

Photonics

Weekly Intelligence Report

2026-08-02 | 40 articles | 11 countries

troy-technical.jp

This Week's Keyword

AI Photonics Shift

Optical interconnects redefine data centers

40

articles

Total Articles Analyzed

11

countries

Source Countries

3.5x

power reduction

CPO Data Center Gain

\$4.4B

valuation

Lightmatter Funding

All 40 Articles This Week — 5-Axis Evaluation Matrix

How to read columns — Tech Novelty: degree of breakthrough Market Proximity: closeness to commercialization Market Impact: industry-wide effect Data Reliability: quantitative data & peer review US/EU Relevance: direct impact on US/European companies & supply chains

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#01	Broadcom 800G CPO Mass	New Product						Broadcom mass produces 800G CPO switch ASICs for AI/HPC, cutting power/latency for cloud providers.
#02	NVIDIA SiP Interconnects	Corporate Strategy						NVIDIA adopts silicon photonics optical interconnects to boost GPU comms for large-scale AI models, improving power efficiency.
#03	Ayar Labs Optical I/O	New Product						Ayar Labs accelerates commercial deployment of optical I/O chiplets for AI/HPC, eliminating electrical bottlenecks.
#04	NTT Opto-Electronic	Research						NTT achieves opto-electronic convergence breakthrough for ultra-high-speed, low-power computing/networking in IOWN initiative.
#05	Marvell 1.6T LPO Samples	New Product						Marvell ships 1.6T LPO transceiver samples for AI/HPC clusters, reducing data center power and cost by eliminating retimers.
#06	Ciena Coherent Network	New Product						Ciena boosts optical network capacity by 30-50% with 800Gb/s and 1.6Tb/s coherent tech for AI workloads.
#07	Photonic Circuit Switch	Research						Photonic circuit switching and frequency combs emerge to break copper limits in AI data centers, especially for large GPU clusters.
#08	Infinera Algar Contract	Corporate Strategy						Infinera secures Algar Telecom contract with ICE6 800G optical engine for subsea network capacity upgrade.
#09	OCI MSA 800G/1.6T	Industry Report						AI data centers shift to 800G/1.6T optical interconnects; OCI MSA defines common optical physical layer for scale-up systems.
#10	ZTE EUCC Certification	Corporate Strategy						ZTE achieves world-first EUCC Substantial-level cybersecurity certification for its complete OTN portfolio.
#11	Lumentum InP Bottleneck	Analysis						Lumentum CEO predicts imminent shift from copper to optical in AI data centers, citing InP manufacturing as a key bottleneck.
#12	Algo-Designed SiN PICs	Research						Algorithm-designed silicon nitride photonic circuits achieve unprecedented miniaturization and optimal performance for next-gen tech.

