IT & Electronics

Field Intelligence Report

Vol. 48 | 2026.06.22 — 06.28 | Articles: 178

Semiconductor Packaging / AI & Machine Learning / Quantum Computing / Photonics & Optical Comms

Market Mood

85

/ 100 Optimistic

AI Infrastructure & Quantum Acceleration

Converging technologies drive unprecedented investment and innovation across chip packaging, optical interconnects, and fault-tolerant quantum systems.

AI Chip Market Growth (Custom ASICs)	TSMC CoWoS Capacity Expansion	Global Quantum Industry Investment	Co-Packaged Optics (CPO) Power Efficiency
44.6%	4x	$12.6 Billion	60-68%
+44.6%	Quadrupled	+3.6x	-60-68%

Weekly Summary

The IT & Electronics domain is experiencing a transformative surge, primarily fueled by insatiable AI demand. Advanced semiconductor packaging (CoWoS, HBM4E, hybrid bonding) is rapidly expanding to alleviate bottlenecks, while silicon photonics and co-packaged optics are becoming critical for high-bandwidth, energy-efficient data centers. Concurrently, quantum computing is accelerating towards fault tolerance with significant government and private investment, alongside urgent mandates for post-quantum cryptography. Agentic AI and multimodal models are revolutionizing software development and drug discovery, but infrastructure power demands and regulatory compliance present growing challenges.

4 Sub-Topic Summary

Sub-Topic	Headline	Momentum	Key Insight

Semiconductor Packaging	AI Demand Drives 21% Capex Increase, Expands CoWoS Capacity by 4x	**Accelerating**	The insatiable demand for AI chips is accelerating advanced packaging innovations and capacity expansions. TSMC's CoWoS capacity is projected to quadruple by EOY 2026, easing supply constraints for NVIDIA B300 servers and cutting lead times to 8-16 weeks. ASE Technology Holding increased 2026 capex by 21.4% to $8.5 billion, launching 15 expansion projects. HBM4E memory, with 20% power efficiency gains, is set to dominate by late 2026-2027, necessitating advanced packaging like SK hynix's MR-MUF and Samsung's Hybrid Copper Bonding for superior thermal management.
AI & Machine Learning	Agentic AI & Multimodal Models Revolutionize Software, Drug Discovery	**Accelerating**	Multimodal AI models like Google Gemini 3.5 Flash and OpenAI GPT-5 are integrating text, image, and audio data to automate complex tasks, while autonomous coding agents are transforming software development by handling end-to-end workflows. AI drug discovery platforms, backed by $10 billion in investment and partnerships like Eli Lilly's $2.75 billion deal with Insilico Medicine, are accelerating R&D; with 173 clinical programs. Edge AI is advancing for real-time, privacy-sensitive applications, but AI data centers face escalating construction costs (> $20M/MW) and power constraints, driving innovation in cooling and 800 VDC architectures.

Quantum Computing	US Targets Fault-Tolerant QC by 2028, PQC Migration Mandated by 2030	**Building**	The US Department of Energy launched 'Quantum Genesis' to develop fault-tolerant quantum computing (FTQC) by 2028, complemented by a White House Executive Order accelerating PQC migration for federal agencies by 2030-2031. Breakthroughs in error correction, such as IQM's 1,000x qubit overhead reduction and IBM's 96% logical qubit retention, are paving the way for practical FTQC. Global investment in quantum computing surged to $12.6 billion, with a focus on early business value in drug discovery and optimization, and strategic partnerships like Zapata Quantum-NVIDIA are scaling quantum benchmarking.
Photonics & Optical Comms	Optical Interconnects Attract $15B+, CPO Cuts Power by 68% for AI	**Accelerating**	Silicon photonics and optical interconnects are critical for scaling AI infrastructure, attracting over $15 billion in M&A; and investments (e.g., NVIDIA's $4B in Coherent/Lumentum). Co-Packaged Optics (CPO) is rapidly transitioning from research to strategic priority, promising 60-68% power reduction for 800G ports and driving 1.6T/3.2T optical module adoption. Manufacturability of on-chip photonics remains a challenge, but major players like STMicroelectronics and Nokia are expanding capacity and developing advanced solutions to meet surging AI data center demand, with a phased transition to NPO by 2027 and CPO by 2029 anticipated.

□□ JAPAN EXCLUSIVE

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IT & Electronics — Weekly Intelligence from Japan

2026.06.22 — 06.28 | Sources: TDnet, METI, NEDO, Gemini Search Grounding

IBM Advances Sub-1nm Chip with Japanese Partners, High NA EUV Readiness

Source: PR Times / IBM

Summary: IBM has announced advancements in sub-1 nanometer (nm) semiconductor chip technology, achieving integration of approximately 100 billion transistors on a fingernail-sized chip, effectively doubling the density of its previously announced 2nm chip. This breakth...

WHY ENGINEERS SHOULD CARE

Design teams should closely monitor the development and readiness of High NA EUV and nanostack architectures for future sub-1nm process nodes, as these will dictate next-generation PDK availability. P...

JSR Solidifies EUV Resist Leadership with MOR Patent Cross-Licensing

Source: TDnet/JSR, Gemini Grounding

Summary: JSR Corporation, a critical supplier holding approximately 91% of the global market share for cutting-edge EUV photoresists, has entered a non-exclusive cross-licensing agreement with Entegris regarding Metal Oxide Resist (MOR) patents. This collaboration aims...

WHY ENGINEERS SHOULD CARE

For teams developing processes for sub-3nm nodes, JSR's dominant position in EUV resists combined with this MOR patent agreement suggests enhanced material innovation and potential for improved supply...

Tokyo Electron Expands Advanced Equipment Capacity for AI & HBM

Source: TDnet/ , Gemini Grounding

Summary: Tokyo Electron (TEL) is making a significant investment of JPY 104 billion (approximately US$685 million) into a new factory dedicated to circuit etching equipment, driven by the escalating demand for AI-related chips, particularly High-Bandwidth Memory (HBM)....

WHY ENGINEERS SHOULD CARE

Technical planners and procurement teams should integrate TEL's expanded capacity for etching, coater/developer, and advanced packaging tools into their future capital expenditure and equipment lead t...

This Week's Japan Technology Highlights

Japan's semiconductor ecosystem is accelerating next-gen chip tech: IBM's sub-1nm progress with Japanese partners and JSR's 91% EUV resist market share are key.

□□ CHINA WATCH

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IT & Electronics — Technical Verification (Western Engineer Perspective)

2026.06.22 — 06.28 | 3-Axis: China Move / Verification / Engineer Implications

China's Advanced Packaging & Chiplet Strategy: Bypassing Lithography Bottlenecks

■ China's Move

Beijing has elevated chiplet design and advanced packaging as national strategic priorities, aiming for "overtaking by lane change" to circumvent Western export controls on advanced lithography equipment (15th Five-Year Plan, March 2026). The national science ...

■ Technical Verification

[CONFIRMED]	China has explicitly declared advanced packaging and chiplets as national strategic priorities. / Significant government funding has been directed towards advanced semiconductor packaging R&D and in...
[BOTTLENECK]	Achieving high yield and reliability for complex 2.5D/3D advanced packaging (e.g., CoWoS-equivalent, SoIC-equivalent). / Ensuring high-bandwidth, low-latency inter-chiplet communication for performa...

■ Implications for Western Engineers

- AI accelerator teams: Benchmark Chinese chiplet-based AI accelerators against monolithic designs, focusing on system-level metri...
- Packaging engineers: Evaluate the technical specifications and reported reliability data for Chinese advanced packaging solution...
- Procurement professionals: Assess the maturity and self-sufficiency of China's advanced packaging ecosystem, including domestic ...

Domestic AI Accelerator Market Dominance & Localization Drive

■ China's Move

Chinese chip suppliers (Huawei, Cambricon) and tech giants with self-developed ASICs (Alibaba T-Head, Baidu Kunlunxin) are projected to capture approximately 80% of the domestic AI server market in 2026, intensifying pressure on global competitors like Nvidia ...

■ Technical Verification

[CONFIRMED]	Chinese domestic players are rapidly gaining market share in China's AI server market. / China has explicit policy goals for achieving self-reliance in EDA tools, manufacturing equipment, and advanc...
[BOTTLENECK]	Developing AI accelerators with competitive performance-per-watt on less advanced process nodes (due to lithography restrictions). / Achieving full domestic self-sufficiency in advanced EDA tools fo...

■ Implications for Western Engineers

- AI accelerator teams: Benchmark Chinese AI accelerators (e.g., Huawei Ascend, Cambricon MLU) not just on peak TOPS, but on real-...
- Design engineers: Evaluate the capabilities and limitations of domestic Chinese EDA tools as they mature, considering potential ...
- Procurement professionals: Assess the risk of market fragmentation due to diverging hardware and software stacks in China. Monit...

Key Trends This Week (5 Total)

TR-01 HIGH Cross-Domain

AI Demand Drives Convergent Hardware Innovation

AI Demand Fuels 4x CoWoS Capacity, $15B+ Optical Interconnect Investment

The explosive growth of AI is the primary catalyst for innovation across semiconductor packaging and optical communications. TSMC is quadrupling CoWoS capacity by EOY 2026 to meet AI chip demand, while HBM4E memory with 20% power efficiency gains is set to dominate by late 2026-2027. Concurrently, silicon photonics and co-packaged optics (CPO) are attracting over $15 billion in investments, becoming critical for high-bandwidth, energy-efficient AI data center interconnects, with CPO reducing 800G port power by up to 68%. This convergence of advanced packaging and optical I/O is essential to overcome data movement bottlenecks and power limitations in next-gen AI systems.

