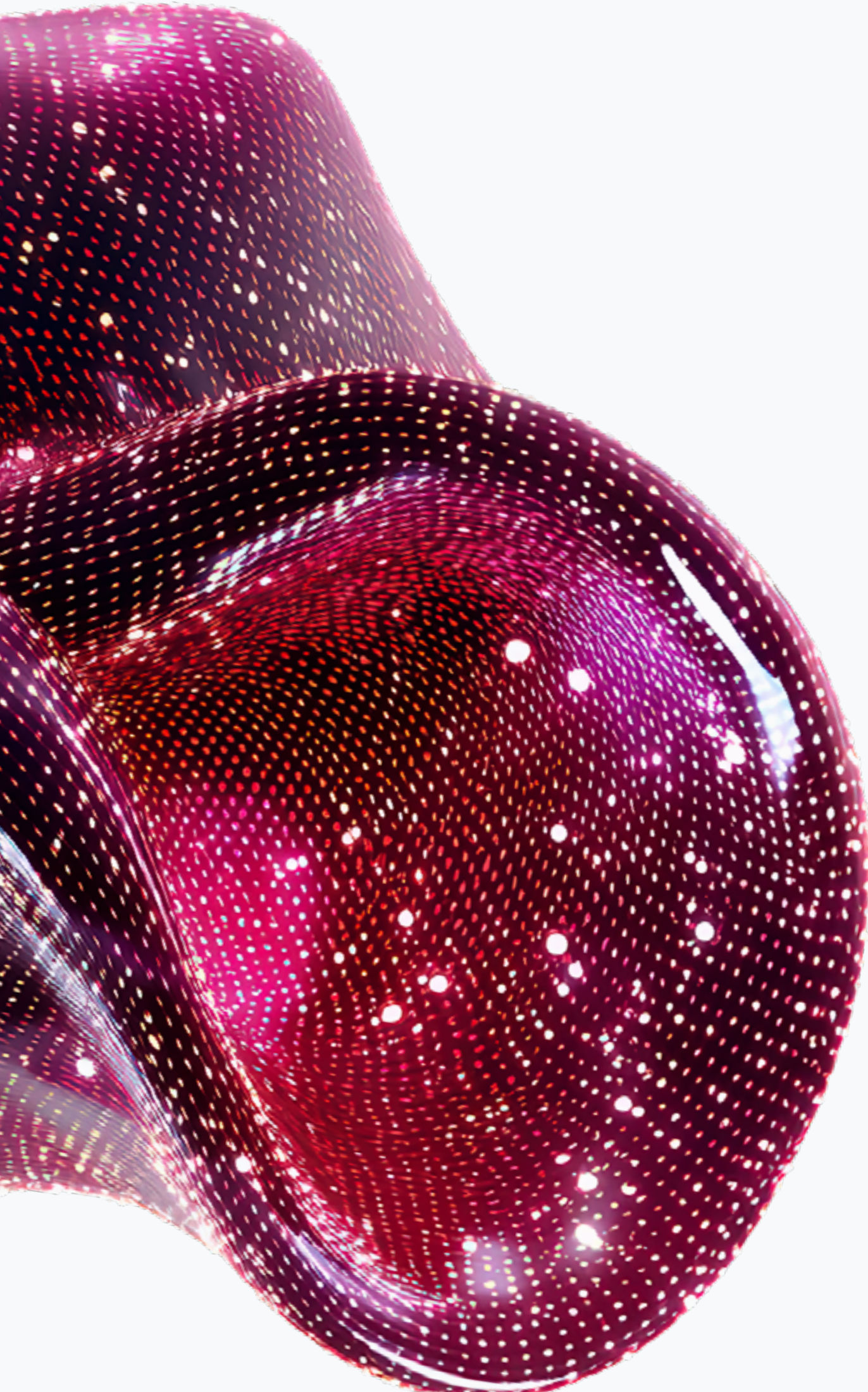
Data tip

Teams can use data agents as an intelligence multiplier.

[Learn more](#)



Suzano, the world’s largest pulp manufacturer and a leader in sustainable bioeconomics, worked with Google Cloud and Sauter to develop an AI agent built with Gemini Pro to translate natural language questions into SQL code to query SAP Materials data on BigQuery. This has resulted in a 95% reduction in the time required for queries among the 50,000 employees using the data.



Ready to 10x your team?

Gemini Enterprise Agent Platform enables employees to build and manage their own specialized AI agents.

Try now



Agents for
every workflow

Running your business with grounded agentic systems

An abstract, flowing, wavy pattern in shades of orange and yellow, resembling a liquid or smoke effect. It is composed of many small, glowing dots and lines, creating a sense of movement and energy. The pattern starts from the bottom right and flows upwards and to the left, partially overlapping the text.



An agentic system is a digital assembly line—a human-guided, multi-step workflow that orchestrates multiple agents to assist with complex business workflows.

It can optimize physical processes to run complex operations like predictive procurement or overall equipment effectiveness (OEE) optimization.

The true value in 2026 begins with augmenting the capabilities of individuals and teams, and continues to grow by making the entire business run more intelligently and efficiently, 24/7, at scale.



37%

of manufacturing executives say their organizations have launched more than 10 AI agents³

“ In 2026, agentic systems will redefine OEE optimization by evolving it from a static metric into an active driver of performance. By orchestrating specialized agents across availability, throughput, and quality, manufacturers create a ‘digital nervous system’ that doesn’t just track inefficiencies, but resolves them in real-time.”



Praveen
Rao

Director, Manufacturing,
Global Strategic Industries,
Google Cloud

³ Google Cloud, [The ROI of AI in Manufacturing](#), 2025 (Manufacturing executives: n=517; Question text: How many AI agents does your company currently have deployed in production across your organization?)