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#13	Cisco Acacia \$4B Rev	Market Overview						Cisco's Acacia business projects \$4B revenue from hyperscalers driven by 800G coherent optical device demand for AI infrastructure.
#14	Nokia Fiber as Sensors	New Product						Nokia transforms optical fiber into sensors using coherent optics and AI for next-gen network protection and monitoring.
#15	Cisco 1.6T AI Scalab.	Analysis						Cisco's Bill Gartner states 1.6T optical devices are key to unlocking AI data center scalability, not a bottleneck.
#16	Japan Dist. AI Trial	Research						Japanese consortium launches distributed AI processing trial using AI-Photonics Network over power grid fiber, with 1FINITY optical NIC.
#17	Nokia AI NetOps	New Product						Nokia revolutionizes optical network operations with AI-assisted automation and ICE-X pluggable coherent optics for reduced TCO.
#18	Nokia Q2 Rev & US Inv.	Corporate Strategy						Nokia reports 20% optical network revenue growth in Q2 FY26, driven by AI/Cloud, and announces €800-900M US manufacturing investment.
#19	OFC Interferometry	Research						Optical frequency comb-based single-frame spectral interferometry enables high-speed, simultaneous multi-parameter measurement of optical flat plates.
#20	AI DC Photonic Shift	Industry Report						AI data centers rapidly transition to photonic interconnects beyond copper limits, driven by 800G/1.6T devices and OCI MSA.
#21	Eliyan \$145M Funding	Corporate Strategy						Cisco-backed Eliyan raises \$145M at \$1B valuation to solve AI interconnect bottlenecks with electro-optical solutions.
#22	IOWN Coherent Plugg.	Industry Report						IOWN Global Forum highlights coherent pluggables driving AI era infrastructure transformation by enabling long-reach optical connectivity at the edge.
#23	UW-Madison Kerr Comb	Research						University of Wisconsin develops full-wave simulation framework for Kerr frequency comb generation, advancing precision measurement and quantum.
#24	PsiQuantum DARPA Award	Corporate Strategy						PsiQuantum secures \$125M DARPA award for photonic quantum computer validation, accelerating U.S. leadership.
#25	PsiQuantum CHIPS LOI	Corporate Strategy						PsiQuantum signs \$100M U.S. Commerce LOI under CHIPS Act for photonic quantum computing development.
#26	PsiQuantum Chicago Ed	Corporate Strategy						PsiQuantum invests \$250,000 in South Chicago quantum education and workforce development programs.
#27	Ouster ARGUS LiDAR	Corporate Strategy						Ouster partners with ARGUS Interception to integrate digital LiDAR into counter-drone interceptors, boosting precision.
#28	Lightmatter NVIDIA NVL	Corporate Strategy						Lightmatter joins NVIDIA NVLink Fusion ecosystem, accelerates photonic interconnect strategy with \$850M funding at \$4.4B valuation.
#29	Scantinel FMCW LiDAR	New Product						Scantinel Photonics (MicroVision) commercializes FMCW LiDAR-on-Chip with over 300m range for autonomous driving.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#30	GF \$300M CHIPS SiP	Corporate Strategy	●●●●○ ○	●●●○ ○	●●●●● ●	●●●●● ○	●●●●● ●	GlobalFoundries secures \$300M U.S. Commerce award to accelerate silicon photonics R&D;,, bolstering U.S. leadership in AI/HPC.
#31	Foundries SiP Mass Prod	Industry Report	●●●●○ ○	●●●●● ●	●●●●● ●	●●●●○ ○	●●●●● ○	Leading foundries accelerate silicon photonics mass production for AI/HPC demand; UMC ships 12-inch wafers, TSMC's COUPE enters production.
#32	Innoviz Defense LiDAR	Corporate Strategy	●●●●○ ○	●●●●● ●	●●●○ ○	●●●●○ ○	●●●●● ○	Innoviz Technologies secures first defense contract (\$3.5M) to supply LiDAR units for counter-drone systems.
#33	Luminar Bankruptcy	Market Overview	●●●○ ○	●●●●● ●	●●●●● ○	●●●●○ ○	●●●●● ●	Luminar Technologies files for bankruptcy; Volvo drops LiDAR from EX90/ES90, highlighting market shift to supplier durability.
#34	Ghent/imec MTP SiP	Research	●●●●● ●	●●●○ ○	●●●●○ ○	●●●●● ●	●●●●● ●	Ghent University and imec pioneer heterogeneous integration in silicon photonics with micro-transfer printing for next-gen systems.
#35	US Rep China LiDAR	Policy	●●●○ ○	●●●●● ●	●●●●● ○	●●●○ ○	●●●●● ●	U.S. Rep. Moolenaar warns of Chinese LiDAR national security risks, proposes phase-out legislation.
#36	NVIDIA/Broadcom CPO	New Product	●●●●● ○	●●●●● ●	●●●●● ●	●●●●● ○	●●●●● ●	NVIDIA and Broadcom commence mass production of Co-Packaged Optics (CPO) switches, poised to cut data center power by up to 3.5x.
#37	Nano-Printed Quantum	Research	●●●●● ●	●●●○ ○	●●●○ ○	●●●○ ○	●●●○ ○	Nano-printed scaffolds enable direct molecular access to quantum photonics, advancing sensing capabilities.
#38	Photonic QC Physics	Analysis	●●●●● ○	●●●○ ○	●●●●● ●	●●●○ ○	●●●●● ●	Article explains physics and promise of photonic quantum computing, highlighting PsiQuantum's approach using photons as qubits.
#39	US NRL Quantum Innov.	Research	●●●●● ○	●●●○ ○	●●●●● ○	●●●●○ ○	●●●●● ●	U.S. Naval Research Laboratory accelerates quantum innovation with new quantum materials and integrated photonic devices.
#40	Photonics21 P4 Med.	Corporate Strategy	●●●●○ ○	●●●○ ○	●●●○ ○	●●●○ ○	●●●●● ●	Photonics21 advocates for preventive medicine in Europe, leveraging AI and photonics for early disease detection and personalized healthcare.

●●●●○ High ●●●○ Med-High ●●●○ Med ●●●○ Low | Yellow highlight = featured article

Three Questions That Demand Your Decision This Week

❶ Is your AI infrastructure ready for the optical shift?

Broadcom, NVIDIA, and Lightmatter are pushing Co-Packaged Optics (CPO) and Near-Packaged Optics (NPO) into mass production for AI/HPC. This promises up to 3.5x power reduction and vastly improved latency. Does your current roadmap account for this rapid transition, and are your procurement teams engaging with these new suppliers now?

❷ How will US quantum leadership impact your strategy?

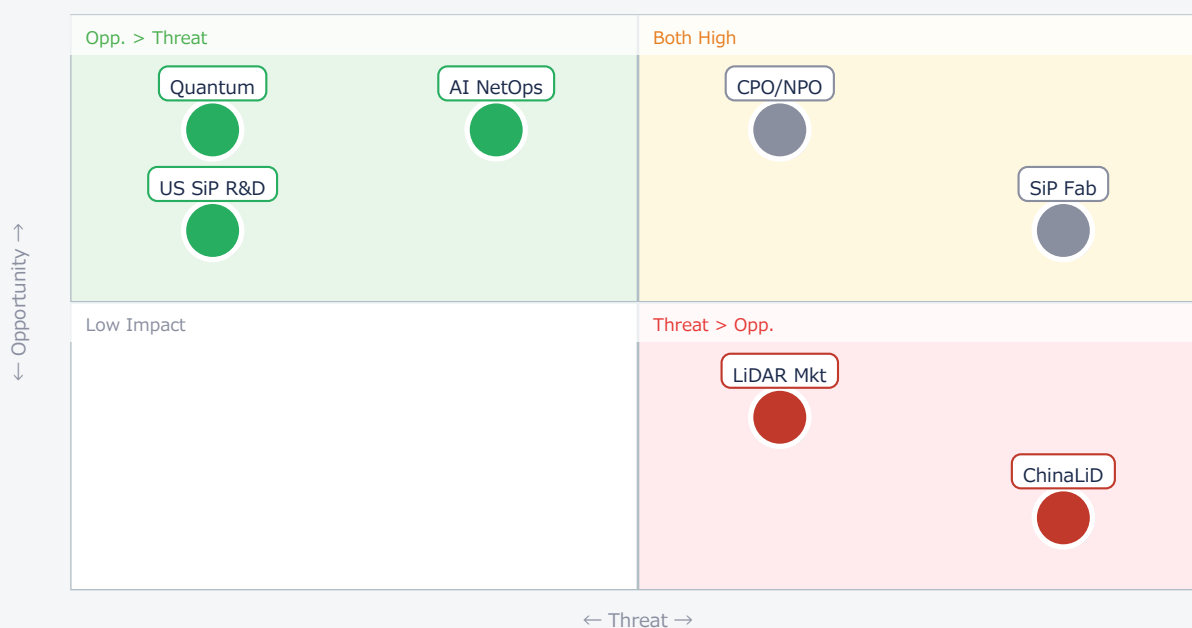
PsiQuantum secured \$125M DARPA funding and a \$100M CHIPS Act LOI for photonic quantum computing, aiming for fault-tolerant systems by 2029. With significant government backing, US companies are accelerating. Are you investing in quantum R&D; or partnerships to avoid being left behind in this critical frontier technology?