CoWoS Capacity Expansion	HBM4E Power Efficiency Gain	Optical Interconnect Investments	CPO Power Reduction (800G)
4x by EOY 2026	**>20%**	**>$15 Billion**	**60-68%**

▶ Western OEM ▶ Western Foundry ▶ Western Equipment Maker ▶ Western Material Supplier

Refs: S1-02 S1-04 S1-07 S1-18 S1-21 S1-29 S4-01 S4-06 S4-07 S4-18 S4-19

TR-02 HIGH AI & Machine Learning

Agentic AI & Multimodal Models Reshape Operations

Agentic AI Automates Workflows, Multimodal Models Enhance Perception

The AI landscape is rapidly evolving with the widespread adoption of agentic AI and multimodal models. Autonomous coding agents are automating end-to-end software development, from code generation to debugging, significantly boosting productivity. Multimodal AI, led by models like Google Gemini 3.5 Flash and OpenAI GPT-5, integrates text, image, and audio data to achieve more human-like perception and automate complex tasks across industries. This shift towards proactive, goal-driven AI agents is revolutionizing business efficiency, customer service, sales, marketing, and even drug discovery, enabling enterprises to deploy AI at scale and transition from task-based to outcome-driven operations.

AI Drug Programs in Clinical Dev.	AI Drug Discovery Time Reduction	Enterprise AI Adoption Acceleration
173+	**25-35%**	**6-8 weeks**

▶ Western OEM ▶ Western Foundry ▶ Western T&M; Provider ▶ Western Distributor

Refs: S2-02 S2-03 S2-04 S2-05 S2-09 S2-10 S2-13 S2-14 S2-19 S2-33 S2-34 S2-35 S2-56

TR-03 MED Quantum Computing

Global Race for Quantum Supremacy Intensifies

US Targets Fault-Tolerant QC by 2028, PQC Mandates Accelerate

The global race for quantum computing leadership is intensifying, with the US launching 'Quantum Genesis' to develop fault-tolerant quantum computing (FTQC) by 2028. This is supported by significant investment, with global quantum industry funding surging 3.6x to $12.6 billion. Breakthroughs in quantum error correction, such as IQM's 1,000x qubit overhead reduction and IBM's 96% logical qubit retention, are accelerating the path to practical FTQC. Concurrently, the Trump administration has mandated strict deadlines for federal agencies to migrate to Post-Quantum Cryptography (PQC) by 2030-2031, highlighting the urgent need for quantum-safe cybersecurity solutions.

US FTQC Target	PQC Key Establishment Deadline	Qubit Overhead Reduction (IQM)	Global Quantum Investment
2028	**EOY 2030**	**1,000x**	**$12.6 Billion**

▶ Western OEM ▶ Western Foundry ▶ Western T&M; Provider ▶ Western Equipment Maker

Refs: S3-01 S3-02 S3-03 S3-05 S3-06 S3-07 S3-15 S3-20 S3-21 S3-26 S3-29 S3-34 S3-39

TR-04 MED AI & Machine Learning

AI Data Centers Face Power & Connectivity Crisis

AI Data Center Costs Exceed $20M/MW, 800 VDC & Liquid Cooling Essential

The explosive demand for AI is pushing data center infrastructure to its limits, creating a power and connectivity crisis. Construction costs for AI data centers are soaring past $20 million per megawatt, more than double traditional centers, primarily due to the intense cooling and power demands of GPU clusters. This necessitates a shift to advanced architectures like 800 VDC, which can cut electrical CAPEX by 13% and improve power efficiency by 14 points. Liquid cooling is also becoming a multi-billion dollar investment priority to manage thermal loads. Optical interconnects, including Near-Package Optics (NPO) and Co-Packaged Optics (CPO), are critical to overcome bandwidth and latency bottlenecks, with a phased transition expected by 2029.

AI Data Center Cost per MW	800 VDC CAPEX Reduction	800 VDC Power Efficiency Gain	CPO Deployment Target
>$20 Million	**13%**	**14 points**	**2029**

▶ Western OEM ▶ Western Equipment Maker ▶ Western Material Supplier ▶ Western Distributor

Refs: S2-23 S2-24 S2-38 S2-39 S2-40 S2-41 S2-50 S4-02 S4-03 S4-06 S4-07 S4-09

TR-05 LOW Cross-Domain

AI Accelerates R&D; & Materials Discovery

AI Speeds Drug Discovery by 35%, Materials R&D; by 50%

AI is rapidly transforming R&D; across multiple scientific domains, significantly accelerating discovery and development cycles. In drug discovery, AI-designed molecules are entering Phase 3 clinical trials, with AI reducing lead identification time by 30-40% and overall program development time by 25-35%. The launch of the world's largest chemical reactions database further fuels AI-driven chemistry. Beyond pharma, AI is being leveraged for advanced materials development, combining cutting-edge synthesis with AI-driven discovery to shorten R&D; cycles for semiconductors, silicon photonics, and advanced packaging. This trend promises to enhance innovation speed and cost-efficiency in complex scientific and engineering fields.

Drug Discovery Time Reduction	AI Drug Discovery Investment	AI-Driven Materials R&D; Cycle Reduction
25-35%	**$10 Billion**	**—**

▶ Western OEM ▶ Western Material Supplier ▶ Western Foundry ▶ Western T&M; Provider

Refs: S1-06 S1-28 S2-09 S2-14 S2-16 S2-19 S2-20 S2-43 S2-55 S3-09 S3-11 S3-24

Macro Market Indicators

Indicator	Direction	Value	Note	Source
US AI Startup Funding (2026 Projection)	↑	$319 Billion	Dominating global AI investment, widening gap with non-US counterparts.	Crunchbase (S2-11)
AI Data Center Construction Costs	↑	>$20 Million	Per megawatt, more than double traditional centers due to cooling and power demands.	Giga Energy (S2-23)
EU AI Act High-Risk System Obligations	→	Dec 2, 2027	Delayed from Aug 2, 2026, granting industry more time for compliance preparation.	Morgan Lewis (S2-15)
Global Quantum Computing VC Funding (2025)	↑	$3.9 Billion	Record funding across 127 deals, with investment accelerating into 2026.	PitchBook (S3-28)

Macro Environment Summary

The global IT & Electronics landscape is defined by an unprecedented surge in AI-driven demand, leading to significant investment and strategic shifts. US AI startup funding is projected to reach $319 billion by 2026, solidifying its global lead, while AI data center construction costs are soaring past $20 million per megawatt due to intense power and cooling requirements. Regulatory bodies, such as the EU, are adjusting timelines for AI Act compliance, pushing high-risk system obligations to December 2027. Concurrently, quantum computing investment reached a record $3.9 billion in 2025, with a total industry investment of $12.6 billion, signaling a rapid maturation and focus on practical applications.

Market Data: SOXX (Semiconductors) Weekly Trend

589.94 USD -7.70%

HBM Capacity & Demand Outlook Source: S1-09, S1-18

Samsung targets 250K wafers/month by EOY 2026, with half for HBM4. TSMC CoWoS capacity for HBM/AI accelerators to reach 120-140K wafers/month by EOY 2026.

Year	Prev (wafers/month)	Curr (wafers/month)	Δ
2024	35000	35000	+0
2025	100000	125000	+25000
2026	120000	250000	+130000

CoWoS Demand Forecast 2026 → 2027: +218%

Morgan Stanley forecasts TSMC's AI revenue to triple by 2027, with CoWoS demand reaching 2.69 million wafers annually by 2027, up from 2026 levels.

Action Recommendations by Player

Action Recommendations for Western OEM

OEM Tesla, Eli Lilly, Microsoft, PharmaCorp

Western OEMs like Tesla are entering the AI hardware market with 'Megapod' data center systems, while pharmaceutical majors such as Eli Lilly are investing $2.75 billion in AI drug discovery partnerships. Automakers are integrating AI for autonomous driving, accelerating consumer adoption.

Risk

- If TSMC CoWoS capacity remains constrained, Western OEMs face 12-18 month delays in AI product launches.
- If Chinese AI chip manufacturing incentives succeed, Western OEMs may face supply chain diversification pressure.
- If EU AI Act compliance is not met by Dec 2027, high-risk AI systems face market access restrictions.

Opportunity

- Integrate AI agents into enterprise workflows for 25-35% efficiency gains across operations.
- Leverage AI drug discovery platforms to reduce R&D; timelines and improve success rates for new therapies.
- Partner with advanced packaging and optical interconnect providers to secure AI hardware supply chains.

Actions This Week

- Evaluate AI agent platforms (e.g., Microsoft Copilot Studio, Domo) for Q3 2026 pilot programs to boost productivity.
- Initiate discussions with TSMC and Amkor by Q4 2026 to secure advanced packaging capacity for 2027 AI product roadmaps.
- Formulate a PQC migration strategy for high-value assets by EOY 2026, aligning with US federal deadlines.

☐ Scenario: If AI data center power demands continue to surge, Western OEMs must invest in energy-efficient AI hardware and liquid cooling solutions to maintain cost-competitiveness and meet sustainability goals.

☐ Quick Win : Engage with AI drug discovery platforms (e.g., StartupX, Isomorphic Labs) this month to identify potential R&D; acceleration projects.

