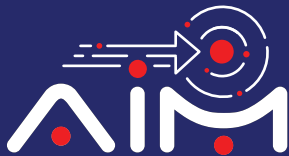


TECH TALK

Issue 169
July 2026

**Pioneering Tech
Leadership with a
Legacy of Excellence.**



Galaxy Office Automation Pvt. Ltd.



Galaxy is proud to be recognized as FY25 Partner of the Year for Technical Excellence by **Check Point Software at the Partner Leadership Summit 2026.**

This award reflects our commitment to delivering world-class cybersecurity solutions, technical excellence, and exceptional customer value.

A heartfelt thank you to Check Point Software, our valued customers, partners, and the entire Galaxy team for their trust and support. Together, we continue to set new benchmarks in cybersecurity excellence

Foreword

Dear Readers,

Watching the World Cup this month, it struck me that the teams still in contention aren't necessarily the ones with the biggest star names. They're the ones where everyone knows their job and the system holds up under pressure. There's a parallel with where enterprise AI is right now. Last month I wrote about the move from digital tools to digital operators. That shift is happening very fast. Too fast, according to Gartner, which predicts more than 40% of agentic AI projects will be cancelled by the end of 2027 because of rising costs, unclear value, or risk controls that simply weren't there to begin with.

So the question worth asking isn't whether to adopt agentic AI. It's whether we can actually govern and afford what we're already building.

At Galaxy, three things are shaping how we approach this with our SOC and NOC teams.

Governance. Deloitte's latest State of AI in the Enterprise survey found that only 21% of organisations have a mature governance model for agentic AI, despite 74% expecting to run agents at scale within the year. That gap is where most of the risk sits. We've been building agent identity, permission boundaries, and audit trails in from the start of a deployment rather than adding them once something's gone wrong. Clearly, retrofitting governance onto a live agent is a lot harder than it sounds.

Cost discipline. An agent that works but costs more than the value it creates isn't a success story, whatever the demo looked like. The same cost overruns behind Gartner's cancellation forecast are largely avoidable if you treat agent spend the way you'd treat any other investment. Track it, question it, and be willing to say no.



Foreword

Identity and security. Every employee has an access profile. Increasingly, every agent needs one too. Our SOC teams are now running agents that watch other agents and flag policy violations and catch unusual behaviour before it becomes an incident. It's Zero Trust, just applied to a workforce that doesn't sleep.

None of this is really new territory conceptually but the same discipline IT has always needed, applied to systems that now act on their own. What's changed is the cost of getting it wrong. Agents deployed without that discipline tend to create more work, not less.

Through our AI, Data Centre, Security, Network, and Cloud practices, we are building solutions with autonomy that's governed and financially accountable by design, not bolted on after the fact.

If you'd like to talk through what this looks like for your organisation, our team is happy to have that conversation.

As for the World Cup, my bet is that the team that will win has a Galaxy of stars with the tightest systems, clear roles, disciplined coordination, and a referee's whistle everyone respects.

Happy reading!



Anoop Pai Dhungat

Chairman & Managing Director



Future is now!

Scientists Develop Battery-Free Technology That Converts Sunlight into Clean Fuel

Researchers at Osaka Metropolitan University have created a new artificial photosynthesis system that can produce solar fuel more consistently while eliminating the need for battery-based control systems. The advance comes from incorporating a self-regulating chemical component directly into the electrolyzer, removing one of the more costly elements commonly used in these technologies.

Like natural photosynthesis in plants, artificial photosynthesis uses sunlight to transform water and carbon dioxide into useful fuels. One example is formic acid, a chemical that can store energy for later use.

How Artificial Photosynthesis Produces Fuel

A key part of the process is the electrolyzer. This device converts electricity generated by solar cells into chemical energy, allowing fuel such as formic acid to be produced and stored.

One challenge is maintaining efficient operation as sunlight levels rise and fall throughout the day. To address this, many artificial photosynthesis systems rely on Maximum Power Point Tracking (MPPT), a control method that continually adjusts voltage and current so solar cells can operate at maximum efficiency. However, MPPT systems often require batteries and additional electronic components to stabilize energy flow. While effective, these extra parts add both cost and complexity.

Self-Regulating Electrolyzer Eliminates Batteries

To simplify the system, a research team led by Associate Professor Yasuo Matsubara and Professor Yutaka Amao at the Research Center for Artificial Photosynthesis at Osaka Metropolitan University, working with Iida Group Holdings Co., Ltd, redesigned the electrolyzer using a special solid electrolyte.