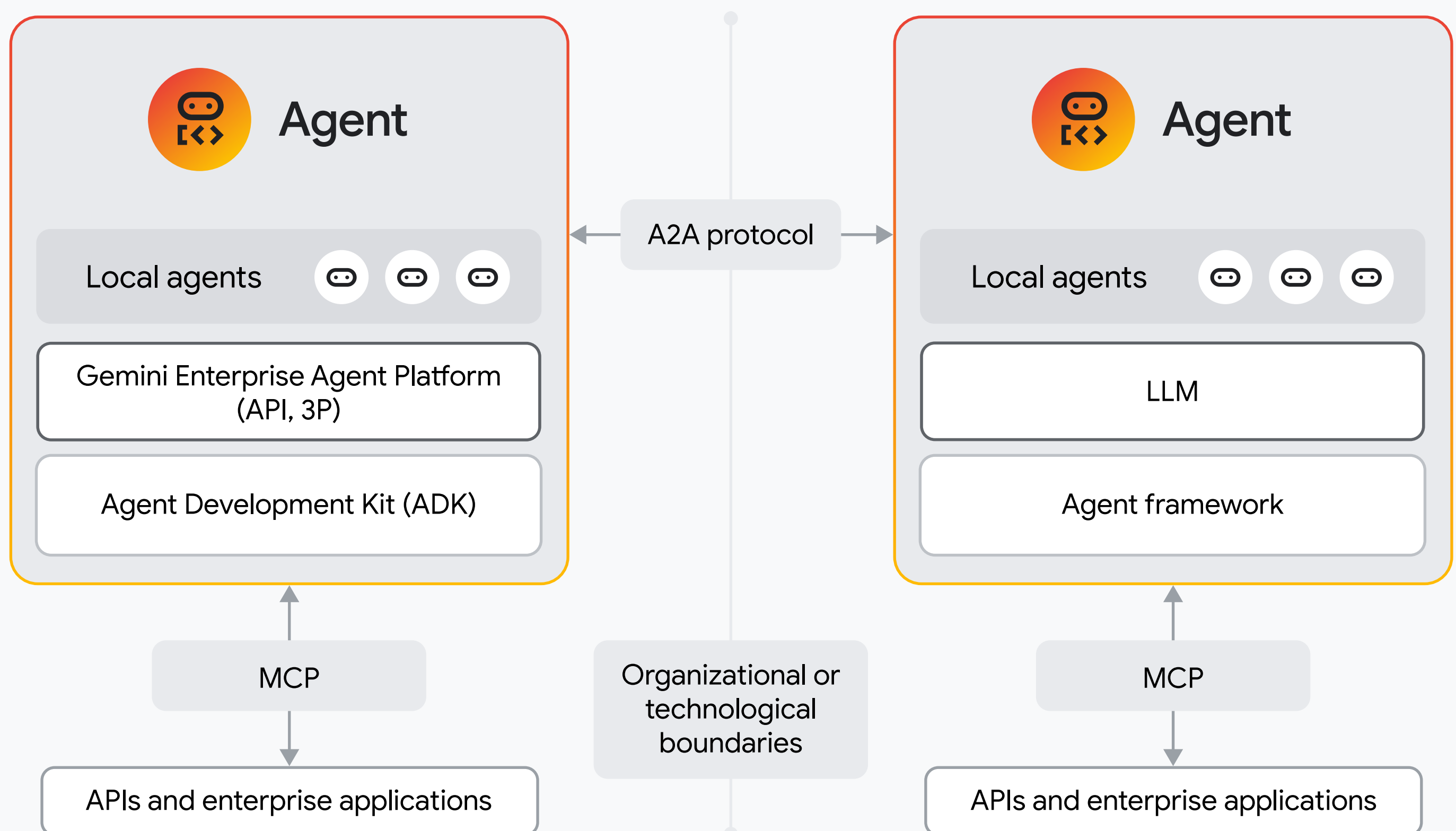
Digital assembly line: Orchestrating agentic systems

A digital assembly line is made possible by the Agent2Agent (A2A) protocol.

This open standard enables seamless integration and orchestration between AI agents, allowing them to work together even if they are from different developers, built on different frameworks, or owned by different organizations.

While LLMs are the “brains” of these agents, they have two major limitations: their knowledge is frozen at the time of their training, and they can’t interact with the outside world to access real-time data or perform actions.

The Model Context Protocol (MCP) solves this. It creates a standardized, two-way connection for AI applications, allowing LLMs to easily connect with various data sources and tools, such as managed databases (e.g., [Cloud SQL](#), [Spanner](#)) and data platforms (e.g., [BigQuery](#)).





Elanco, a global leader in animal health, uses Gemini models within its Elanco.ai platform to automatically sort, extract key insights from, compare, and restructure information from over 2,500 unstructured policy and procedure documents per manufacturing site. The AI agent improves accuracy and consistency, reducing the risk of outdated or conflicting information that could cost up to \$1.3 million in productivity impact at large sites.



Data tip

Discover how your data teams can ground AI in your business data.

[Get started](#)

How it works

Agentic manufacturing systems in action

Today's supply chain systems assume a human is directly initiating the orders.

This poses a fundamental challenge for security: What happens when a non-human entity (the agent) is making the final transaction decision, with pre-approval from a human?

An agent initiating a payment with human oversight can utilize a framework such as the [Agent Payments Protocol \(AP2\)](#)—an open protocol—to provide cryptographically-signed proof of user authorization. This enables manufacturers and suppliers to authenticate that the request reflects the user's true intent and establishes a clear audit trail for accountability in the event of a fraudulent transaction or fulfillment issues.





For example, a maintenance lead discovers a critical spare part is out of stock—potentially causing weeks-long production delays if a machine breaks down and a spare part isn't available. They can then tell their agent:

“Monitor real-time risk alerts across our supplier network. Procure this specific part when it becomes available from a Tier 1 supplier. If their lead times exceed 72 hours, automatically source from a certified alternative and reroute via priority freight, provided the total cost is within 5% of our contract rate.”



Try Gemini Enterprise Agent Platform

Get started

The agent then monitors prices and availability and, with human pre-approval, executes a secure purchase the moment that spare part is found.