❸ Is your LiDAR supply chain resilient to market shifts?

Luminar's bankruptcy and Volvo's decision to drop LiDAR highlight supplier durability risks. Concurrently, US legislation targets phasing out Chinese LiDAR due to national security concerns. Are your automotive or defense LiDAR procurement strategies diversified and robust enough to navigate this volatile market?

Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
● CPO/NPO	Critical	New market for CPO	Lagging CPO adoption
● SiP Fab	Critical	Secure SiP supply	Supply chain risk
● Quantum	Opp.	Quantum leadership	Falling behind
● LiDAR Mkt	Threat	Stable suppliers	Supplier instability
● ChinaLiD	Threat	US/EU market share	Geopolitical risk

● AI NetOps	Opp.	Network efficiency	Complex integration
● US SiP R&D;	Opp.	Domestic SiP tech	R&D; dependency

Deep Dive ① — CPO Mass Production for AI Data Centers

#36 | 2026/07/30 | Electronics360 | Tech Novelty●●●●○ Proximity●●●●● Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●●

NVIDIA and Broadcom have initiated mass production of Co-Packaged Optics (CPO) switches, integrating optical engines directly with switch ASICs. This innovation is poised to cut data center power consumption by up to 3.5 times and significantly reduce latency.

NVIDIA's Spectrum-X CPO switch (with TSMC's COUPE) and Broadcom's Bailly CPO switch are already in production, with further expansion expected. CPO is becoming the leading architecture for next-gen high-bandwidth switches, essential for 400Gbits/sec serdes technology.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: The claimed 3.5x power reduction is highly realistic, reflecting the fundamental efficiency gains of moving optics closer to the chip. The primary technical barrier is scaling manufacturing yield and ensuring interoperability across a complex ecosystem. [Opportunity] for US/EU materials & component suppliers to provide advanced silicon photonics, lasers, and packaging. [Threat] for OEMs and device manufacturers if they fail to rapidly integrate CPO into their AI platforms, risking obsolescence. [Next Actions]: [R&D;] Immediately evaluate CPO integration roadmaps and engage with Broadcom/NVIDIA. [Procurement] Assess supply chain readiness for CPO components. [Strategy] Develop a clear CPO adoption strategy by Q4 2026.

Deep Dive ② — PsiQuantum Secures DARPA Award for QC

#24 | 2026/07/23 | Intelligence Community News | Tech Novelty●●●●● Proximity●●○○○ Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●●

PsiQuantum has secured a \$125 million DARPA award for independent validation of its photonic quantum computing architecture. This funding will rigorously assess silicon photonics-based quantum systems, including cryogenic infrastructure and advanced manufacturing at PsiFactory.

The award underscores the U.S. government's commitment to accelerating practical-scale quantum computing, aiming for a fault-tolerant system by 2029. Photonic qubits offer advantages like room-temperature operation and CMOS compatibility, leveraging existing semiconductor fabs.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: The DARPA award signals strong confidence in PsiQuantum's approach, making their 2029 fault-tolerant system goal more realistic, though still highly ambitious. Technical barriers remain in scaling qubit count while maintaining coherence and error correction. [Opportunity] for US/EU technology licensors and IP holders in quantum algorithms and software, and for materials suppliers in advanced silicon photonics. [Threat] for companies relying on other quantum modalities if photonic QC achieves early scalability. [Next Actions]: [R&D;] Establish a dedicated quantum computing task force to track photonic QC advancements. [Strategy] Evaluate potential quantum applications for your industry and identify key partners by Q1 2027. [Executive] Advocate for continued government funding in quantum research.

Deep Dive ③ — Foundries Accelerate Silicon Photonics Mass Production

#31 | 2026/07/30 | TrendForce | Tech Novelty●●●○○ Proximity●●●●● Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●●

Major foundries like TSMC, UMC, GlobalFoundries, and Tower Semiconductor are accelerating silicon photonics (SiP) mass production to meet AI/HPC demand. UMC's Singapore fab has shipped its first 12-inch SiP wafers, and TSMC's COUPE platform is in production.

This increased CapEx and capacity expansion aim to stabilize the supply of high-performance, energy-efficient optical interconnect solutions. Tower Semiconductor plans to convert its Arai fab to a 12-inch SiP platform, further boosting global capacity.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: The acceleration by major foundries is a strong indicator of SiP's commercial viability and scalability. The published numbers on capacity expansion are credible, driven by clear market demand. A key barrier is the integration complexity with existing CMOS processes and ensuring robust supply chain diversification. [Opportunity] for US/EU OEMs & device manufacturers to secure stable, high-volume SiP component supply. [Threat] for procurement & supply chain managers if they remain overly reliant on a single region or foundry, especially given geopolitical tensions. [Next Actions]: [Procurement] Diversify SiP foundry engagements and negotiate long-term supply agreements. [R&D;] Collaborate with foundries on next-gen SiP designs. [Strategy] Assess the long-term cost implications and competitive advantages of widespread SiP adoption by Q4 2026.