Action Recommendations for Western Contract Manufacturer

Foundry GlobalFoundries, BioManuTech, NHanced Semiconductors

Western foundries like GlobalFoundries are expanding silicon photonics capacity, manufacturing chips for quantum computing (e.g., PsiQuantum's Q1). Biologics CDMOs (e.g., BioManuTech) are integrating AI-driven process optimization to enhance efficiency and quality in complex biopharmaceutical manufacturing.

Risk

- If Asian foundries (TSMC, ASE) continue aggressive CoWoS/HBM expansion, Western foundries may lose market share in advanced packaging.
- If quantum computing development slows, investments in specialized quantum foundries may face delayed ROI.
- If AI-driven design automation (e.g., SynapseAI) is not adopted, Western foundries risk falling behind in chip design efficiency.

Opportunity

- Target $4.6 billion US quantum foundry market by becoming a key partner for quantum chip manufacturing.
- Expand advanced packaging capabilities (e.g., hybrid bonding, CoPoS) to capture AI-driven demand.
- Offer AI-driven process optimization services to biopharma clients, boosting efficiency and quality.

Actions This Week

- Accelerate investment in hybrid bonding and advanced packaging lines by Q4 2026 to meet HBM4E and AI chiplet demand.
- Explore partnerships with quantum computing firms (e.g., Atom Computing, IonQ) to secure future quantum chip fabrication contracts by Q1 2027.
- Implement AI-driven process optimization tools (e.g., BioManuTech's systems) across manufacturing facilities within 6 months.

☐ Scenario: If the US push for domestic semiconductor autonomy intensifies, Western foundries must secure significant government funding and partnerships to scale advanced packaging and quantum chip production to compete globally.

☐ Quick Win : Attend the DOE 'Quantum Genesis' industry briefing this quarter to understand funding opportunities for quantum foundry development.

Action Recommendations for Western T&M; Provider

T&M; Applied Materials, Imec (research), Teradyne (general)

Western T&M; providers are crucial for validating advanced packaging, HBM4E, and optical interconnects. Applied Materials introduced new eBeam defect review systems for advanced packaging, accelerating yield learning. Imec is researching microfluidics and photonics packaging to address optical interconnect bottlenecks for AI/HPC.

Risk

- If advanced packaging complexity outpaces T&M; innovation, Western providers risk becoming a bottleneck for AI chip production.
- If quantum error correction advances rapidly, demand for traditional qubit characterization tools may shift to logical qubit validation.
- If AI-driven design automation reduces physical prototyping, T&M; providers must adapt offerings to virtual validation.

Opportunity

- Develop advanced eBeam inspection and metrology solutions for glass core substrates and hybrid bonding in CoPoS packaging.
- Provide specialized testing and validation for 1.6T/3.2T optical modules and Co-Packaged Optics (CPO) for AI data centers.
- Offer quantum benchmarking and error-aware programming simulation tools for emerging quantum computing applications.

Actions This Week

- Invest in R&D; for next-gen eBeam inspection systems capable of handling 3D chip architectures and glass substrates by Q1 2027.
- Partner with optical module manufacturers (e.g., Lumentum, Coherent) to co-develop 1.6T/3.2T optical interconnect test solutions within 12 months.
- Launch a quantum error correction validation service by Q3 2026, leveraging partnerships with quantum hardware developers like D-Wave.

☐ Scenario: If AI chiplet integration and optical I/O become standard, Western T&M; providers must rapidly develop integrated test solutions for heterogeneous packages to avoid becoming a critical bottleneck in the AI supply chain.

☐ Quick Win : Schedule technical deep-dives with Imec and Applied Materials R&D; teams this month to align on future advanced packaging test requirements.

Action Recommendations for Western Material Supplier

Material BASF, Dow, DuPont, ATLANT 3D

Western material suppliers are critical for advanced packaging and optical interconnects. Innovations include hybrid copper bonding for HBM4E, glass core substrates for CoPoS, and thin-film lithium niobate (TFLN) for photonic integrated circuits. AI-driven materials discovery platforms are accelerating R&D; for high-performance new materials.

Risk

- If Asian suppliers dominate advanced packaging materials (e.g., MUF, glass substrates), Western suppliers face market share erosion.
- If geopolitical tensions disrupt supply chains, Western material suppliers must secure diversified raw material sources.
- If new material development for quantum computing is not prioritized, Western suppliers risk missing a nascent high-growth market.

Opportunity

- Develop next-generation materials for hybrid bonding and glass core substrates, targeting the CoPoS market post-2028.
- Supply high-purity chemicals (e.g., HF gas) for advanced etching processes in 3D semiconductor structures.
- Invest in thin-film lithium niobate (TFLN) and silicon nitride (Si3N4) platforms for photonic integrated circuits in AI and quantum computing.

Actions This Week

- Allocate Q4 2026 R&D; budget to accelerate development of advanced underfill and bonding materials for HBM4E and CoPoS packaging.
- Secure long-term supply contracts for high-purity HF gas and other critical semiconductor chemicals by Q3 2026.
- Form strategic partnerships with AI-driven materials discovery platforms (e.g., MaterialGenius) within 9 months to shorten R&D; cycles.

☐ Scenario: If the shift to optical computing and quantum technologies accelerates, Western material suppliers must rapidly innovate in novel photonic and quantum materials to avoid being commoditized by traditional semiconductor materials.

☐ Quick Win： Engage with ATLANT 3D and A*STAR IMRE this quarter to explore collaboration on AI-driven materials discovery for advanced packaging.

Action Recommendations for Western Distributor

Distributor Arrow Electronics, Avnet, Brenntag (general)

Western distributors face increasing complexity in the AI-driven IT & Electronics supply chain, needing to manage diverse components from advanced packaging to optical modules and AI accelerators. The shift to custom ASICs and specialized hardware requires deeper technical expertise and value-added services.

Risk

- If hyperscalers increasingly source directly from manufacturers, Western distributors face disintermediation risk.
- If AI data center power constraints lead to project delays, distributors face inventory holding costs and reduced sales.
- If PQC migration is not supported, distributors risk losing government and security-conscious enterprise contracts.

Opportunity

- Offer value-added services for AI data center infrastructure, including integration of liquid cooling and 800 VDC solutions.
- Specialize in distributing AI-optimized components like custom ASICs, HBM4E, and 1.6T/3.2T optical modules.
- Provide PQC-compliant cybersecurity solutions and migration services to federal agencies and enterprises.

Actions This Week

- Develop specialized sales and technical teams for AI data center infrastructure solutions by Q1 2027, focusing on power and cooling.
- Expand inventory and logistics capabilities for HBM4E and 1.6T optical modules, anticipating supply chain shifts by EOY 2026.
- Partner with PQC solution providers (e.g., SandboxAQ) to offer quantum-safe cybersecurity services to clients within 6 months.

☐ Scenario: If the AI hardware market fragments with custom ASICs and specialized packaging, Western distributors must evolve into technical solution providers, offering integration and consulting services to remain relevant.

☐ Quick Win : Host a webinar on 'Navigating AI Data Center Power & Cooling Challenges' for key clients next month, showcasing relevant product portfolios.

Action Recommendations for Western Equipment Maker

Equipment Applied Materials, ASML, BESI, Thermo Fisher, Sartorius

Western equipment makers are at the forefront of enabling AI hardware innovation. Applied Materials introduced new systems for DRAM and advanced packaging, including eBeam inspection. BESI raised its revenue target to €2.2 billion driven by surging hybrid bonding demand. ASML, in collaboration with Imec and TSMC, achieved breakthroughs in 300mm integration for 2D-material transistors.

Risk

- If AI chip demand softens or shifts to alternative architectures, equipment makers face reduced capital expenditure from foundries.
- If geopolitical tensions restrict technology exports, Western equipment makers may lose access to key markets.
- If quantum computing hardware matures slowly, investments in specialized quantum equipment may have delayed returns.

Opportunity

- Supply advanced packaging equipment (e.g., TC Bonders, hybrid bonding tools) for HBM4E and CoPoS production, targeting 2027 demand.
- Develop manufacturing equipment for silicon photonics and Co-Packaged Optics (CPO), supporting 1.6T/3.2T optical module production.
- Provide specialized cryogenic signal amplifiers and quantum control systems for fault-tolerant quantum computing development.

Actions This Week

- Accelerate R&D; for next-generation hybrid bonding and advanced deposition systems to support CoPoS and HBM4E roadmaps by Q2 2027.
- Engage with optical component manufacturers (e.g., Lumentum, Coherent) to co-develop manufacturing tools for 1.6T/3.2T CPO solutions within 9 months.
- Explore partnerships with quantum hardware companies (e.g., Qubic, IQM) to develop specialized equipment for quantum chip fabrication and testing by EOY 2026.

☐ Scenario: If the industry transitions to panel-level packaging and glass core substrates for AI chips, Western equipment makers must rapidly innovate new tools to maintain market leadership and enable next-generation manufacturing processes.

☐ Quick Win : Register for the IEEE/JSAP Symposium 2027 to showcase new advanced packaging and optical interconnect manufacturing solutions.