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Trend 3

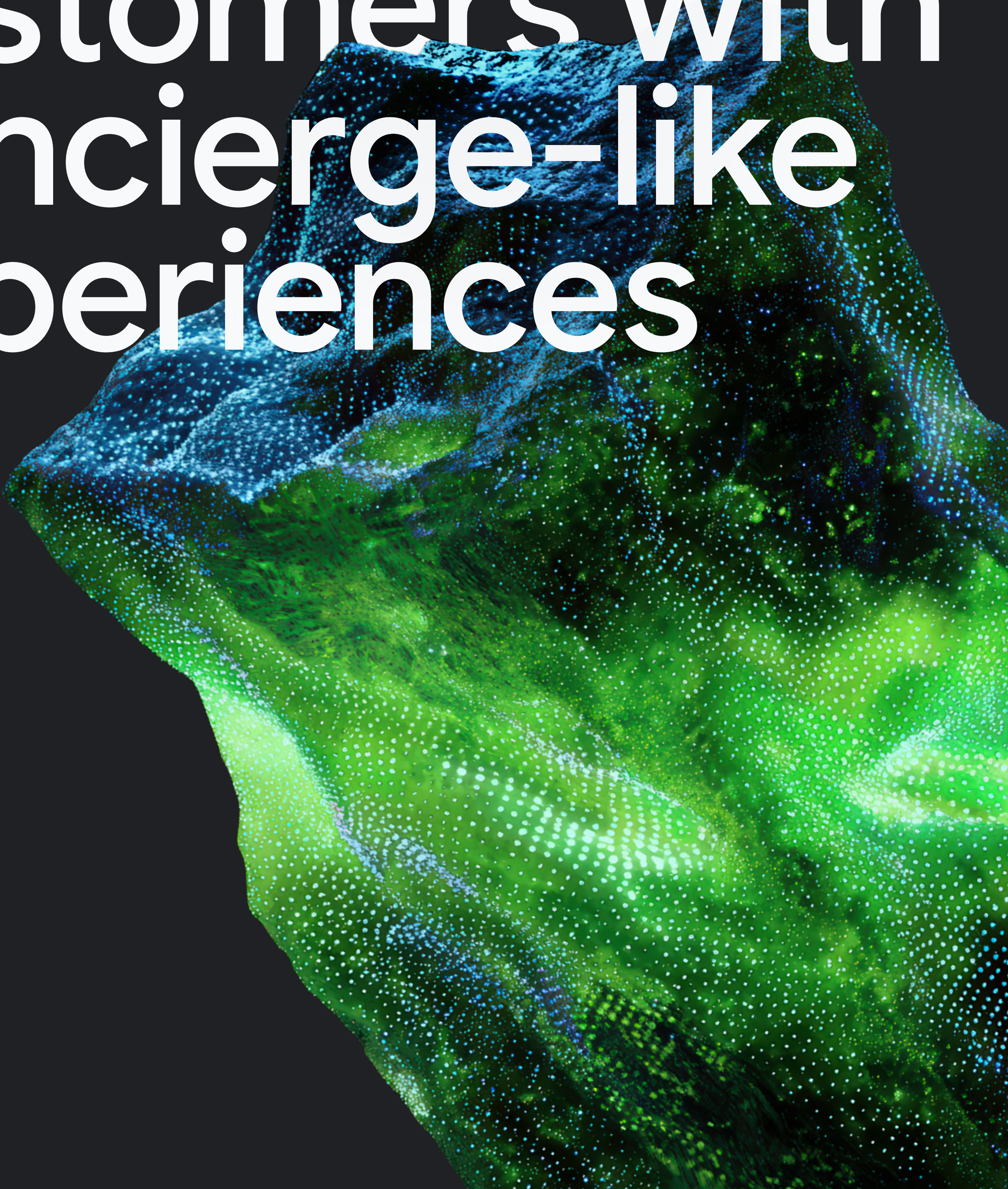
4

5



Agents for
your customers

Delighting customers with concierge-like experiences

A large, abstract, three-dimensional structure composed of numerous small, glowing particles. The structure is primarily green and blue, with a bright, glowing core. It has a complex, organic shape, resembling a mountain or a large, intricate crystal. The particles are densely packed in some areas and more sparse in others, creating a sense of depth and texture.



For the last decade, customer service automation meant pre-programmed chatbots answering simple questions and deflecting support tickets.

They were efficient, but they lacked the ability to understand more nuanced and complex questions. This was especially true for business-to-business (B2B) buyers who were often resolving complex issues spanning the entire supply chain and multiple vendors.

With advances in LLMs and A2A, 2026 will deliver more helpful concierge-style agents. These AI agents will connect enterprises and customers by remembering preferences and past conversations to offer truly one-to-one experiences.



56%

of executives at manufacturing organizations with AI agents in production report adopting agents for customer service and experience⁴

“Personalization extends beyond consumer experiences. On the manufacturing floor, for example, agentic systems could offer personalized advice to managers. If the second shift underperforms the first, the system could inspect multiple machine criteria and suggest solutions like offering more training or recommending optimal machine set points.”



Praveen Rao

Director, Manufacturing,
Global Strategic Industries,
Google Cloud

⁴ Google Cloud, [The ROI of AI in Manufacturing](#), 2025 (Manufacturing executives whose organization is leveraging agentic AI: n=292; Question text: What use cases has your company deployed AI agents for?)



Personalization at scale

Your customer no longer has to start every conversation by proving who they are or re-explaining their problem.