In the new design, the electrolyzer performs the MPPT function on its own, removing the need for batteries and external control hardware.

Rather than relying on separate electronics, converters, and batteries to optimize performance, the electrolyzer automatically adjusts its electrical characteristics by varying its thermal and impedance properties.

"As sunlight increases, the electrolyzer naturally heats up. The system is designed so that this warming causes the electrical resistance to drop, allowing electricity to flow more freely," Professor Amao explained. "This makes the system automatically adjust its electrical behaviour.s"

"This self-regulating behaviour helps keep fuel production more stable throughout the day and automates the system, while reducing dependence on batteries and costly external components," he added.

Stable Solar Fuel Production in Real Sunlight

When researchers tested a prototype incorporating the technology, it successfully and consistently produced formic acid from water and CO₂ under real outdoor sunlight, even when light levels changed.

We were confident that it would be successful, as we previously showcased this research at the Joint Pavilion Iida Group x Osaka Metropolitan University' exhibition as part of the Osaka Kansai Expo 2025," Professor Matsubara said. "It successfully generated enough formic acid to power a miniature diorama in the pavilion, showing its potential as an efficient artificial photosynthesis system that could potentially be used to charge applications in our homes."

[Read more →](#)



Data Center Modernization: Powering the Digital Future.

Modernizing data centers enables organizations to improve performance, enhance security, reduce operational costs, and prepare their infrastructure for AI-driven workloads to improve efficiency, increase performance, strengthen data security, and build in the flexibility needed to adopt new technologies, including artificial intelligence (AI) and machine learning (ML), and respond to market needs. Modernization can take many forms, depending on business goals and unique circumstances, and is an ongoing process that can require substantial investments. However, in many cases, the cost of maintaining legacy equipment or delaying modernization—reduced productivity, greater security risks, and lack of innovation—can prove higher than the cost of evolving the technology infrastructure. This makes data center modernization a business imperative.

Corporate leaders recognize the need to revitalize their data center infrastructure. In a survey of technology leaders, only 38% of CIOs and CTOs said their company's technology was prepared to support a new business model

Benefits of Data Center Modernization

Data center modernization can help companies maximize technology investments, increase performance and efficiency, improve security, and provide the flexibility to capitalize on new business opportunities.

Cost Reduction

Relying on outdated hardware and software infrastructure to handle modern workloads can lead to inefficient and underperforming systems, driving operating expenses higher and preventing organizations from leveraging the benefits of digital transformation.

By updating data center infrastructure and cloud investments businesses can lower operating costs, including energy expenses, and accomplish more with fewer servers. Selecting the right technologies can help to support the same or greater workload capacity in less space and with higher performance per watt for a more efficient data center footprint.

AI Deployment

Businesses can maximize AI's vast and rapidly expanding capabilities with updated data center technology that supports the high-power densities and cooling requirements that AI applications demand.

A technology stack for artificial intelligence is a complete, end-to-end solution that consists of hardware, software, and tools that facilitate the development and deployment of AI applications. While similar to the technology stack used to build general-purpose software applications, the AI tech stack includes specialized tools to support the building of AI models that enable machine learning and deep learning.

It's important to note that many common AI workloads in the data center, cloud, and at the edge can be supported by AI processors with integrated AI accelerators. This removes the need for discrete GPUs or hardware AI accelerators, helping businesses save on hardware and software costs and reduce system complexity. Newer processors also offer enhanced security capabilities and more efficient architectures.

Modernize your data center with cutting-edge infrastructure, improved scalability, and enhanced security. We help you reduce costs, boost performance, and future-proof your IT environment by seamlessly integrating cloud, automation, and AI for smarter operations and business agility.

To talk to our experts, email us at marketing@goapl.com



Securing the AI-Powered Enterprise: Building Trust Across GenAI and the AI Ecosystem

Artificial Intelligence (AI) has rapidly transformed from an emerging technology into a strategic business enabler. Enterprises are adopting Generative AI (GenAI), AI copilots, Retrieval Augmented Generation (RAG) applications, AI agents, and machine learning models to improve productivity, automate business processes, accelerate software development, and enhance customer experiences.

However, AI also introduces an entirely new attack surface. Unlike traditional applications, AI systems interact with sensitive enterprise data, make autonomous decisions, consume APIs, and access internal knowledge repositories. Traditional cybersecurity controls alone are insufficient to address these risks. A modern AI security strategy must secure the complete AI lifecycle—from discovery and governance to runtime protection and continuous validation.