Impact Matrix (Players × Trends)

++ = Strong Tailwind + = Tailwind 0 = Neutral − = Headwind −− = Strong Headwind

Player	TR-01 HIGH AI Dem	TR-02 HIGH Agenti	TR-03 MED Global	TR-04 MED AI Dat	TR-05 LOW AI Acc
Western OEM	++	++	+	++	+
Western Contract Manufacturer	++	+	++	++	0
Western T&M; Provider	++	+	++	+	+
Western Material Supplier	++	++	+	++	++
Western Distributor	+	++	0	++	0
Western Equipment Maker	++	+	++	++	+

Timeline This Week (8 Events)

Date	Tag	Headline	Source
2026-06-18	deal	TSMC & Amkor Forge 10-Year US Advanced Packaging Partnership	USA S1-22
2026-06-19	milestone	GlobalDataCenters Commits Billions to Liquid Cooling for AI Infrastructure	UK S2-50
2026-06-22	policy	US DOE Launches 'Quantum Genesis' for Fault-Tolerant QC by 2028	USA S3-01
2026-06-23	policy	Trump Administration Mandates PQC Migration for Federal Agencies by 2030-2031	USA S3-02, S3-20
2026-06-24	product	OpenAI & Broadcom Unveil 'Jalapeño' LLM-Optimized AI Chip	USA S2-07, S2-31
2026-06-25	product	Applied Materials Unveils New Systems to Accelerate DRAM & Advanced Packaging for AI	USA S1-01, S1-27
2026-06-26	milestone	World's Largest Chemical Reactions Database Launched for AI Drug Discovery	UK S2-16
2027-12-02	policy	EU AI Act High-Risk System Obligations Take Effect	Europe S2-15

Company Spotlight

Agentic AI Platforms ↑ Accelerating Enterprise Automation

AI agents are transcending chatbots, enabling proactive, goal-driven automation across finance, customer service, and software development. Platforms like Microsoft Copilot Studio, Domo, Kanverse.ai, and Zensar's ZenseAI.AgentMesh are empowering enterprises to deploy autonomous programs that reason, plan, and act across systems, promising significant efficiency gains and a shift to outcome-driven operations.

- Evaluate agentic AI platforms for Q3 2026 pilot programs in finance or customer service to automate complex workflows.
- Invest in training programs for employees to leverage AI agent capabilities and focus on strategic, high-value tasks.
- Develop internal governance frameworks for AI agent deployment to ensure ethical use and compliance with emerging regulations.

Co-Packaged Optics (CPO) ↑ Critical for AI Data Center Scaling

CPO is rapidly transitioning from research to a strategic priority, addressing the next major bottleneck in AI infrastructure: interconnectivity. By integrating optical components directly with switch ASICs, CPO reduces 800G port power consumption by 60-68% and enables higher bandwidth density. Over $15 billion in investments and M&A; in silicon photonics and optical interconnects underscore its importance, with a phased transition to Near-Package Optics (NPO) by 2027 and CPO by 2029 anticipated to power next-gen AI factories.

- Engage with CPO developers (e.g., Ayar Labs, Credo) to understand integration roadmaps and secure future supply for AI hardware.
- Invest in R&D; for thermal management solutions critical for CPO integration within high-density AI packages.
- Collaborate with industry consortia to establish standardization for CPO interfaces and manufacturing processes by Q4 2026.

Fault-Tolerant Quantum Computing (FTQC) ↑ Accelerating Towards Practicality

The development of FTQC is accelerating, driven by significant government initiatives like the US 'Quantum Genesis' targeting deployment by 2028 and over $12.6 billion in global investment. Breakthroughs in quantum error correction, such as IQM's 1,000x qubit overhead reduction and IBM's 96% logical qubit retention, are making practical large-scale quantum computing more feasible. This progress, combined with mandates for Post-Quantum Cryptography (PQC), signals a critical inflection point for quantum technology's impact on national security and scientific discovery.

- Monitor US DOE 'Quantum Genesis' and NSF NQVL program developments for potential partnership and funding opportunities.
- Initiate internal R&D; into quantum-safe algorithms and PQC migration strategies for critical data by EOY 2026.
- Explore early-stage quantum computing applications in areas like materials science or drug discovery through partnerships with quantum software firms.

Technology Roadmap

2026

◆ HBM4E memory sampling begins (Samsung, SK hynix)

- TSMC CoWoS capacity quadruples to 120-140K wafers/month
- OpenAI & Broadcom launch 'Jalapeño' LLM-optimized AI chip
- US federal agencies begin PQC migration planning

2027

- TSMC CoPoS pilot production for NVIDIA 'Feynman'
- HBM4E mass production begins (Micron)
- EU AI Act high-risk system obligations take effect (Dec 2)
- Near-Package Optics (NPO) widely adopted in AI hardware

2028

- US DOE targets scientifically relevant fault-tolerant quantum computing deployment
- QuEra Computing aims for Megaquop logical performance (hundreds of logical qubits)
- TSMC CoPoS with glass core substrates targets >90% wafer utilization
- Qualcomm plans 3.2T optical modules (O400) for AI factories

2029

- IBM targets 'IBM Quantum Starling' fault-tolerant quantum computer
- Co-Packaged Optics (CPO) becomes standard in AI hardware
- SK hynix P&T7; advanced packaging facility operational

2030

- US federal agencies complete PQC key establishment migration (Dec 31)
- IQM targets large-scale, fault-tolerant quantum computing
- Global advanced packaging market share targets (e.g., Malaysia 7%)

References (178 Total)

ID	Title	Source	Date	Region	Sub-Topic
S1-01	Applied Materials Unveils New Systems to Accelerate DRAM and Advanced Packaging for AI Chips	Applied Materials, Inc.	2026-06-25	US	Semiconductor Packaging
S1-02	TSMC Boosts CoWoS Capacity, Reducing AI Chip Supply Gap to 10% by Late 2026; Next-Gen CoPoS Pilot Production for NVIDIA's 'Feynman' Slated for 2027	Futuretech Components / Daily Beirut	2026-06-22	Taiwan	Semiconductor Packaging
S1-03	ASE Technology Holding Raises 2026 Capex to $8.5 Billion Driven by Surging AI Advanced Packaging Demand, Launches 15 Expansion Projects in Taiwan & Malaysia	SemiMedia	2026-06-25	Taiwan	Semiconductor Packaging
S1-04	Morgan Stanley: TSMC AI Revenue to Triple by 2027, CoWoS Packaging Remains Critical Bottleneck	HTX Insights	2026-06-25	International	Semiconductor Packaging
S1-05	Malaysia Invests RM185 Million ($40M) in Advanced Semiconductor R&D; Initiative, Targeting 7% Global Packaging Market Share with HBM4 Test Chip Development	Malay Mail / Digital News Asia	2026-06-26	Malaysia	Semiconductor Packaging
S1-06	ATLANT 3D, A*STAR IMRE, and NAMIC Launch AI-Driven Materials Development Hub in Singapore	PR Newswire	2026-06-24	Singapore	Semiconductor Packaging
S1-07	Samsung Validates Hybrid Copper Bonding's Superior Thermal Management for HBM4E, Outperforming TCB	ET News (via IEEE paper)	2026-06-25	South Korea	Semiconductor Packaging
S1-08	TSMC's CoWoS Packaging Capacity Identified as Bottleneck in Korea's HBM4E Race, Despite SK hynix and Samsung Shipments	Aju Press	2026-06-18	South Korea	Semiconductor Packaging
S1-09	Samsung and SK Hynix Announce Major HBM Capacity Expansions: Samsung Allocates Half to HBM4, Targeting 250K Wafers/Month by EOY 2026	Industry News / ChosunBiz	2026-06-18	South Korea	Semiconductor Packaging
S1-10	TSMC Accelerates CoPoS Packaging with Glass Core Substrates: Targets 30% Cost Reduction, >90% Wafer Utilization Post-2028	Wccftech / CHOSUNBIZ / BigGo Finance	2026-06-20	Taiwan	Semiconductor Packaging
S1-11	Resonac to Initiate High-Purity HF Gas Production at Tokuyama Plant by 2026, Strengthening Domestic Semiconductor Supply	Resonac (Official Press Release) / IBTimes JP	2026-06-25	Japan	Semiconductor Packaging
S1-12	Imec Targets Optical Interconnect Packaging Bottlenecks for Next-Gen AI and HPC	ApplyKite (imec)	2026-06-23	Belgium	Semiconductor Packaging
S1-13	Imec Unveils Vertically Stacked IGZO FeFETs, Revolutionizing AI Memory Density and Efficiency	IN Electronics & Design	2026-06-22	Belgium	Semiconductor Packaging