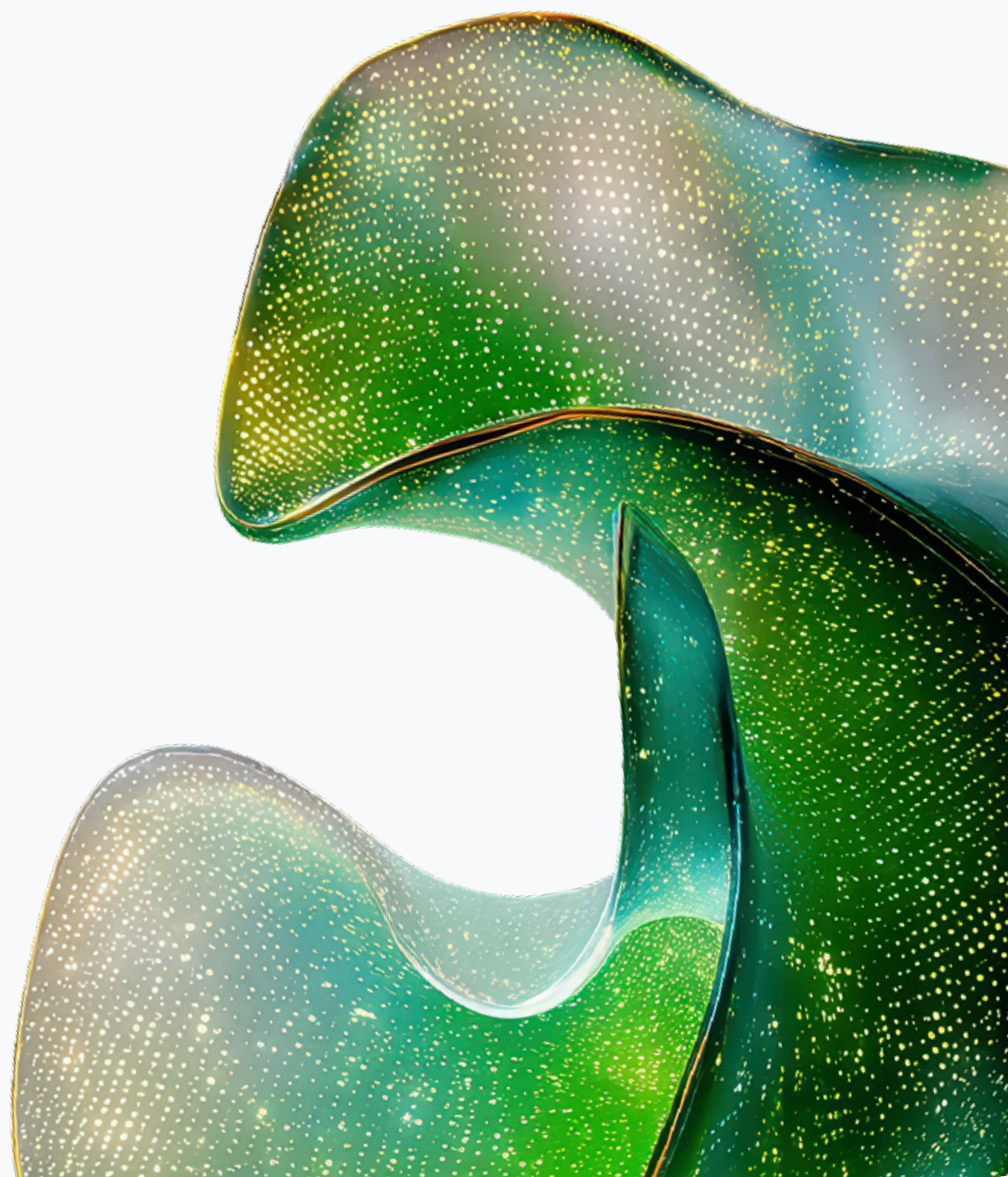
The difference isn't just the AI, it's the data. The agentic concierge can succeed because it is grounded in an enterprise context you choose to share for a particular customer—from purchase history in the CRM to package tracking in the logistics database.

Chatbot

“Please enter your 12-digit order number.”

Agentic concierge

“Hi, Elizaveta. This is your supplier's automated assistant. I see you asked about the spare part you bought last week. Our system shows it was just delivered. Would you like to start a return or an exchange?”





How it works

Insightful and always-on help

Customer service is defined by its helpfulness.

An agentic concierge doesn't wait for a complaint. It monitors systems for triggers and resolves problems using real-time data to provide insights and take actions with human guidance and oversight.



Try Gemini Enterprise for Customer Experience

Get started





Building trust through proactive customer service.

Imagine this scenario: a product manager at a major retailer wants to add a new ‘Viking’ chair to its catalog and places a high-volume order with their contract manufacturer. Instead of the typical scramble when a disruption occurs, the manufacturer’s concierge-style agent orchestrates the following:

- 1 **Checks** the MES and confirms its sub-contractor has a production delay for a critical component.
- 2 **Accesses** the supply chain system and identifies a supplier that can provide the components, meeting the product manager’s specifications.
- 3 **Notifies** the retailer via email: “Hi, the delivery of your ‘Viking’ chair order may be delayed due to our supplier issue. We identified a certified supplier that can deliver the components that meet your specifications. Would you like to approve this swap to maintain your original delivery date?”

The problem is resolved quickly. The agent is designed to execute a smart handoff with a full summary for complex or emotionally charged issues; human staff can step in if the case becomes much more complex.



Danfoss, a global manufacturer operating in over 100 countries, uses AI agents from Go Autonomous on Google Cloud to automate email-based order processing. The solution automated 80% of transactional decisions, reduced average customer response time from 42 hours to near real-time, and consolidated five systems into a single interface.

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Trend 4

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Agents
for security

Advancing
security
from alerts
to action





In a modern security operations center (SOC), human analysts face a constant stream of data and alerts, with 82% concerned or very concerned that they may be missing real threats or incidents due to the amount of alerts and data they are faced with.⁵

This “alert fatigue” is the attacker’s greatest advantage; they only need to be right once, while the defender has to be right every single time.

While security orchestration automation and remediation (SOAR) solutions deliver some automation, they may offer only incremental benefits. But with their ability to reason, act, observe, and adjust actions across information technology (IT) and operational technology (OT) networks with human guidance and oversight, AI agents have the potential to help security teams identify and respond to threats more effectively.

Expanded [Secure AI Framework 2.0](#) can help address the rapidly emerging risks posed by autonomous AI agents. [Digital twins](#) can play an important role, too. Combining them with agentic chaos engineering can help with preemptive exploitability and attack path analysis.

Additionally, early results from DeepMind’s research on [CodeMender](#), a new AI-powered agent that improves code security automatically, already demonstrated its ability to find new zero-day vulnerabilities in well-tested software.

In 2026, AI agents will increasingly help with tasks like vulnerability discovery as well as alert triage and investigation.