Key Features

AI Discovery & Visibility

Organizations cannot protect what they cannot see. AI Discovery and Visibility identifies sanctioned and unsanctioned AI applications, AI agents, APIs and user interactions. It helps detect Shadow AI, monitor AI adoption across business units and understand how enterprise data is being shared with AI platforms.

- Provides centralized visibility across AI assets.
- Detects Shadow AI and unauthorized AI usage.
- Monitors AI adoption and data interactions.

AI Security Posture Management (AI-SPM)

AI-SPM continuously evaluates AI models, datasets, APIs, vector databases and infrastructure for misconfigurations, excessive permissions and governance gaps. Continuous posture assessment helps organizations maintain secure AI deployments.

- Discovers AI assets automatically.
- Identifies security gaps and exposed AI services.
- Supports governance and compliance initiatives.

AI Runtime Protection

Runtime protection monitors AI applications during live operation by inspecting prompts, responses and AI agent behavior. It detects prompt injection, jailbreak attempts, data leakage and anomalous activities before they become security incidents.

- Real-time monitoring of AI interactions.
- Protects customer-facing and internal AI applications.
- Prevents sensitive data exposure.

AI Red Teaming

AI Red Teaming simulates adversarial attacks against AI models before production deployment. It evaluates resilience against prompt injection, hallucinations, jailbreaks, system prompt disclosure and data extraction attacks.

- Validates AI model security.
- Improves resilience before deployment.
- Supports continuous AI testing.

Frontier AI Security

As organizations adopt autonomous AI agents and advanced reasoning models, Frontier AI Security protects AI supply chains, agent-to-agent communication, model integrity and autonomous workflows.

- Secures Agentic AI.
- Protects AI supply chains.
- Enables future-ready AI adoption.

Benefits

- Secure enterprise-wide adoption of GenAI and Agentic AI.
- Reduce Shadow AI and improve governance.
- Prevent prompt injection, jailbreak attacks and sensitive data leakage.
- Continuously monitor AI assets, models, APIs and agents.
- Improve regulatory compliance and audit readiness.
- Accelerate AI innovation while minimizing cyber risk.

Use Cases

- Enterprise AI governance and Shadow AI discovery.
- Protection of customer-facing AI chatbots and virtual assistants.
- Security validation for AI development environments and RAG applications.
- Monitoring autonomous AI agents accessing enterprise systems.
- Continuous AI risk assessment through AI Red Teaming and runtime monitoring.

How Galaxy Enables Secure AI Adoption

Galaxy plays a critical role in helping organizations adopt AI securely. Services include AI readiness assessments, AI asset discovery, governance framework design, secure architecture, implementation of AI security controls, integration with existing security platforms, AI Red Teaming, continuous monitoring and managed services. Galaxy supports customers through a vendor-neutral approach, helping organizations deploy AI securely while aligning with business objectives and regulatory requirements.

AI security is becoming a foundational requirement for every enterprise embracing digital transformation. By combining AI Discovery & Visibility, AI Security Posture Management, AI Runtime Protection, AI Red Teaming and Frontier AI Security, organizations can confidently scale AI initiatives while protecting their data, applications and business operations.

To connect with our experts, write to us at marketing@goapl.com



IBM introduces the world's first-ever sub-1 nanometre chip technology

IBM has announced a major breakthrough in semiconductor technology. The tech giant has unveiled what it describes as the world's first sub-1-nanometer (nm) chip technology featuring a transistor architecture at the 0.7 nm or 7 angstrom node. The company claims that it is a landmark moment as the industry is facing physical constraints in traditional chip scaling.

"IBM's latest chip breakthrough marks a landmark moment in computing, pushing technology beyond the Nanometer era to the scale of atoms. With our new Nanostack architecture, we're not just making smaller transistors; we're reinventing how chips are built to deliver dramatically more power and energy efficiency," said Jay Gambetta, Director of IBM Research and IBM Fellow.

Rapid advancements in technology have made semiconductors a crucial component. They play a key role in everything ranging from computing and appliances to communications equipment, transportation systems, and critical infrastructure. "This industry-first innovation continues IBM's legacy of leading in next-generation technologies and sets the foundation for the next era of computing," said Gambetta. The new sub-1 nm chip comes with around 100 billion transistors all packed into the size of a fingernail. It has nearly twice the density of IBM's 2nm chip which was launched in 2021. According to the company, the new chip is backed by a range of structural and material innovations, including IBM's groundbreaking three-dimensional nanostack architecture.