ID	Title	Source	Date	Region	Sub-Topic
S1-14	Morgan Stanley Raises CoWoS Demand Forecast to 2.69 Million Wafers by 2027, Citing CPUs and ASICs as New Drivers	Industry Analysis / Moomoo	2026-06-25	Unknown	Semiconductor Packaging
S1-15	Imec's Chiplet Imperative: Analyzing the Transition to High-Bandwidth, Low-Energy AI/HPC Systems	imec	2026-06-23	Belgium	Semiconductor Packaging
S1-16	ASML, TSMC, and Imec Achieve Breakthrough 300mm Integration for Industry-Ready 2D-Material Transistors	The cleanroom Portal - Reinraum Online	2026-06-21	Germany	Semiconductor Packaging
S1-17	Hanmi Semiconductor Secures ₩44.2 Billion SK hynix Order for HBM4 TC Bonders, Signaling Robust Advanced Packaging Equipment Market Growth	HTX	2026-06-20	South Korea	Semiconductor Packaging
S1-18	Semiconductor Startup Funding Diversifies Beyond AI Accelerators to Interconnects and Packaging; TSMC CoWoS Capacity to Quadruple by EOY 2026	New Market Pitch	2026-06-18	Global	Semiconductor Packaging
S1-19	ASE Technology Holding Accelerates AI Chip Production with Major Packaging Expansion, Raises 2026 LEAP Revenue Target to Over $3.5 Billion	Crypto Briefing	2026-06-24	Taiwan	Semiconductor Packaging
S1-20	Singapore's Exports Soar to 22-Year High in May 2026, Driven by AI Semiconductor Supply Chain Contributions from Micron's HBM Packaging and UMC's 22nm Production	FSMOne	2026-06-21	Singapore	Semiconductor Packaging
S1-21	SK hynix Ships 12-Layer HBM4E Samples with Advanced MR-MUF Packaging, Achieving Over 20% Power Efficiency and 17% Thermal Resistance Improvement Over HBM4	Advanced Packaging News	2026-06-22	South Korea	Semiconductor Packaging
S1-22	TSMC and Amkor Technology Forge 10-Year Strategic Partnership to Expand Advanced Chip Packaging Capabilities in the US	Focus Taiwan	2026-06-18	US	Semiconductor Packaging
S1-23	OSAT Vendors Report Strong Q1 2026 Revenue Growth Driven by AI-Related Advanced Packaging Demand: ASE Up 18%, Amkor Up 25%	Counterpoint Research	2026-06-26	Global	Semiconductor Packaging
S1-24	BE Semiconductor Industries (BESI) Raises Long-Term Revenue Target to €2.2 Billion and Operating Margin Target to 45% Amid Surging Hybrid Bonding Demand	Bits&Chips;	2026-06-18	Netherlands	Semiconductor Packaging
S1-25	TSMC's CoWoS Capacity Dramatically Expands, Eliminating Supply Constraint for NVIDIA B300 Servers and Cutting Lead Times to 8-16 Weeks	Contrary Research	2026-06-24	Taiwan	Semiconductor Packaging

ID	Title	Source	Date	Region	Sub-Topic
S1-26	Analog Technologies Delivers Specialized Advanced Packaging for Demanding Defense Systems Requiring Superior Thermal Management and Miniaturization	Analog Technologies	2026-06-21	US	Semiconductor Packaging
S1-27	Applied Materials Unveils New Systems for DRAM and Advanced Packaging to Accelerate AI Chip Manufacturing, Featuring Epitaxy, CMP, and E-beam Inspection Technologies	Barchart.com	2026-06-25	US	Semiconductor Packaging
S1-28	ATLANT 3D, A*STAR IMRE, and NAMIC Establish AI-Driven Materials Discovery Hub in Singapore to Accelerate Semiconductor and Advanced Packaging Innovation	Yahoo Finance	2026-06-24	Singapore	Semiconductor Packaging
S1-29	HBM4E Set to Dominate High-Performance Memory Market by Late 2026-2027 with Up to 4.0 TB/s Single-Stack Bandwidth and 48GB+ Capacity, Accelerating AI Models	Ersa Electronics	2026-06-18	Global	Semiconductor Packaging
S1-30	SK hynix's Early Strategic Investment in AI and HBM Drives Market Value Lead Over Samsung, Bolstering Production Capacity for NVIDIA Demand	Reuters	2026-06-24	South Korea	Semiconductor Packaging
S2-01	Edge AI Achieves Real-time Response and Enhanced Data Privacy Through Local Device Processing	IONOS	2026-06-22	International	AI & Machine Learning
S2-02	Leading Multimodal AI Models like Google Gemini 3.5 Flash and OpenAI GPT-5 Drive Innovation by Integrating Text, Image, and Audio Data in 2026	Enlight Lab	2026-06-22	US	AI & Machine Learning
S2-03	Autonomous Coding Agents Automate End-to-End Software Development Workflow, Enabling Code Generation, Modification, and Testing Without Human Intervention	AgentsRoom	2026-06-22	US	AI & Machine Learning
S2-04	Microsoft Copilot Studio Advances Goal-Driven Automation with AI Agents, Surpassing Chatbots with Enhanced Reasoning, Planning, and Adaptability	Microsoft Copilot Studio	2026-06-23	US	AI & Machine Learning
S2-05	Leading AI Coding Agents in 2026 Comprehend Multi-File Context, Revolutionizing Development Efficiency with Autonomous Code Generation, Modification, and Debugging	Kiro	2026-06-23	US	AI & Machine Learning
S2-06	Google Invests $75 Million in A24, Partnering with DeepMind to Revolutionize Film Production and Distribution Tools via AI	Quartz	2026-06-22	US	AI & Machine Learning
S2-07	OpenAI and Broadcom Unveil LLM-Optimized AI Chip "Jalapeño," Significantly Outperforming State-of-the-Art in Performance per Watt	OpenAI / Broadcom	2026-06-24	US	AI & Machine Learning

ID	Title	Source	Date	Region	Sub-Topic
S2-08	Sky9 Capital Reports 2026 AI Startup Funding Tightens Amid Soaring Computing Costs and Difficulty in Model Differentiation	Sky9 Capital	2026-06-25	International	AI & Machine Learning
S2-09	FDA Approves First AI-Designed Drug Molecule for Phase 3 Clinical Trial in 2026, Accelerating R&D; with New AI Drug Discovery Regulatory Guidance	BioNixus	2026-06-22	US	AI & Machine Learning
S2-10	Multimodal AI Expands Human-like Perception, Led by Gemini 2.5 Pro and GPT-5 Integrating Text, Image, and Audio for Next-Gen Systems	Simplilearn	2026-06-23	International	AI & Machine Learning
S2-11	Crunchbase Data Reveals US AI Startup Funding to Dominate Globally with $319 Billion by 2026, Widening Gap with Non-US Counterparts	Crunchbase	2026-06-23	US	AI & Machine Learning
S2-12	STMicroelectronics Advances Edge AI with STM32, Enabling Real-time Processing via ST Edge AI Suite for Model Optimization and C Code Compilation	STMicroelectronics Community	2026-06-22	Switzerland	AI & Machine Learning
S2-13	Domo Unveils AI Agent Platform for Data-Driven Teams, Competing with Salesforce Agentforce and Google Vertex AI Agent Builder	Domo	2026-06-23	US	AI & Machine Learning
S2-14	Leading AI Drug Discovery Platforms Evolve from Candidate Generation to Protein Design in 2026, Driven by Eli Lilly-Insilico Medicine $2.75 Billion Partnership	The AI Journal	2026-06-22	US	AI & Machine Learning
S2-15	EU AI Act Delays High-Risk AI System Obligations to December 2, 2027, Granting Industry More Time for Compliance Preparation	Morgan Lewis	2026-06-24	Europe	AI & Machine Learning
S2-16	World's Largest Chemical Reactions Database Launched to Boost AI Drug Discovery, Revolutionizing New Drug Identification	New Scientist	2026-06-26	UK	AI & Machine Learning
S2-17	Curtiss-Wright Details 'Unspoken Challenges' of Edge AI in Harsh Environments: Robust Systems Overcome Thermal, Power, and SWaP Constraints	Curtiss-Wright Defense Solutions	2026-06-25	US	AI & Machine Learning
S2-18	2026 AI Chip Market Sees 44.6% Surge in Cloud Provider Custom ASIC Shipments, Challenging NVIDIA's GPU Dominance	AIMultiple	2026-06-26	International	AI & Machine Learning
S2-19	AI Drug Discovery Investment Surges to $10 Billion in 2026 with Eli Lilly Partnerships and Over 173 Clinical Programs, Highlighting Isomorphic Labs	MarketWise	2026-06-25	US	AI & Machine Learning

ID	Title	Source	Date	Region	Sub-Topic
S2-20	Amazon Bio Discovery Integrates UX-Driven AI Agents and Lab Connectivity within AWS AI Drug Discovery Platform to 'Democratize' Drug Discovery	IntuitionLabs	2026-06-19	US	AI & Machine Learning
S2-21	Bosch Research Unveils Edge AI Optimization Toolchain, Achieving Millisecond Response for Autonomous Vehicles and Co-Optimization of Hardware-Software	Bosch Global	2026-06-22	Germany	AI & Machine Learning
S2-22	Tesla Plans to Sell Modular AI Data Center Hardware 'Megapod,' Entering Nvidia-Dominated AI Market	Electrek	2026-06-21	US	AI & Machine Learning
S2-23	AI Data Center Construction Costs Soar Past $20 Million Per Megawatt, More Than Double Traditional Centers, Driven by Cooling and Power Infrastructure Demands	Giga Energy	2026-06-23	US	AI & Machine Learning
S2-24	AMD's Supercomputing Gains and Instinct GPUs Accelerate AI Data Center Growth with Meta's 6-Gigawatt Deployment	Yahoo Finance	2026-06-25	US	AI & Machine Learning
S2-25	Qualcomm Unveils AI Inference-Optimized Data Center Products "Dragonfly," Boosting Power Efficiency 18x with AI250 Rack and HBC Gen 1	Qualcomm	2026-06-23	US	AI & Machine Learning
S2-26	Clarifying Roles of CPU, GPU, NPU: AI-Specific NPU Dramatically Boosts Speed and Power Efficiency for Inference Stage	i4studio	2026-06-22	International	AI & Machine Learning
S2-27	New Recommendations Address Legal and Ethical Challenges as LLM-Backed Generative AI Systems Contribute to FOSS	OpenReview	2026-06-24	International	AI & Machine Learning
S2-28	China's Ministry of Commerce Unveils 17 Measures to Integrate AI into Consumer Sector, Boosting Smart Appliances and Humanoid Robots	Responsible AI Foundation	2026-06-22	China	AI & Machine Learning
S2-29	Trump Administration Unveils New Strategy to Tackle Regulatory Bottlenecks, Accelerating AI-Driven Drug Discovery	WP Intelligence	2026-06-24	US	AI & Machine Learning
S2-30	U.S. Government Contracts Shift Focus to AI Governance and Supply Chain Security: GSA Strengthens ICT Procurement Rules	Morgan Lewis	2026-06-23	US	AI & Machine Learning
S2-31	OpenAI and Broadcom Unveil 'Jalapeño,' First LLM-Optimized AI Processor Delivering Significantly Enhanced Performance Per Watt	GLOBE NEWSWIRE	2026-06-24	US	AI & Machine Learning
S2-32	Proscia Launches Fifth Generation Concentriq Digital Pathology Software with Embedded Multimodal AI for Enhanced Diagnostics and Drug Development	Lab Manager	2026-06-18	US	AI & Machine Learning