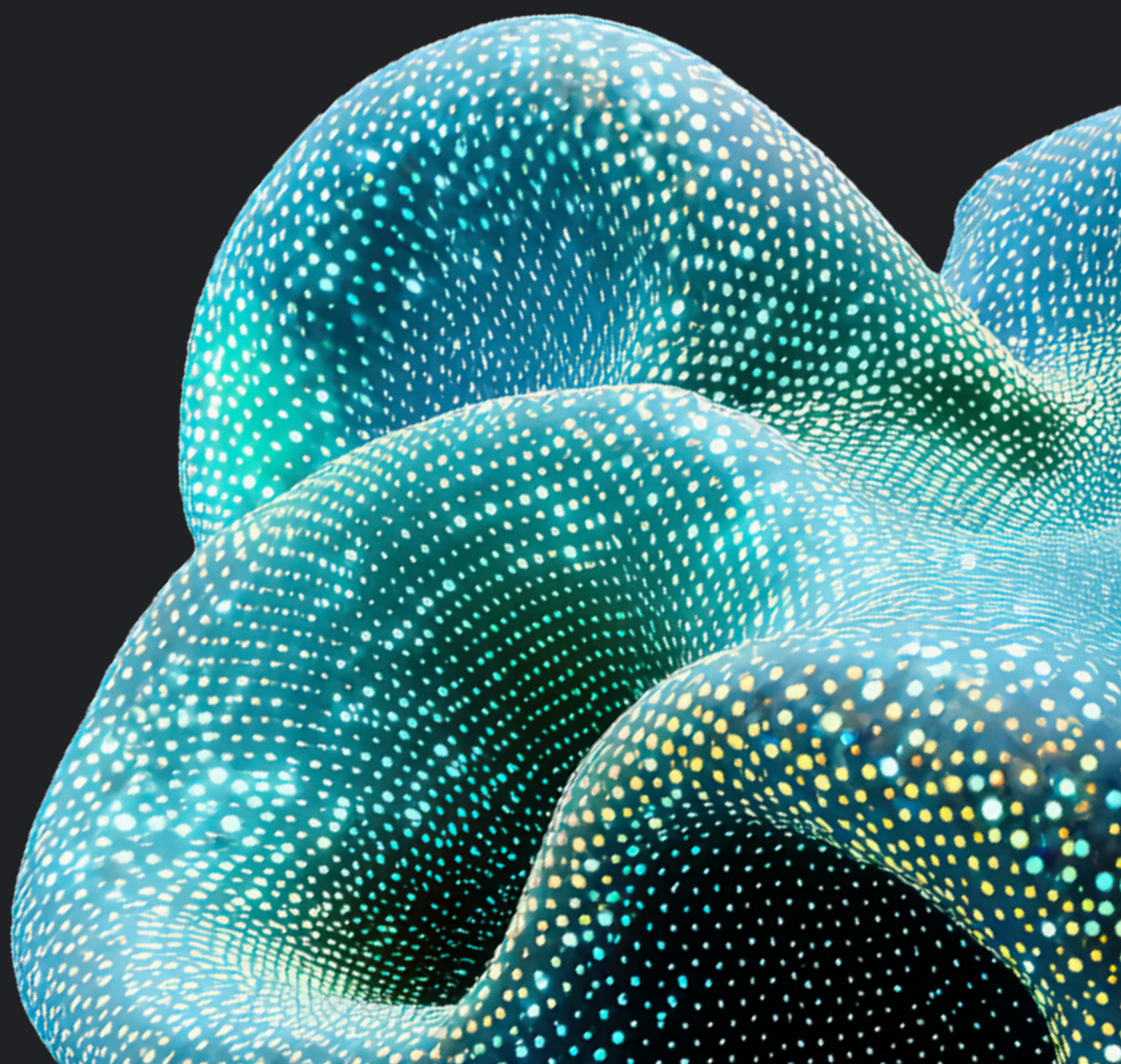


50%

of executives at manufacturing organizations with AI agents in production report adopting agents for security operations and cybersecurity⁶

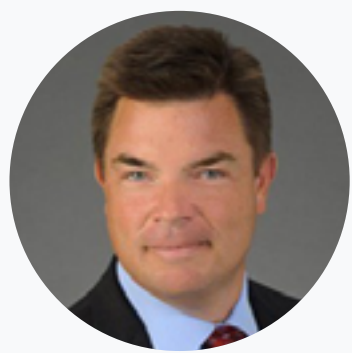
⁵ Forrester, [Threat Intelligence Benchmark: Stop reacting; start anticipating](#), 2025

⁶ Google Cloud, [The ROI of AI in Manufacturing](#), 2025 (Manufacturing executives whose organization is leveraging agentic AI: n=292; Question text: What use cases has your company deployed AI agents for?)





“Today’s CISO is laser-focused on achieving the greatest decrease of risk per dollar spent. Agents are essential to this, as they detect and respond faster to enterprise risks. More importantly, they elevate our SOC analysts from tactical responders to strategic defenders.”