Other Notable Articles

#12 Lumentum CEO Predicts Imminent Shift from Copper to Optical Interconnects in AI Data Centers, Citing InP Manufacturing as Key Bottleneck (Teahose)

Tech Novelty●●●○○ Proximity●●●●● Market Impact●●●●● Data Reliability●●○○○ US/EU Relevance●●●●●

CEO warns InP manufacturing capacity is a critical bottleneck for the imminent copper-to-optical shift in AI data centers.

#13 Algorithm-Designed Silicon Nitride Photonic Circuits Achieve Unprecedented Miniaturization and Optimal Performance for Next-Gen Sensing, Telecom, and Quantum Tech (Max Planck Institute / Harvard SEAS)

Tech Novelty●●●●● Proximity●○○○○ Market Impact●●●○○ Data Reliability●●●●● US/EU Relevance●●●●●

AI-driven inverse design creates ultra-compact SiN photonic circuits, revolutionizing future optical devices for quantum and sensing.

#15 Nokia Transforms Optical Fiber into Sensors with Coherent Optics and AI for Next-Gen Network Protection and Monitoring (Nokia.com)

Tech Novelty●●●●○ Proximity●●●○○ Market Impact●●●○○ Data Reliability●●●○○ US/EU Relevance●●●●●

Nokia leverages coherent optics and AI to turn fiber into intelligent sensors for network protection and infrastructure monitoring.

#31 Scantinel Photonics, Now Part of MicroVision, Commercializes FMCW LiDAR-on-Chip with Over 300m Range for Autonomous Driving (eMove360° Europe)

Tech Novelty●●●●○ Proximity●●●●● Market Impact●●●●○ Data Reliability●●●○○ US/EU Relevance●●●●●

Scantinel (MicroVision) commercializes long-range FMCW LiDAR-on-Chip, crucial for mass-produced autonomous vehicles.

#35 Luminar Technologies Files for Bankruptcy, Volvo Completely Drops LiDAR from EX90 and ES90 Models, Offers Owner Compensation (Moomoo)

Tech Novelty●○○○○ Proximity●●●●● Market Impact●●●●○ Data Reliability●●●○○ US/EU Relevance●●●●●

Luminar's bankruptcy and Volvo's LiDAR removal underscore the critical need for supplier stability in automotive tech.

Recommended Actions This Week

Action recommendations based on article evaluation matrix and opportunity/threat analysis.

■ Immediate (this week)

- [Procurement] Review current AI data center interconnect supplier contracts and CPO/NPO roadmap alignment with Broadcom/NVIDIA. (By EOW)
- [Strategy] Initiate a rapid assessment of geopolitical risks associated with Chinese LiDAR in critical infrastructure and defense projects. (By EOW)
- [R&D;] Task a small team to analyze the latest photonic quantum computing breakthroughs from PsiQuantum and US government initiatives. (By EOW)

■ Short-term (1 month)

- [Business Dev] Explore partnerships with US/EU silicon photonics foundries (e.g., GlobalFoundries, imec) to secure future supply and R&D; access. (By 2026-09-02)
- [Procurement] Conduct a comprehensive audit of LiDAR suppliers, prioritizing financial stability and mass production capabilities over niche specs. (By 2026-09-02)
- [R&D;] Evaluate the potential for AI-assisted automation in optical network operations, leveraging Nokia's WaveSuite/Transcend platforms. (By 2026-09-02)

■ Medium-long term (quarter+)

- [Executive] Develop a multi-year investment strategy for advanced photonics, including CPO/NPO and silicon nitride platforms, to maintain competitive edge in AI/HPC. (By Q1 2027)
- [Legal/IP] Establish a robust IP strategy around quantum computing and advanced photonic integration to protect future innovations. (By Q2 2027)
- [Strategy] Invest in talent development programs for quantum technology and integrated photonics to address future workforce shortages. (Ongoing)

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Photonics — Selected Articles

Date: 2026-08-02

Articles: 40

Table of Contents

- #01 Broadcom Initiates Mass Production of 800G CPO Switch ASICs for Next-Gen AI/HPC Data Centers, Slashing Power and Latency
- #02 NVIDIA Integrates Next-Gen Silicon Photonics Optical Interconnects to Boost GPU Communication for Large-Scale AI Models
- #03 Ayar Labs Accelerates Commercial Deployment of Optical I/O Chiplets to Revolutionize AI/HPC Performance, Breaking Data Center Bottlenecks
- #04 NTT Announces Opto-Electronic Convergence Breakthrough within IOWN Initiative: Paving Way for Ultra-High-Speed, Low-Power Next-Gen Computing and Networking
- #05 Marvell Begins Initial Sample Shipments of 1.6T LPO Transceivers for AI/HPC Clusters, Reducing Data Center Power and Cost
- #06 Ciena Boosts Optical Network Capacity by 30-50% with 800Gb/s and 1.6Tb/s Coherent Tech for AI Workloads
- #07 Photonic Circuit Switching and Frequency Combs Emerge to Break Copper Limits in AI Data Centers
- #09 Infinera Secures Algar Telecom Contract with ICE6 800G Optical Engine and GX Series to Upgrade Subsea Network Capacity
- #10 AI Data Centers Accelerate Shift to 800G/1.6T Optical Interconnects; OCI MSA Defines Common Optical Physical Layer
- #11 ZTE Achieves World-First EUCC Substantial-Level Cybersecurity Certification for Complete OTN Portfolio
- #12 Lumentum CEO Predicts Imminent Shift from Copper to Optical Interconnects in AI Data Centers, Citing InP Manufacturing as Key Bottleneck
- #13 Algorithm-Designed Silicon Nitride Photonic Circuits Achieve Unprecedented Miniaturization and Optimal Performance for Next-Gen Sensing, Telecom, and Quantum Tech
- #14 Zacks Equity Research: Cisco's Acacia Business Projects \$4B Revenue from Hyperscalers Driven by 800G Coherent Optical Device Demand
- #15 Nokia Transforms Optical Fiber into Sensors with Coherent Optics and AI for Next-Gen Network Protection and Monitoring
- #16 Cisco's Bill Gartner on AI Data Center Optics Economics: 1.6T Devices Key to Unlocking Scalability, Not a Bottleneck
- #17 Japanese Consortium Launches Distributed AI Processing Infrastructure Trial Linked to KYOJO CUP, Utilizing All-Photonics Network over Power Grid Fiber