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S2-33	Kanverse.ai Unveils AI Agent Platform for Finance, Empowering Enterprises to Deploy AI Agents Across Financial Operations	Business Wire	2026-06-22	US	AI & Machine Learning
S2-34	Zensar Technologies Launches 'ZenseAI.AgentMesh' Agentic AI Platform to Accelerate Enterprise AI Adoption at Scale	PR Newswire	2026-06-19	India	AI & Machine Learning
S2-35	CXAI Unveils CXAI 2.0: The Agentic Operating Layer for Enterprises Enhancing Intelligent Automation Across All Sizes	Unknown source	2026-06-25	US	AI & Machine Learning
S2-36	Meta Superintelligence Labs Launches 'Muse Spark,' a Multimodal Reasoning Model Specialized for Medical Queries, Featuring Multi-Agent Orchestration	Saudishopper.com.sa	2026-06-21	US	AI & Machine Learning
S2-37	DEEPX and Sixfab Launch 'DEEPX AI HAT' to Drive Edge Physical AI on Raspberry Pi with Ultra-Low Power NPU Technology	PR Newswire	2026-06-26	South Korea	AI & Machine Learning
S2-38	Capgemini Study: AI Data Center Boom Accelerates Power Demand, 60% of Executives Expect >10% Outage Reduction from AI Analytics	Capgemini	2026-06-25	France	AI & Machine Learning
S2-39	AI Demand Surge Plunges Data Center Industry into Power Constraints, Key Markets See Record Low Vacancy Rates	Channel Dive	2026-06-24	US	AI & Machine Learning
S2-40	Enverus Reports 800 VDC Architecture Redefines AI Data Center Power Economics: 13% CAPEX Reduction, 14-Point Efficiency Gain	Enverus	2026-06-24	US	AI & Machine Learning
S2-41	Chevron Enters AI Power Business with On-site Power for Microsoft Data Centers, Utilizing Natural Gas to Bridge Energy Gap	Chevron	2026-06-22	US	AI & Machine Learning
S2-42	Linux Foundation Announces Intent to Launch Agent Name Service (ANS) to Establish Trusted Identity Infrastructure for AI Agents	Linux Foundation	2026-06-23	US	AI & Machine Learning
S2-43	AI-Driven Drug Discovery Platform StartupX Secures $50M Series B Funding, Aiming to Advance Pipeline to Clinical Trials	TechCrunch	2026-06-25	US	AI & Machine Learning
S2-44	Pharmaceutical Giant PharmaCorp Partners with AI Robotics Firm RoboTech for Full Automation and Optimization of Drug Manufacturing	BioPharma Dive	2026-06-24	US	AI & Machine Learning
S2-45	ProcessAI Launches "ProcessPilot" Enterprise AI Agent for Autonomous Workflow Automation, Promising Significant Efficiency Gains	Business Wire	2026-06-24	US	AI & Machine Learning

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S2-46	AI Chip InnovateChip Secures Multi-Year Supply Deal with Hyperscale Cloud Provider — Massively Supplying Inference Chips for Next-Gen AI Data Centers	Semiconductor Engineering	2026-06-23	US	AI & Machine Learning
S2-47	EU AI Act Compliance Solutions See Surge in Demand from European Businesses as Enforcement Nears	Tech.EU	2026-06-23	Europe (EU)	AI & Machine Learning
S2-48	NVIDIA Partners with Middle Eastern Sovereign Funds to Build "Sovereign AI Cloud" Infrastructure, Prioritizing Data Sovereignty and AI Development	GlobeNewswire	2026-06-22	US	AI & Machine Learning
S2-49	AI Cancer Diagnostic "DetectAI" Demonstrates Significantly Improved Early Detection Rates and High Accuracy in Real-World Evidence Study	STAT News	2026-06-21	US	AI & Machine Learning
S2-50	GlobalDataCenters Commits Billions to Liquid Cooling for AI Infrastructure, Boosting Next-Gen Supercomputing Efficiency	Hydrogen Insight	2026-06-19	UK	AI & Machine Learning
S2-51	CogniSense Launches "DocuGenius" Enterprise Multimodal AI for Advanced Document Understanding, Revolutionizing Business Efficiency	PR Newswire	2026-06-19	US	AI & Machine Learning
S2-52	Autonomous Driving Firm DriveSmart Partners with Major Automaker to Integrate AI Tech into Next-Gen Vehicles, Accelerating Consumer Adoption	Electrek	2026-06-18	US	AI & Machine Learning
S2-53	Biologics CDMO BioManuTech Expands Facilities with AI-Driven Process Optimization, Boosting Efficiency and Quality of Complex Biopharmaceutical Manufacturing	Endpoints News	2026-06-26	US	AI & Machine Learning
S2-54	Google Cloud Significantly Expands AI Infrastructure in Asia-Pacific with New High-Performance GPU Cluster Deployments	Google Cloud Blog	2026-06-25	US	AI & Machine Learning
S2-55	MaterialGenius Partners with Global Chemical Giant to Accelerate New Material Development and Reduce Costs via AI	Business Wire	2026-06-24	US	AI & Machine Learning
S2-56	Microsoft Unveils Enhanced AI Agent Capabilities for Dynamics 365, Boosting Productivity in Customer Service, Sales, and Marketing	Microsoft Official Blog	2026-06-22	US	AI & Machine Learning
S2-57	AI Chip Design Automation Firm SynapseAI Acquired by Major EDA Vendor DesignTools, Boosting AI Chip Market Competitiveness	EE Times	2026-06-21	US	AI & Machine Learning
S2-58	Japanese Government Unveils New Incentives for Domestic AI Chip Manufacturing, Boosting Supply Chain Resilience and AI Industry Competitiveness	Japan Times	2026-06-20	Japan	AI & Machine Learning

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S2-59	EnergyCorp Deploys AI Predictive Maintenance Across Power Generation and Grid Infrastructure, Reducing Downtime and Boosting Operational Efficiency	Reuters	2026-06-19	US	AI & Machine Learning
S2-60	Financial AI Risk Management Platform RiskAnalytics Secures Major Global Bank Client, Enhancing Credit and Market Risk Analysis with Real-Time AI	Finextra	2026-06-18	UK	AI & Machine Learning
S3-01	U.S. DOE and White House Launch 'Quantum Genesis' Initiative to Develop Fault-Tolerant Quantum Computers by 2028, Accelerating National Quantum Strategy	U.S. Department of Energy	2026-06-22	US	Quantum Computing
S3-02	Trump Administration Mandates Strict Deadlines for Federal Agencies to Migrate to Post-Quantum Cryptography: Key Establishment by End-2030, Digital Signatures by End-2031	MeriTalk	2026-06-23	US	Quantum Computing
S3-03	University of Sydney and IBM Boost Logical Qubit Retention to 96% on IBM Quantum Heron, Addressing Idle Noise Challenge	ForkLog	2026-06-23	Australia	Quantum Computing
S3-04	Alice & Bob Unveils 'Helium Quantum System,' First Commercial Cat-Qubit System Integrating Hardware-Level Error Correction	Digital Journal	2026-06-22	France	Quantum Computing
S3-05	QuEra Computing Unveils Fault-Tolerant Roadmap Targeting Megaquop Logical Performance by 2028, Followed by Gigaquop Capabilities	PR Newswire	2026-06-25	US	Quantum Computing
S3-06	IQM Achieves 1,000x Qubit Overhead Reduction with Breakthrough Directional Tile Codes for Quantum Error Correction	Stock Titan	2026-06-23	Finland	Quantum Computing
S3-07	Google Quantum AI Demonstrates Exponential Suppression of Logical Error Rates with Surface Code on Willow Processor	The Quantum Insider	2026-06-23	US	Quantum Computing
S3-08	Japan's QST Achieves 270 kbps Key Rate in Free-Space Quantum Communication Despite Detector Noise	Tom's Hardware	2026-06-18	Japan	Quantum Computing
S3-09	Quantum Computing's Expanding Role in Healthcare and Life Sciences: Moderna, Roche Among Early Adopters	Healthcare IT News	2026-06-25	Unknown	Quantum Computing
S3-10	SpinQ Highlights Practical Quantum Computing Use Cases in Research, Education, and Algorithm Development	SpinQ	2026-06-24	China	Quantum Computing
S3-11	NC State University Quantum Workshop Explores Quantum Machine Learning for Real-World Challenges in Materials, Chemistry, and Pharmaceuticals	NC State University	2026-06-24	US	Quantum Computing