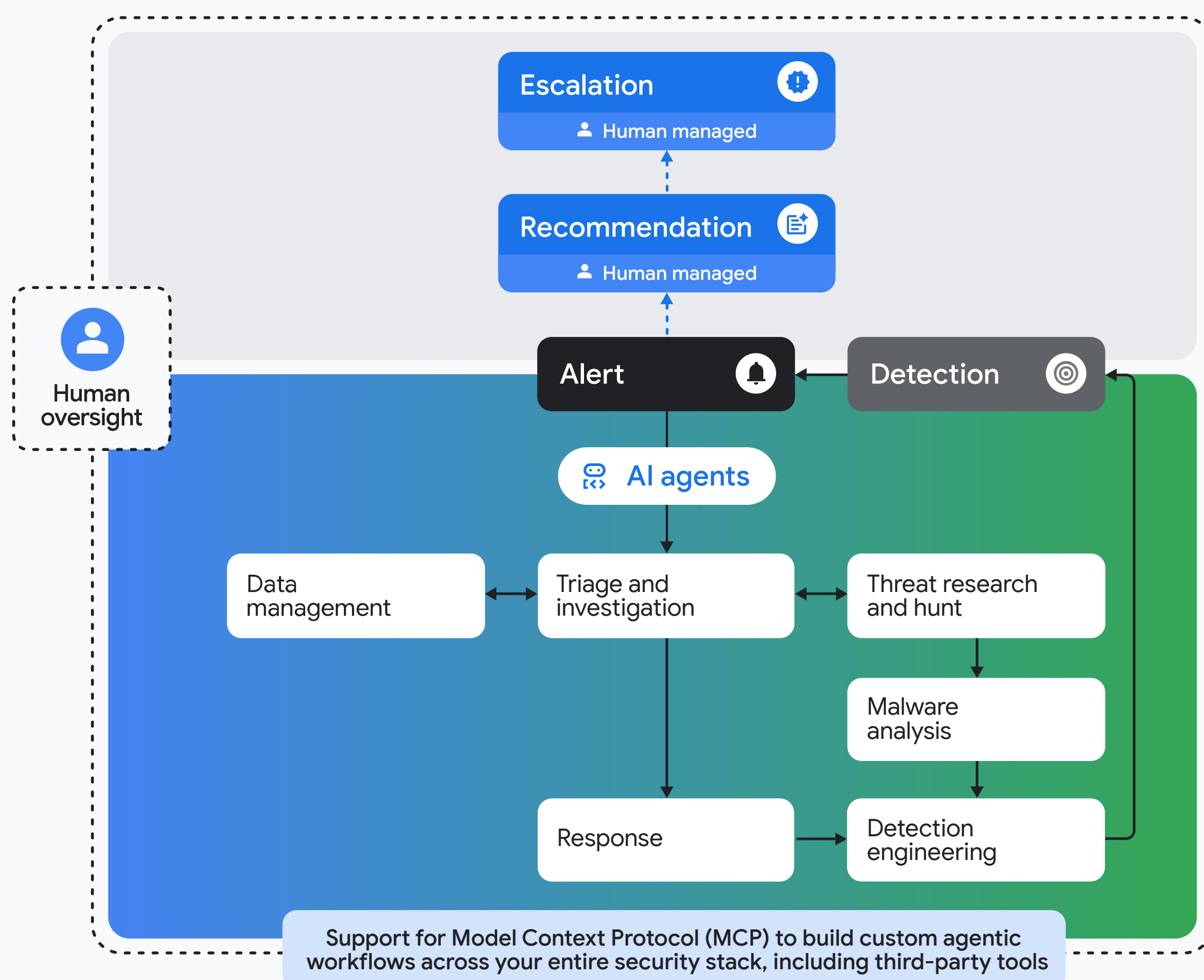
**Jon
Ramsey**

Vice President &
General Manager,
Security, Google Cloud

The semi-autonomous security operations cycle

An agentic SOC orchestrates a system of task-based AI agents, each with a specific role, to achieve a common security outcome.

After receiving a security alert, the agentic SOC cycles through a process, engaging various agents:



This dynamic process of evaluating, acting, and re-evaluating enables the system to adapt to a changing security environment in real time, while freeing up time for human analysts to focus on higher-value work.

Multiple SOC agents need common enterprise context and can share the same security data sources (e.g., security telemetry data), regularly communicate, and adapt their actions through technologies like A2A and MCP. Agents should also be trained on continuously evolving real-world insights from security experts.



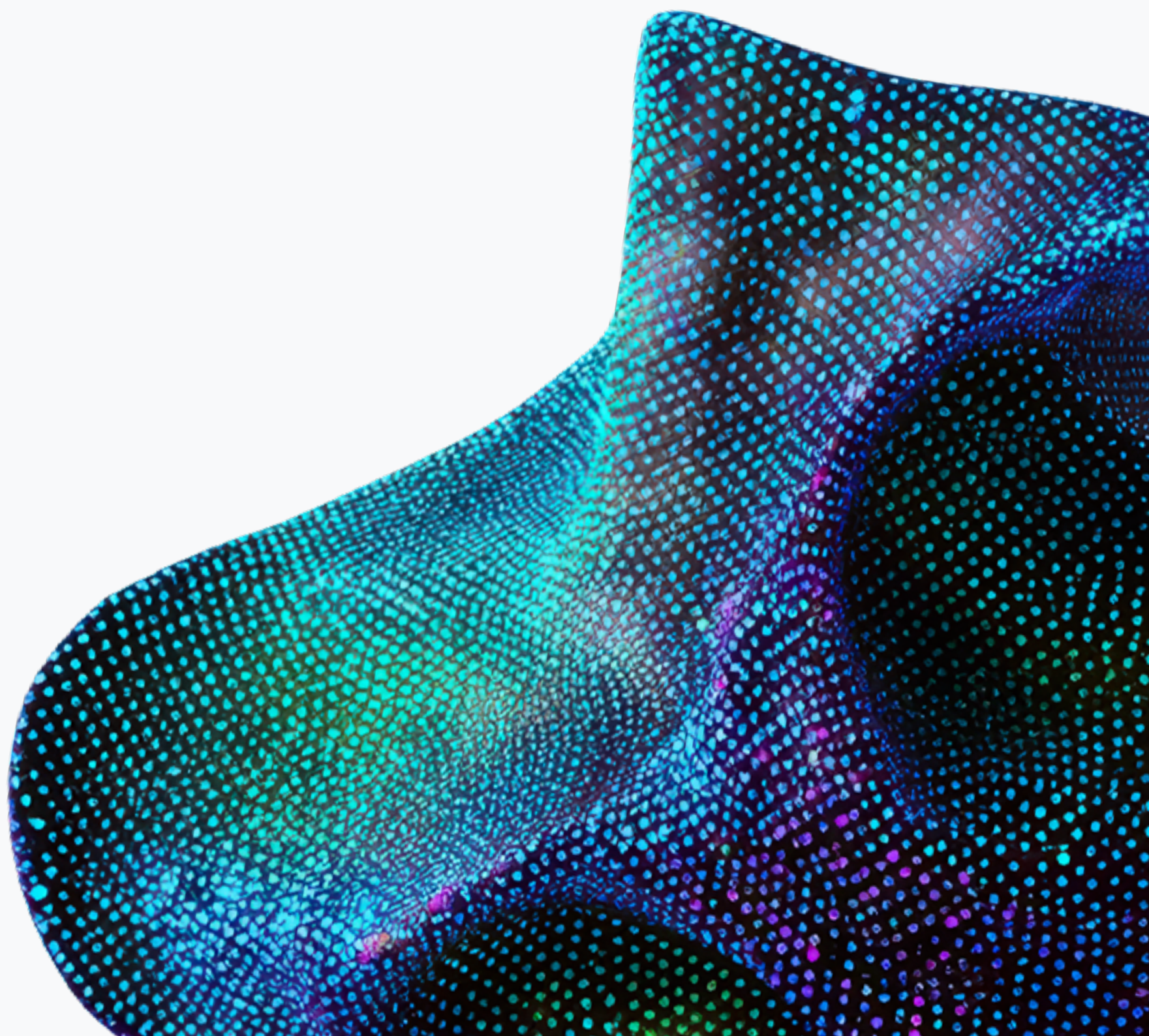
“

AI is already being used to find zero-days, identify malicious code, and uplift the work of defenders. As threat actors incorporate the technology into their operations, it will be our best tool to meet this new challenge.”



Sandra Joyce

Vice President of Threat Intelligence,
Google Cloud





How it works

Elevating the security analyst

With the addition of agentic systems acting as force multipliers, human analyst roles are expected to change for the better. AI agents can take on the draining, reactive work of “alert-watching,” shifting the human analyst to a more strategic level, engaging in activities such as:

Threat hunting

Using their intuition and experience to guide the agents. Example: “Agent, I have a hunch about this server. Hunt for any unusual outbound data transfers.”

Supervising agents

Fine-tuning the agents’ “rules of engagement” and “performance-reviewing” their automated responses.

Defending

Focusing on long-term security posture, architecting better defenses and anticipating the next wave of attacks, rather than just chasing the current ones.



Explore Google
Security Operations

Get started



torq=

Torq uses agentic AI to automate the entire security operations lifecycle through Socrates, an AI SOC analyst that coordinates specialized agents. Running on Google Cloud’s infrastructure, teams achieve 90% automation of tier-1 analyst tasks auto-remediated without human involvement, 95% decrease in manual tasks and 10x faster response times.