#18 Nokia Revolutionizes Optical Network Operations with AI-Assisted Automation and ICE-X Pluggable Coherent Optics for Reduced TCO and Enhanced Resilience

#20 Nokia Reports 20% Optical Network Revenue Growth in Q2 FY 2026 Driven by AI/Cloud Demand, Announces €800-900M Investment in US Manufacturing Capacity

#21 Optical Frequency Comb-Based Single-Frame Spectral Interferometry Enables High-Speed, Simultaneous Multi-Parameter Measurement of Optical Flat Plates

#22 AI Data Centers Rapidly Transition to Photonic Interconnects Beyond Copper Limits, Driven by 800G/1.6T Devices and OCI MSA Standardization

#23 Cisco-Backed Eliyan Raises \$145M, Achieves \$1B Valuation to Solve AI Interconnect Bottlenecks with Electro-Optical Solutions

#24 IOWN Global Forum: Coherent Pluggables Drive AI Era Infrastructure Transformation by Enabling Long-Reach, High-Capacity Optical Connectivity at the Network Edge

#25 University of Wisconsin Develops Full-Wave Simulation Framework for Kerr Frequency Comb Generation, Advancing Precision Measurement and Quantum Technologies

#26 PsiQuantum Secures \$125M DARPA Quantum Benchmarking Initiative Award for Photonic Quantum Computer Validation

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#30 Lightmatter Joins NVIDIA NVLink Fusion Ecosystem, Accelerates Photonic Interconnect Strategy for AI Data Centers with \$850M Funding at \$4.4B Valuation

#31 Scantinel Photonics, Now Part of MicroVision, Commercializes FMCW LiDAR-on-Chip with Over 300m Range for Autonomous Driving

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#35 Luminar Technologies Files for Bankruptcy, Volvo Completely Drops LiDAR from EX90 and ES90 Models, Offers Owner Compensation

#36 Ghent University and imec Pioneer Heterogeneous Integration in Silicon Photonics with Micro-Transfer Printing

#37 U.S. Representative Moolenaar Warns of Chinese LiDAR National Security Risks in CNBC Report, Proposes Phase-Out Legislation

#38 NVIDIA and Broadcom Commence Mass Production of Co-Packaged Optics (CPO) Switches: Poised to Cut Data Center Power Consumption by Up to 3.5x

#39 Nano-Printed Scaffolds Enable Direct Molecular Access to Quantum Photonics, Advancing Sensing Capabilities

#40 Physics and Promise of Photonic Quantum Computing: PsiQuantum's Approach Utilizing Photons as Qubits

#41 U.S. Naval Research Laboratory Accelerates Quantum Innovation with New Quantum Materials and Integrated Photonic Devices

#42 Photonics21 Advocates for Preventive Medicine in Europe: Leveraging AI and Photonics for Early Disease Detection and Personalized Healthcare

#01 Broadcom Initiates Mass Production of 800G CPO Switch ASICs for Next-Gen AI/HPC Data Centers, Slashing Power and Latency

Published July 29, 2026 Photonics News Weekly USA



OVERVIEW

Leading semiconductor manufacturer Broadcom has commenced mass production of its 800G Co-Packaged Optics (CPO) switch ASICs, specifically designed for AI and HPC data centers. This innovative ASIC integrates CPO optical engines with a retimer-less design, drastically reducing overall system power consumption and data latency. Initial deployments are targeted at next-generation AI clusters for major cloud providers, promising significant contributions to high-speed data processing and improved power efficiency, thereby accelerating AI infrastructure cost reduction and performance enhancement.

Key Findings

Broadcom, a prominent semiconductor manufacturer, has announced the commencement of mass production for its 800G Co-Packaged Optics (CPO) switch ASICs. These ASICs are engineered for next-generation Artificial Intelligence (AI) and High-Performance Computing (HPC) data centers, integrating CPO optical engines in a retimer-less design that significantly reduces power consumption and data latency compared to traditional electrical interconnects. This advancement is critical for achieving the ultra-high-speed and energy-efficient data transmission demanded by modern AI workloads.

Technical Details

The Broadcom 800G CPO switch ASIC leverages cutting-edge silicon photonics technology co-packaged with CMOS switching circuitry within a single module. This co-packaging approach minimizes signal degradation and power loss typically associated with long-distance electrical traces on printed circuit boards. By eliminating retimers, the design streamlines signal processing, leading to a substantial reduction in end-to-end latency while simultaneously improving overall data center power efficiency. This technology is poised to resolve GPU-to-GPU communication bottlenecks in AI clusters and large language model (LLM) training environments, which require terabit-scale bandwidth.