The chip demonstrates that significant performance and energy-efficiency improvements remain possible despite the physical limits of traditional transistor scaling. Further, IBM said that based on published technical results, the new chip is projected to offer a substantial leap in capability, essentially up to 50 per cent more performance. When compared to IBM's 2 nm node chips, the new chip offers 70 per cent greater energy efficiency, meaning it could supercharge compute for applications from generative AI and cloud infrastructure to next-gen electronic devices.

Researchers at IBM developed a new transistor architecture called Nanostack, the industry's first known three-dimensional, nanosheet-based design. While nanosheet technology is currently the leading-edge transistor architecture pioneered by IBM, Nanostack represents a significant advancement beyond it.

The architecture vertically stacks and staggers transistors using **3D sequential integration**, allowing more transistors to be packed onto a single chip. It also enables different material combinations within each stacked layer, optimizing the performance and power efficiency of each transistor independently

Read more →

OpenAI and Broadcom announce chip designed for LLM inference at scale

OpenAI, the company behind ChatGPT and Codex and the models those tools use, and Broadcom, an established silicon supplier, have announced a new chip, called Jalapeño, designed specifically for large language model inference in data centers.

The companies intend to deploy the chip at large data centers and claim this is just the first generation in a long-term project that will see chips refined over time. Broadcom says that this ASIC (Application-Specific Integrated Circuit) was designed from scratch for LLM inference, based on “detailed insights” from the company’s conversations with researchers at OpenAI, and that the chip’s development was informed by OpenAI’s own roadmap for future models and products. The design and production of the chip took nine months.

The promise is that this chip is more specialized for the current needs of LLMs than those that inference systems currently run on in existing data centers.

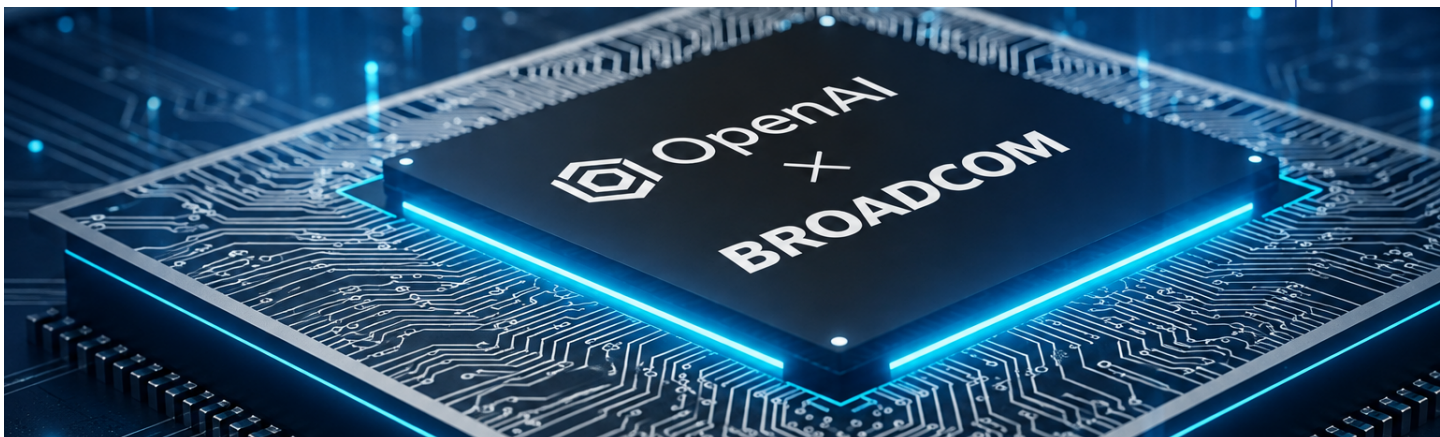
OpenAI claims that “early testing shows that Jalapeño will deliver performance per watt substantially better than current state-of-the-art,” but notes that it is not done measuring performance, and that a “detailed technical report will be presented in the coming months.”

Until then, we don’t have many details to go on.

The company, which is known for its ChatGPT and Codex services and harnesses, hopes to ultimately own the full stack behind its models and products, reducing dependence on outside companies like Nvidia and ostensibly providing better performance or efficiency thanks to vertical integration.

More generally, OpenAI and its competitors are interested in custom silicon because it’s another way to potentially squeeze out more capacity amid a global compute crunch, as competing companies scramble for limited data center capacity.

[Read more →](#)





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