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Trend 5



Agents
for scale

Upskilling
talent will be
the ultimate
driver of
business
value





It is tempting to focus on the technology—the models, the platforms, and prompts—but this misses the most critical element: the people.

As AI is evolving, the skills gap is widening and it's getting harder for individuals and organizations to keep up. Skills themselves expire faster than ever: The “half-life” of a professional skill is now four years—and in tech, as short as two years.⁷

Both practitioners and decision-makers see the importance of closing this gap. Skills increase the ability to get hired, get promoted, and grow careers—plus, they have a positive impact on productivity, innovation, and revenue.

“The 2026 manufacturing landscape is defined by two pressures: the loss of veteran expertise and the race for AI literacy. Solving this requires a hybrid approach: intensive mentorship that captures irreplaceable tribal knowledge while simultaneously building the AI fluency needed to scale it. By doing so, we empower today's workforce to leverage AI as an extension of their own expertise.”



**Praveen
Rao**

Director, Manufacturing,
Global Strategic Industries,
Google Cloud

⁷ Forbes, [AI Puts The Squeeze On The Shrinking Half-life Of Skills](#), 2024



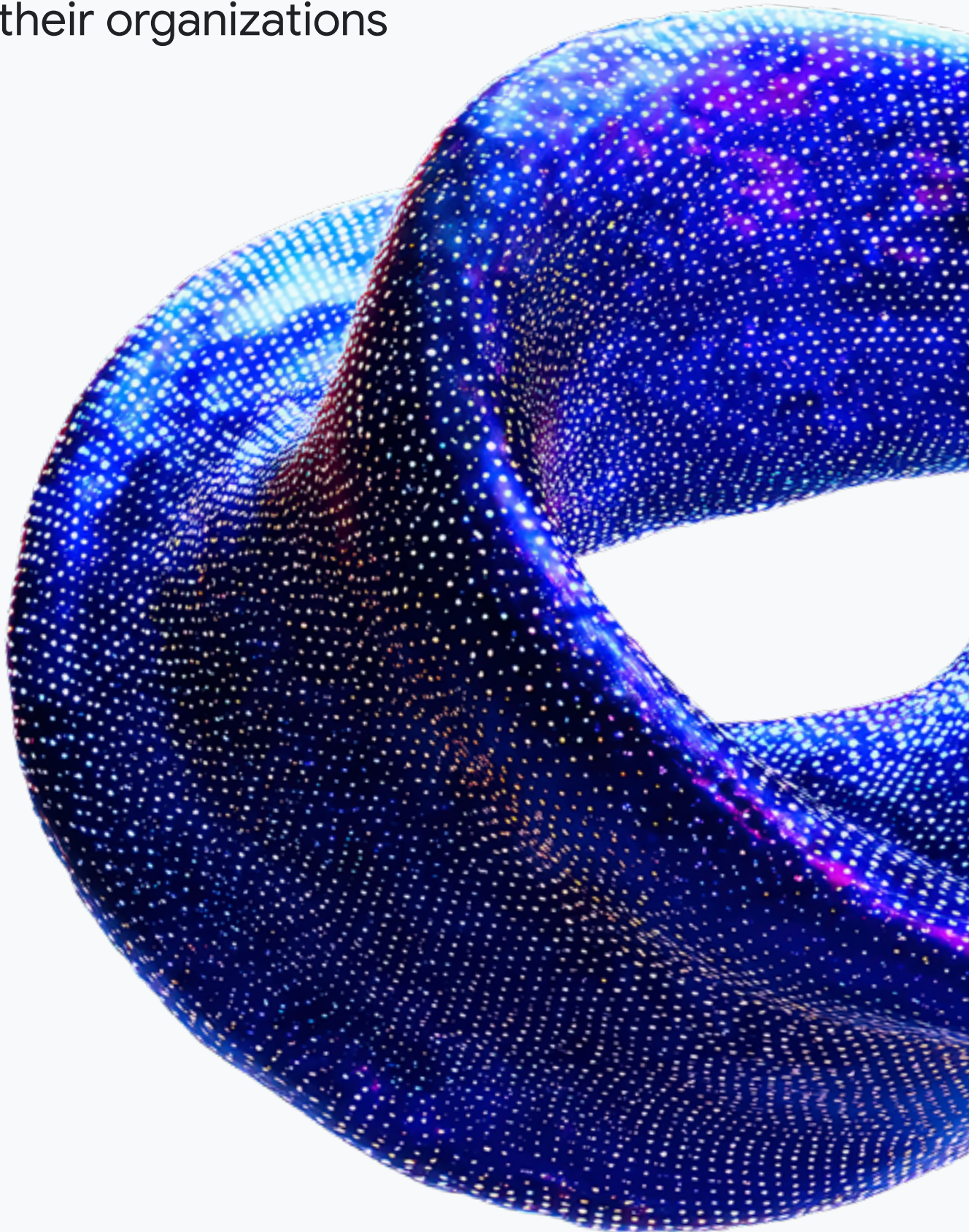
What executives are saying:⁸



What employees are saying:⁹



⁸ Google/Ipsos, Cloud Learning Services Market Pulse, fielded Sept.-Nov. 2024 (US, UK, FR, DE, IN, BR, MX, JP, AU/NZ; Decision-makers (n=902). Findings reflect the opinion of survey respondents only)
⁹ Google, [Beyond AI Optimism: Five ways to move your business from saving time to sparking innovation](#), 2025





How it works

The 5 pillars of AI learning

To thrive, organizations must move beyond simply buying technology and focus on building an AI-ready workforce. This requires a holistic strategy built on five key pillars.

01

Establish goals

Figure out what is most important and what you can actually measure. For example, perhaps your business goal is 100% AI tool adoption within your organization. So, every team member—from design and assembly to maintenance—would use a Gemini Enterprise app at some point in their workflow—making the flow better than what they could have done on their own. Make sure your specific business goal aligns to the bigger picture of what the organization needs—and that it's measurable.





02

Secure sponsorship

Gathering a team together ensures that there is constant communication and momentum around your AI initiative. A good place to start is with a team of three primary stakeholders: an **executive sponsor**, the **groundswell lead**, and the **AI accelerator**. Let's break these roles down.

The **executive sponsor** provides the necessary funding, high-level backing, and consistent messaging on AI's importance.

The **groundswell lead** acts as the "AI megaphone" by managing grassroots campaigns, generating excitement, and collecting employee ideas.