Background & Context

The explosive growth of AI and HPC has placed unprecedented demands on data center network performance and power efficiency. Traditional electrical interconnect solutions are increasingly struggling with power consumption and signal attenuation as data rates climb into the gigabit and terabit ranges. CPO technology addresses these challenges by placing optical transceivers much closer to, or even within the same package as, the switch ASICs, thus bridging the gap between electrical and optical domains. Broadcom's move to mass production signifies a critical transition of CPO from a research concept to a commercially viable and scalable solution for data center infrastructure.

Strategic Significance & Outlook

Initial deployments of Broadcom's 800G CPO switch ASICs are anticipated within the next-generation AI clusters of leading cloud providers. This will directly translate to faster AI model training times and enhanced inference performance, thereby accelerating the evolution of AI services globally. Furthermore, the significant reduction in power consumption will contribute to lower data center operational costs and reduced environmental impact. As the industry continues its shift towards optical interconnects, CPO technology is expected to become a standard for future data center architectures, with continuous advancements in density and speed. Broadcom is solidifying its position as a pivotal enabler of AI-era infrastructure.

Source: <https://www.photonicsnews.com/800g-cpo-ai-datacenter-switch-asic-mass-production-20260729>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#02 NVIDIA Integrates Next-Gen Silicon Photonics Optical Interconnects to Boost GPU Communication for Large-Scale AI Models

Published July 27, 2026 HPC Wire United States



OVERVIEW

NVIDIA has announced the adoption of a new generation of optical interconnect technology for its upcoming GPU clusters, significantly enhancing chip-to-chip and board-to-board optical connectivity. This technology is specifically designed to maximize bandwidth and minimize latency between GPUs, crucial for training large-scale AI models. Built on silicon photonics, it promises substantial improvements in power efficiency, thereby dramatically boosting the scalability and performance of AI computations and resolving critical bottlenecks in AI development.

Key Findings

NVIDIA has unveiled its plan to integrate a new generation of optical interconnect technology into its forthcoming GPU clusters. This strategic move aims to significantly enhance optical connectivity at both chip-to-chip and board-to-board levels, specifically addressing the paramount need for maximized bandwidth and ultra-low latency between GPUs in the context of large-scale AI model training. This silicon photonics-based solution is also expected to deliver substantial improvements in power efficiency compared to traditional electrical wiring.

Technical Details

The new optical interconnect technology is engineered to unlock the full computational potential of NVIDIA's GPUs. High-speed communication between GPUs is directly correlated with the efficiency of large-scale AI model training, where data transfer rates between chips frequently become a bottleneck, especially for models comprising trillions of parameters. NVIDIA's adopted silicon photonics technology facilitates data transfer using light signals, thereby transcending the limitations of electrical signals to achieve superior bandwidth and reduced latency. This enhancement will boost the efficiency of thousands of GPUs interacting within a cluster, enabling significantly shorter AI training times. Furthermore, the reduction in power consumption will contribute to lower data center operating costs and decreased cooling requirements, making AI infrastructure more sustainable.

Background & Context

The relentless evolution of AI demands increasingly larger models and more complex datasets, leading to a continuous expansion in the scale of GPU clusters. However, conventional copper-based electrical interconnects are increasingly struggling to keep pace due to inherent limitations in signal degradation, power consumption, and physical routing constraints. Consequently, the transition to optical interconnect technologies, such as silicon photonics, has become an urgent imperative for the AI/HPC industry. NVIDIA's announcement marks a crucial milestone, signifying that a major player in AI infrastructure recognizes the critical importance of optical communication and is actively integrating it into its cutting-edge GPU architectures.

Strategic Significance & Outlook

The integration of NVIDIA's new generation optical interconnect technology will empower AI researchers and engineers to develop and train even larger and more sophisticated models. This is expected to accelerate new AI breakthroughs and foster applications across diverse fields such, as autonomous driving, medical diagnostics, and scientific computing. Moreover, improved power efficiency is indispensable for sustainable AI development. NVIDIA's initiative is likely to spur other GPU manufacturers and AI hardware vendors to invest further in optical interconnect technology, thereby driving industry-wide innovation. This represents a pivotal step towards establishing new standards for computing infrastructure in the AI era.

Source: <https://www.hpcwire.com/nvidia-new-optical-interconnect-gpu-20260727>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#03 Ayar Labs Accelerates Commercial Deployment of Optical I/O Chiplets to Revolutionize AI/HPC Performance, Breaking Data Center Bottlenecks

Published July 26, 2026 Lightwave Online United States



OVERVIEW

Ayar Labs has announced new partnerships to accelerate the commercial deployment of its silicon photonics-based optical I/O chiplets. This technology directly integrates optical interconnects with CPUs and GPUs, eliminating traditional electrical interconnect bottlenecks and dramatically boosting AI/HPC system performance. It fundamentally addresses data center challenges related to bandwidth, latency, and power consumption, laying the groundwork for next-generation AI infrastructure. The company is intensifying its mass production efforts to achieve widespread adoption.

Key Findings

Ayar Labs has announced significant new partnerships aimed at accelerating the commercial deployment of its silicon photonics-based optical I/O chiplets. This groundbreaking technology directly integrates optical interconnects with high-performance semiconductors such as Central Processing Units (CPUs) and Graphics Processing Units (GPUs). By doing so, it fundamentally eliminates the critical bottlenecks of bandwidth, latency, and power consumption inherent in traditional electrical connections, thereby enabling a dramatic leap in the performance of Artificial Intelligence (AI) and High-Performance Computing (HPC) systems.