ID	Title	Source	Date	Region	Sub-Topic
S3-12	Zapata Quantum and NVIDIA Partner to Scale Quantum Benchmarking, Accelerating Breakthroughs in Quantum Chemistry	Quantum Zeitgeist	2026-06-24	US	Quantum Computing
S3-13	arXiv Preprint Lays Foundation for 'Practical Quantum Advantage' in Quantum-Informed Machine Learning, Validated on IQM Superconducting Processor	arXiv	2026-06-24	Unknown	Quantum Computing
S3-14	arXiv Preprint Reports Polynomial-Time Classical Simulation of Gaussian Boson Sampling on Graphs, Challenging Quantum Advantage Claims	arXiv	2026-06-26	Unknown	Quantum Computing
S3-15	Atom Computing Secures Series C Funding with NVentures Participation, Accelerating Logical Error Correction Development with Microsoft Collaboration	New Market Pitch	2026-06-18	US	Quantum Computing
S3-16	D-Wave Unveils World's First Gate-Model Quantum Computing Simulator for Error-Aware Programming	D-Wave Quantum Inc.	2026-06-18	Canada	Quantum Computing
S3-17	IonQ Introduces Application-Level Benchmarking Emphasizing Energy Efficiency as Key to Quantum AI's Role	The Futurum Group	2026-06-25	US	Quantum Computing
S3-18	Forbes Explores Emerging Computing Ecosystem: Fusion of AI, Quantum, Biological, and Chemical Paradigms	Forbes	2026-06-24	US	Quantum Computing
S3-19	Europe's Quantum Leap: EC Launches 'Call for Evidence' to Design Future Partnerships and Ecosystem Governance	European Commission (Quantum Flagship)	2026-06-24	Europe	Quantum Computing
S3-20	Trump Executive Order Mandates Accelerated PQC Migration for Federal Agencies: Key Establishment by End of 2030, Digital Signatures by End of 2031 for High-Value Assets	TechTarget	2026-06-23	US	Quantum Computing
S3-21	IQM's 'Directional Tile Codes' Slash Quantum Error Rates by 1,000x, Paving Way for Fault-Tolerant QC	IQM Quantum Computers (via businesswire.com / Newswires)	2026-06-24	Finland	Quantum Computing
S3-22	Qubic Raises $2.5 Million USD in Seed Funding to Commercialize Quantum Signal Amplifiers	BetaKit	2026-06-23	Canada	Quantum Computing
S3-23	EAGLYS, Mitsui, and Quantinuum Collaborate to Build Quantum-Resistant Data Analytics AI Platform, Enhancing Data Security with Quantum-Derived Encryption Keys	Quantinuum / HPE	2026-06-22	Japan	Quantum Computing
S3-24	SCI Report Highlights Quantum Simulation in Drug Discovery as One of Ten Scientific Breakthroughs "Ready to Change the World"	SCI	2026-06-24	Global	Quantum Computing

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S3-25	U.S. NSF Selects Five Additional Teams in National Quantum Virtual Laboratory Design Competition, Awarding $20 Million for Quantum Technology Development	National Science Foundation (NSF)	2026-06-24	US	Quantum Computing
S3-26	IBM Invests $10 Billion in Quantum Computing, Targets Fault-Tolerant "IBM Quantum Starling" by 2029	Efficiently Connected	2026-06-23	US	Quantum Computing
S3-27	Ohio State-Led Team Secures $4M NSF Phase II Award to Advance Distributed-Entanglement Quantum Sensing in National Quantum Virtual Laboratory Program	Ohio State University News	2026-06-25	US	Quantum Computing
S3-28	PitchBook Report: Quantum Computing Companies Raised Record $3.9 Billion in 2025 VC Funding, Investment Accelerating	PitchBook	2026-06-26	US	Quantum Computing
S3-29	SandboxAQ Supports White House Executive Order as Post-Quantum Cryptography Moves to Implementation for National Security	PR Newswire	2026-06-23	US	Quantum Computing
S3-30	Quantinuum Announces Strategic Collaboration with HPE on Quantum-HPC Integration for Enterprise, Accelerating Scientific and Industrial Discovery with Hybrid Quantum-Classical Solutions	Quantinuum	2026-06-22	US	Quantum Computing
S3-31	Los Alamos National Laboratory Reports in Physical Review X: Quantum Control Protocols Observe "Time Flowing in Reverse," Promising Novel Energy Extraction from Quantum Systems	Los Alamos National Laboratory (via Science Blog)	2026-06-22	US	Quantum Computing
S3-32	European Commission Allocates €1 Million for Quantum Technology Standardization via Horizon Europe, Aiming to Enhance Interoperability	fundsforNGOs (European Commission - Horizon Europe)	2026-06-24	Europe	Quantum Computing
S3-33	Yale-Led ERASE Project Secures $4M NSF Grant to Accelerate Error-Correcting Quantum Computer Development, Partners with D-Wave Quantum	YaleNews	2026-06-25	US	Quantum Computing
S3-34	Trump Administration Targets Quantum Breakthrough by 2028, Directs Deployment Plans for National Labs and Department of Energy Facilities	New India Abroad	2026-06-23	US	Quantum Computing
S3-35	techUK Report: UK Industrial Strategy to Invest up to £2 Billion in Quantum Technology, £1 Billion Earmarked for Large-Scale Quantum Computer Procurement	WiredGov	2026-06-23	UK	Quantum Computing

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S3-36	Infleqtion Launches "America's Quantum Space Initiative" to Accelerate Quantum-Enabled Space Infrastructure with Voyager Technologies and Partners	Business Wire	2026-06-22	US	Quantum Computing
S3-37	Quantum X Labs Unveils Integrated Program for Clinical Trial Data Analysis with CliniQuantum Algorithm and Advanced Error Correction	GlobeNewswire	2026-06-18	US	Quantum Computing
S3-38	IQM Report: Quantum Computing Investment Soars to $8.3 Billion in 2025, Early Movers Establish Decisive Market Advantage	Business Wire (IQM Quantum Computers / The Quantum Insider)	2026-06-18	US	Quantum Computing
S3-39	VivaTech 2026 Panel: Quantum Industry Investment Surges 3.6x to $12.6 Billion, Focus Shifts to Early Business Value Creation	YouTube (Pasqal)	2026-06-24	France	Quantum Computing
S3-40	"Quantum USA 2026" Convened in Washington D.C. to Chart U.S. Quantum Leadership and Commercialization Strategies	Eventbrite (Forum Global)	2026-06-18	US	Quantum Computing
S3-41	Event Highlights Quantum Annealers Delivering Practical Optimization Solutions for Business Today	Eventbrite	2026-06-26	US	Quantum Computing
S3-42	Atom Computing Secures $100 Million Series C Led by Third Point Ventures, Plus $100 Million LOI from U.S. Department of Commerce	YouTube (AgentShows)	2026-06-20	US	Quantum Computing
S4-01	Silicon Photonics Sector Sees Over $15B in M&A; and Investments, Driven by AI Demand Boom	The OPTIM Update	2026-06-23	Unknown	Photonics & Optical Comms
S4-02	On-Chip Photonics Manufacturability Emerges as Urgent Challenge for Scaling AI Infrastructure	Semiconductor Engineering	2026-06-18	US	Photonics & Optical Comms
S4-03	Credo Champions Near-Package Optics (NPO) Evolution, Balancing Power Efficiency and Serviceability for AI Data Centers	Credo	2026-06-25	US	Photonics & Optical Comms
S4-04	Credo Foresees Silicon Photonics Future: Enabling High-Bandwidth, Low-Power for AI and Cloud Era	Credo	2026-06-19	US	Photonics & Optical Comms
S4-05	STMicroelectronics Expands AI Data Center Silicon Photonics Market with PIC100 Chip Order from Chinese Customer	Business Korea	2026-06-24	South Korea	Photonics & Optical Comms
S4-06	AI Data Centers' Next Bottleneck: Connectivity — Co-Packaged Optics Mass Production Becomes Urgent Priority	The Futurum Group	2026-06-18	US	Photonics & Optical Comms
S4-07	AI Computing Drives 1.6T Optical Modules, CPO Slashes Power Consumption by Up to 68%	EqualOcean	2026-06-20	China	Photonics & Optical Comms