The **AI accelerator** is the technical expert responsible for transforming those prioritized ideas into functional solutions in areas such as standard enforcement, defect mitigation, and auditing.

This structure ensures the program has the support to be funded, the momentum to engage employees, and the technical capability to deliver tangible AI tools.

03

Sustain momentum and reward innovation

To sustain engagement, the program should use a layered strategy centered on interactive platforms and consistent communication. Think of the program as a "digital continuous improvement hub"—a gamified idea exchange where operators and engineers can submit AI use cases and new ideas for rapid design cycles or automation. Peer-to-peer knowledge should be highlighted in a way that showcases successful AI applications across various roles.

Maintain momentum through regular communication, including weekly supervisor syncs, shift huddles, and a quarterly awards program to recognize top innovators.



04

Integrate AI into daily workflows

Keep the AI education going and tap into your team's collective operational expertise by hosting internal "Smart Factory Hackathons." Pair cross-functional teams, such as factory floor operators with data engineers to develop and pitch innovative AI solutions. Winning concepts could be integrated into the pilot programs.

Consider hosting Kaizen-AI Days, which are structured, challenge-based events that encourage teams to practice using the new agentic tools—like AI-powered automated spare part inventory tracking and reordering—in a collaborative, practical setting. These can be both in-person and virtual.

05

Prepare for increasing risks with trusted frameworks

As agent-accelerated cyber security risks become ever more sophisticated, security becomes everyone's responsibility. It's critical to ensure that employees understand their role—including training on what data can (and cannot) be used in AI tools, and how to recognize sophisticated threats like social engineering that uses AI.

Due to reliance on external suppliers for hardware and software, manufacturing employees also need to be aware of risks related to malicious components or backdoors. Mitigating these risks requires robust training as well as close partnership with the cyber security teams that can establish cybersecurity protocols and ensure supply chain diversification.





AI offers an unprecedented opportunity for employees to harness the data and context around them. 2026 will be the year when every employee can go from guessing to knowing—but only if their organizations invest in the skills to make it possible.”



Andrew Milo

Global Director, Customer Training,
Cloud Learning Services,
Google Cloud



Honeywell partnered with Google Cloud to develop AI agents that augment the existing workforce and industrial operations to help address both labor and skills shortages.



Try Google Skills

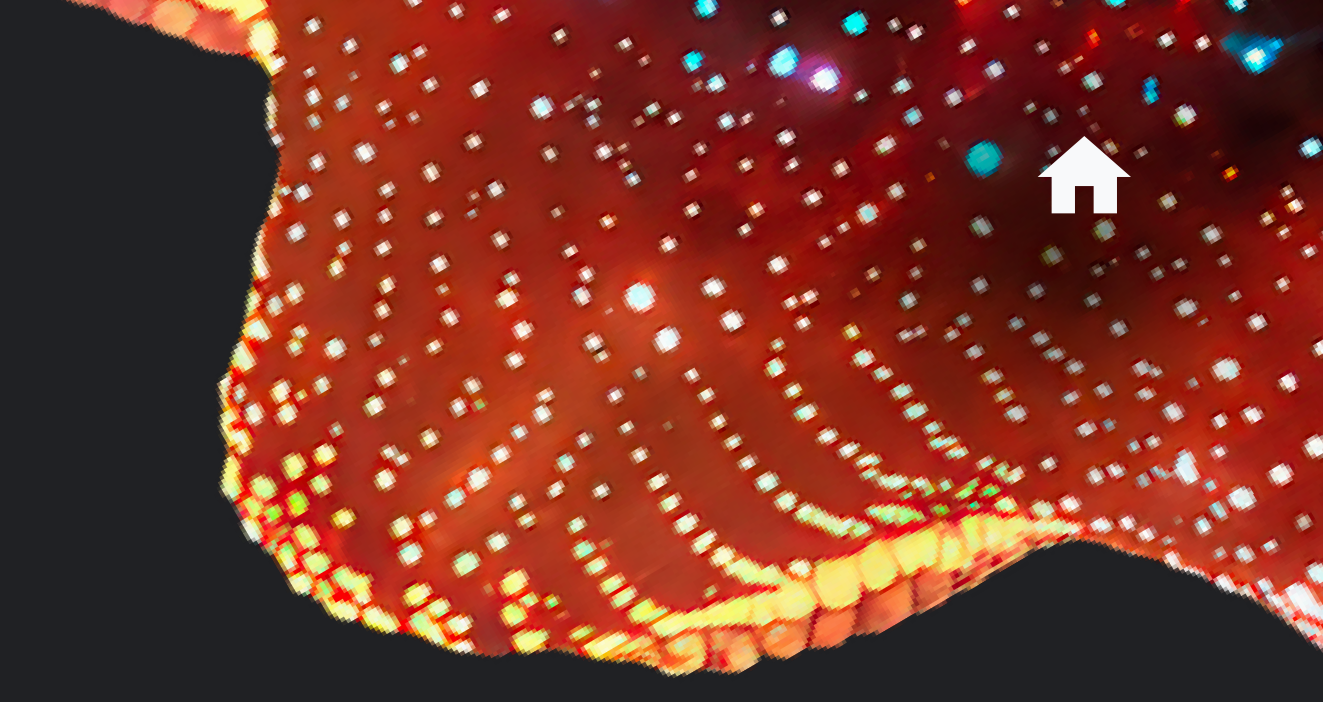
Find AI training courses and lessons on a wide range of topics.

[Get started](#)



The 2026 opportunity: A path to business growth





Although the 2026 opportunity can seem technical—and the adoption curve steep—it is fundamentally about innovation and business growth.

Manufacturers that experiment today are not just building tools; they are building the critical, in-house expertise to manage, govern, and scale this new capability.

The true value of agentic systems for manufacturers lies in freeing their teams to focus on the creative, strategic,

and empathetic work that only they can do, fundamentally redefining how great products are designed, built, and delivered across the entire value chain.

For manufacturers, the move towards agentic AI presents a clear path to growth in 2026.

“ Access to agentic AI capabilities will democratize insights, innovation, creativity, and business growth, bringing value to consumers, employees, and organizations. This opportunity is truly significant, but comes with tremendous responsibility to ensure that the promise of AI delivers secure, ethical, and fair outcomes for all.”



Anil
Jain

Global Managing Director,
Global Strategic Industries,
Google Cloud

Google Cloud

See what
these trends
mean for your
business.

Get in touch