Technical Details

Ayar Labs' optical I/O chiplets employ an 'in-package optics' approach, where optical transceivers are placed adjacent to or within the same package as the processor chip. This architecture significantly shortens the distance electrical signals must travel on a printed circuit board, minimizing signal degradation and power loss. The result is ultra-high bandwidths reaching several terabits per second and incredibly low latencies in the picosecond range. This innovation is particularly crucial for addressing data transfer bottlenecks between GPUs and CPUs in large-scale AI model training and data-intensive HPC applications, boosting overall system throughput. Silicon photonics, being highly compatible with existing semiconductor manufacturing processes, offers cost-effective scalability for mass production.

Background & Context

In modern data centers, the explosive growth of AI and HPC workloads has led to continuous improvements in CPU and GPU computational power. However, the interconnects linking these processors have increasingly become a limiting factor in overall system performance. Electrical interconnects face inherent physical limitations in transmission distance and bandwidth, while also experiencing escalating power consumption as speeds increase. This 'I/O wall' problem is one of the most significant challenges in AI-era data center design. Ayar Labs' optical I/O chiplets are garnering substantial industry attention as a promising solution to break through this I/O wall. The technology's practical utility has been validated through collaborations with industry giants like Microsoft and Intel.

Strategic Significance & Outlook

The accelerated commercial deployment of Ayar Labs' optical I/O chiplets is set to drive a performance revolution in AI/HPC within data centers and cloud infrastructure.

Widespread adoption of this technology will enable the development of more complex and larger-scale AI models, promising breakthroughs in fields such as autonomous driving, drug discovery, and climate change modeling. Furthermore, the improved power efficiency will contribute to reduced data center operational costs and carbon emissions, fostering the realization of sustainable computing. Through its new partnerships, Ayar Labs aims to strengthen its mass production capabilities and accelerate the proliferation of this foundational technology, which will underpin the next generation of AI-driven society.

Source: <https://www.lightwaveonline.com/ayar-labs-optical-io-chiplet-commercial-20260726>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#04 NTT Announces Opto-Electronic Convergence Breakthrough within IOWN Initiative: Paving Way for Ultra-High-Speed, Low-Power Next-Gen Computing and Networking

Published July 25, 2026 TechJapan Daily Japan



OVERVIEW

NTT has announced a significant breakthrough in opto-electronic convergence technology as part of its Innovative Optical and Wireless Network (IOWN) initiative. This innovation dramatically improves the conversion efficiency between optical and electrical signals, enabling substantial power reduction and ultra-high-speed communication for next-generation computing and networking. Expected applications include data center interconnects and edge computing, promising to overcome the power wall in data communication and processing for a sustainable information society.

Key Findings

NTT has announced a groundbreaking breakthrough in opto-electronic convergence technology under its Innovative Optical and Wireless Network (IOWN) initiative. This technological innovation dramatically enhances the mutual conversion efficiency between optical and electrical signals, enabling significant power reductions and unprecedented ultra-high-speed communication in next-generation computing and networking systems. This development is crucial for resolving information processing bottlenecks in an era of explosive data growth.

Technical Details

The opto-electronic convergence breakthrough presented by NTT is particularly notable for its extremely high-density integration of optical and electrical circuits. Historically, the conversion between optical and electrical signals has been a major source of energy loss and a primary consumer of power in data centers and telecommunication networks. NTT researchers have successfully improved this conversion efficiency substantially and minimized associated delays by combining unique material science and device structure designs. While specific figures were not disclosed, the achievement suggests the realization of devices capable of equivalent or superior data transfer capabilities at a fraction of the power consumption of existing technologies. This technology is expected to be applied to co-packaged optics (CPO) that directly integrate optical interfaces into processors like CPUs and GPUs, as well as to improve transmission efficiency across wide-area optical networks.

Background & Context

The IOWN concept, advocated by NTT, envisions a future communication infrastructure centered on the All-Photonics Network (APN), aiming for enhanced power efficiency, increased capacity, and reduced latency. With the proliferation of technologies such as AI, IoT, and 5G/6G, data centers and network infrastructures worldwide process immense volumes of data, consuming colossal amounts of electricity. Advances in opto-electronic convergence technology are recognized as one of the most critical elements to overcome this power problem and the limitations of data processing capabilities. This achievement by NTT marks a significant step for Japan in demonstrating global leadership in information and communication technology development, with expectations for standardization and widespread adoption through international partnerships.

Strategic Significance & Outlook

NTT's opto-electronic convergence breakthrough will bring revolutionary impacts, particularly in inter-server connections within data centers and real-time data processing in edge computing. The dramatic reduction in power consumption will not only significantly lower data center operating costs but also contribute to global warming countermeasures. Furthermore, ultra-high-speed, low-latency communication will form the foundation for future services such as autonomous driving, remote medicine, smart cities, and the metaverse. NTT plans to further advance demonstration experiments based on this technology, strengthening collaboration with industries both domestically and internationally towards the full-scale social implementation of the IOWN concept by 2030. This achievement holds the potential to drive a new paradigm shift in information and communication technology.

Source: <https://www.techjapandaily.com/ntt-iown-optoelectronic-breakthrough-20260725>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#05 Marvell Begins Initial Sample Shipments of 1.6T LPO Transceivers for AI/HPC Clusters, Reducing Data Center Power and Cost

Published July 24, 2026 Data Center Dynamics United States



Marvell begins early sample shipments of 1.6T LPO transceivers for AI/HPC: Reducing data power consumption and costs

Published July 24, 2026
Data Center Dynamics



OVERVIEW

Marvell has initiated initial sample shipments of its 1.6T Linear Pluggable Optics (LPO) transceivers, designed for AI and High-Performance Computing (HPC) clusters. These LPO modules significantly reduce power consumption and cost by eliminating the need for internal retimers, addressing the demands of next-generation data centers. Through providing evaluation samples to key customers, Marvell is steadily preparing for market launch, contributing to the efficiency and reduced deployment costs of AI infrastructure.