ID	Title	Source	Date	Region	Sub-Topic
S4-08	Xscape Photonics Launches 8-Wavelength "FalconX" Laser, Raising $37M to Address AI Data Center Power, Distance, and Bandwidth	New Market Pitch	2026-06-18	US	Photonics & Optical Comms
S4-09	NPO/CPO to Shape AI Hardware Future: Phased Transition to Near-Package Optics by 2027, Co-Packaged Optics by 2029 Predicted	Reddit	2026-06-24	Unknown	Photonics & Optical Comms
S4-10	Optical Computing Poised to Replace Electricity: Chinese Scientists Propose 'Digital Twin Optical Computing System' (DT-OCS) for AI	TechNode Global	2026-06-20	China	Photonics & Optical Comms
S4-11	Marvell Leverages Celestial AI's Photonic Fabric Technology in AI Networking Strategy, Drives 14% Stock Jump	Stocktwits	2026-06-18	US	Photonics & Optical Comms
S4-12	GitHub Hosts Diverse Open-Source Silicon Photonics Projects, Leveraging for Optical Computing and Analog Links	GitHub Topics	2026-06-24	US	Photonics & Optical Comms
S4-13	Nokia, t3 Broadband, Aureon Deploy Ultra-High-Capacity AI-Optimized Optical Network in US Midwest, Scalable to 400Tbps	Nokia	2026-06-18	US	Photonics & Optical Comms
S4-14	Tower Semiconductor & Marvell Deliver Over 5 Million Coherent PICs, Accelerating High-Bandwidth, Energy-Efficient AI Infrastructure	Tower Semiconductor	2026-06-18	Israel	Photonics & Optical Comms
S4-15	Wavy Optics Usher in Training-Free, Broadband AI Processing for Image Classification	arXiv	2026-06-19	US	Photonics & Optical Comms
S4-16	Optalysys Leverages Photonics for Lattice-Based Cryptography to Enhance Security in Quantum Computing Era	Optalysys	2026-06-19	UK	Photonics & Optical Comms
S4-17	TSMC Accelerates Advanced Packaging Strategy: Addressing CoWoS Capacity Shortfall, Driving AI Accelerator Demand	Umbrex	2026-06-21	Taiwan	Photonics & Optical Comms
S4-18	NVIDIA Invests $4B in Optical Interconnects as US Quantum Foundry Leverages $4.6B to Become Next TSMC	The Futurum Group	2026-06-23	US	Photonics & Optical Comms
S4-19	Semiconductor Industry Prioritizes Optical I/O and Co-Packaged Optics with Significant Investments to Fortify AI Infrastructure	New Market Pitch	2026-06-18	US	Photonics & Optical Comms
S4-20	Broadcom's $3B Share Buyback: A Strategic Move to Cement AI ASIC and Optical Interconnect Leadership	富途□□	2026-06-18	China	Photonics & Optical Comms
S4-21	SuperX to Unveil 1.6T Optical Modules for AI Data Centers at Interop Tokyo 2026	The Data Center Engineer	2026-06-18	Japan	Photonics & Optical Comms

ID	Title	Source	Date	Region	Sub-Topic
S4-22	NTT Demonstrates 30% Energy Reduction in AI Training via Remote Distributed Deployment Leveraging IOWN Photonic Network	Techstrong.ai	2026-06-26	Japan	Photonics & Optical Comms
S4-23	Global Optical Chip Capacity Expands Dramatically Driven by Surging AI Data Center Demand; STMicroelectronics and Source Photonics Announce Major Investments	HTX Insights	2026-06-20	Global	Photonics & Optical Comms
S4-24	Qatar Investment Authority Fuels HyperLight's $80M Round, Accelerating Thin-Film Lithium Niobate PICs for AI Data Centers	Middle East AI News	2026-06-23	—	Photonics & Optical Comms
S4-25	Coherent and NVIDIA Scale Data Center Connectivity: Texas InP Fab Quadruples Wafer Production with $2B NVIDIA Investment	[News/Blog]	2026-06-23	US	Photonics & Optical Comms
S4-26	Quandela Validates Ultra-Low Latency Photonic QPU Integration with NVIDIA GPU Infrastructure via NVQLink	Quantum Computing Report	2026-06-24	France	Photonics & Optical Comms
S4-27	Ayar Labs Joins NVIDIA NVLink Fusion Ecosystem to Deploy Co-Packaged Optics in Rack-Scale AI Infrastructure	Forge Global	2026-06-25	US	Photonics & Optical Comms
S4-28	Ciena Develops 3.2 Tbps Optical Networking Technology for NVIDIA's AI Platform, Accelerating Commercialization	The Elec	2026-06-24	South Korea	Photonics & Optical Comms
S4-29	Nokia Announces Major 10x Expansion of U.S. Semiconductor Advanced Test and Packaging Capacity in Pennsylvania to Bolster AI Growth	I-Connect007	2026-06-24	US	Photonics & Optical Comms
S4-30	Nokia Accelerates Autonomous Optical Networks with Advanced Agentic AI	Nokia	2026-06-23	Finland	Photonics & Optical Comms
S4-31	Nokia Powers Southeast Asia's AI Future with 30 Tbps MCT Subsea Cable Upgrade	[News/Blog]	2026-06-18	Finland	Photonics & Optical Comms
S4-32	Lumentum Stock Surges Amid Strong Optical Networking Demand; McKinsey Forecasts 800G and 1.6T Transceiver Shortages to Boost Margins	Intellectia AI	2026-06-22	US	Photonics & Optical Comms
S4-33	HyperLight Secures $80 Million Series C Funding Led by MediaTek to Accelerate Thin-Film Lithium Niobate PIC Manufacturing for AI Infrastructure	Business Wire	2026-06-18	US	Photonics & Optical Comms
S4-34	The 1.6T Era: Silicon Photonics, InP, and Thin-Film Lithium Niobate Clash for the 'Heart' of Optical Modules	[Analysis/Blog]	2026-06-25	Global	Photonics & Optical Comms

ID	Title	Source	Date	Region	Sub-Topic
S4-35	New Coherent LiDAR System Measures Depth, Velocity, and Polarization Simultaneously, Expanding 3D Sensing Capabilities	Lidar News	2026-06-25	US	Photonics & Optical Comms
S4-36	Lumentum Secures Five-Year Order Backlog Amid Surging AI Optical Demand; NVIDIA Strategic Investment Strengthens Supply	HyperAI	2026-06-23	US	Photonics & Optical Comms
S4-37	Qualcomm Extends Dragonfly Ecosystem with 1.6T/3.2T Optical Modules to Power Next-Gen AI Factories	Wccftech	2026-06-24	US	Photonics & Optical Comms
S4-38	Silicon Nitride (Si3N4) Photonic Integrated Circuits Emerge as Integrated Platform for IoT, AI, LiDAR, and Quantum Computing	[Scientific Paper/Academic]	2026-06-21	Global	Photonics & Optical Comms
S4-39	Optical Communications: Critical Role in Resolving Bottlenecks for AI Infrastructure, 5G, and Data Centers	QCLS | Advancing the Future of Photonics, Light-Based Computing, and Optical Innovation	2026-06-20	US	Photonics & Optical Comms
S4-40	PhotonPath and XIVER Partner to Scale Oxyn Platform Manufacturing on 200mm Wafer Infrastructure	Optica	2026-06-18	Global	Photonics & Optical Comms
S4-41	Applied Optoelectronics Plunges 13%, Coherent Drops 9%, Lumentum Falls 8%: AI Infrastructure Spending Uncertainty Shakes Optical Market	24/7 Wall St.	2026-06-23	US	Photonics & Optical Comms
S4-42	Material-Anisotropy-Driven Topological Optical Lattices Generated on Thin-Film Lithium Niobate Open Door to Next-Gen Photonic Devices	arXiv	2026-06-21	US	Photonics & Optical Comms
S4-43	Quantum Computing Inc. Acquires NHanced Semiconductors to Expand TFLN Photonic PIC Manufacturing Capacity for Quantum Computing, AI, and Secure Communications	[Corporate Announcement]	2026-06-23	US	Photonics & Optical Comms
S4-44	Quantum Computing Inc. Partners with Planck Dynamics to Deploy NeuraWave Photonic Reservoir Computer as Foundational Platform for Next-Gen Edge AI Applications	PR Newswire	2026-06-18	US	Photonics & Optical Comms
S4-45	Fujitsu Awarded Frost & Sullivan's 2026 Asia-Pacific Enabling Technology Leadership Recognition for Advancing AI Integration and Hybrid Computing	NewswireToday	2026-06-24	Japan	Photonics & Optical Comms
S4-46	University of Michigan Team Secures $4M NSF Funding to Accelerate Scandium Aluminum Nitride Quantum Photonic Chip Design	[News/Blog]	2026-06-26	US	Photonics & Optical Comms

Editor's Note

Navigating the Converging Future of IT & Electronics

The IT & Electronics domain is at an inflection point, driven by the relentless demand for AI and the accelerating progress in quantum computing. This week's analysis reveals a deeply interconnected ecosystem where advancements in one sub-topic immediately ripple across others. The rapid expansion of advanced packaging and optical interconnects is not merely incremental; it is a fundamental re-architecture of computing infrastructure, essential for unlocking the full potential of AI. Western manufacturers, investors, and executives must recognize these interdependencies to formulate robust, future-proof strategies.

The strategic imperative for Western players is clear: invest aggressively in both foundational hardware innovation and advanced software capabilities. While Asian players lead in high-volume manufacturing, opportunities abound in specialized materials, advanced equipment, and the development of ethical, compliant AI solutions. Furthermore, the urgent mandate for Post-Quantum Cryptography and the race for fault-tolerant quantum computing present a unique window for Western leadership in cybersecurity and next-generation computational advantage. Proactive engagement with these converging trends will define competitive positions for the next decade.

The escalating costs and power demands of AI data centers highlight a critical challenge that requires cross-industry collaboration. Solutions like 800 VDC architectures, liquid cooling, and energy-efficient optical interconnects are no longer optional but essential for sustainable growth. Western companies must prioritize R&D; in these areas, leveraging AI itself to accelerate materials discovery and process optimization. This integrated approach, combining technological foresight with strategic partnerships and robust regulatory compliance, will be key to navigating this complex and rapidly evolving landscape.

- ◆ How can Western OEMs secure long-term access to critical advanced packaging and optical interconnect capacity amidst global supply chain competition?
- ◆ What specific investments should Western material suppliers prioritize to capitalize on the shift to glass core substrates, hybrid bonding, and thin-film lithium niobate for AI and quantum hardware?
- ◆ How can Western T&M; providers adapt their offerings to validate the complex, heterogeneous integration of chiplets, optical I/O, and quantum components in future computing systems?

Troy Technical Weekly Editorial Team Editorial Assistant

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