Key Findings

Marvell has announced the commencement of initial sample shipments for its 1.6T Linear Pluggable Optics (LPO) transceivers, specifically engineered for Artificial Intelligence (AI) and High-Performance Computing (HPC) clusters. This innovative LPO module adopts a 'retimer-less' design, which eliminates the need for an integrated retimer function, leading to substantial reductions in power consumption and cost compared to traditional pluggable optics. This represents a critical step towards alleviating the power load and economic burden on data centers driven by ever-increasing AI workloads.

Technical Details

Marvell's 1.6T LPO transceivers are characterized by an architecture that does not require high-performance Digital Signal Processing (DSP) retimer chips. In conventional pluggable optics, DSP retimers are essential for ensuring long-distance transmission and signal integrity, but they also contribute to increased power consumption and cost. By omitting the DSP, LPO modules can potentially reduce their own power consumption by 30% to 50%. This enables a dramatic improvement in overall system power efficiency for short-reach connections within AI/HPC clusters, all while maintaining ultra-high bandwidth. This technology is optimized particularly for high-speed data transmission over relatively short distances, such as within and between racks (a few meters to tens of meters), maximizing benefits in environments where signal degradation remains within acceptable limits.

Background & Context

The rapid advancement of AI has driven unprecedented demands for bandwidth and power efficiency within data centers. Specifically, the training of large AI models necessitates enormous data movement between GPUs, requiring ultra-high-speed interconnects like 1.6T (terabit) solutions. Concurrently, power consumption constitutes a significant portion of the total cost of ownership (TCO) for data centers, making power reduction an urgent priority for operational efficiency. LPO technology has emerged in this context as a solution to achieve high speeds while balancing cost and power consumption, particularly for short-reach connections. Marvell's initiation of sample shipments indicates that this technology has entered a practical deployment phase in the data center market.

Strategic Significance & Outlook

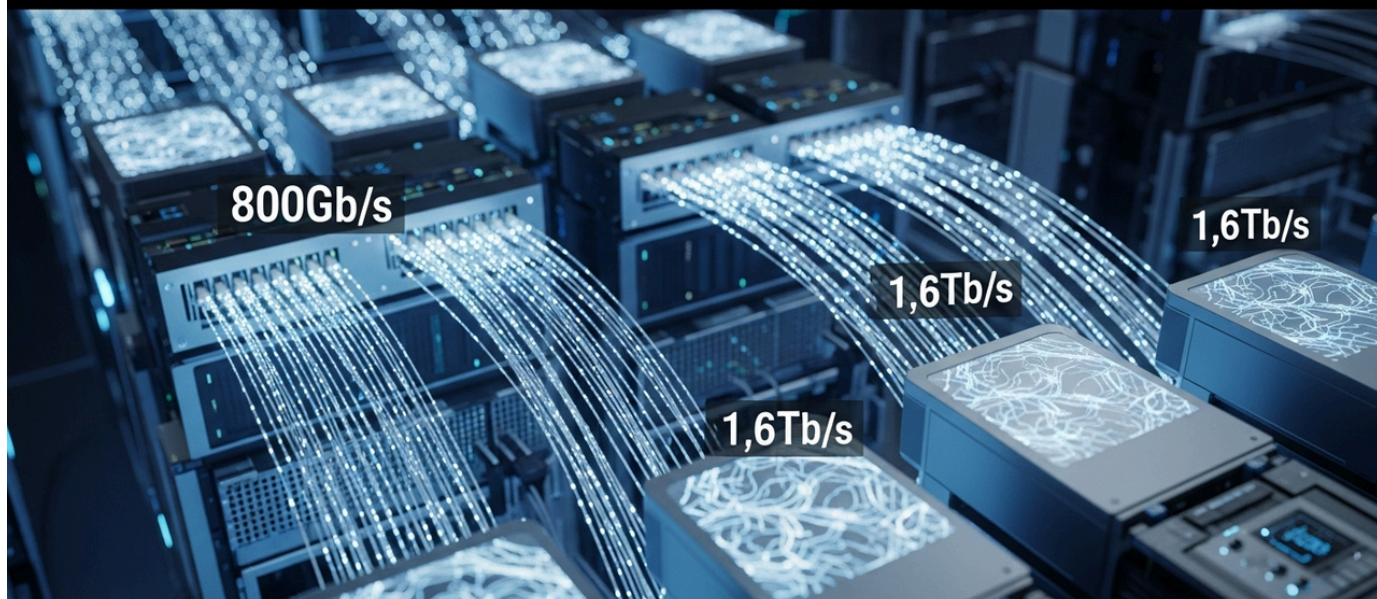
The market introduction of Marvell's 1.6T LPO transceivers is expected to profoundly impact the design and operation of AI/HPC data centers. The reduction in power consumption and cost will enable data center operators to scale up their AI infrastructure more extensively and economically. This, in turn, is anticipated to accelerate AI research and development, fostering the creation of new AI services and applications. Providing evaluation samples to key customers helps validate product reliability and compatibility, paving the way for widespread market adoption. Moving forward, LPO technology is poised to play a crucial role in the evolution of data center networks, coexisting with other optical interconnect technologies such as Co-Packaged Optics (CPO).

Source: <https://www.datacenterdynamics.com/marvell-1-6t-lpo-transceiver-samples-20260724>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#06 Ciena Boosts Optical Network Capacity by 30-50% with 800Gb/s and 1.6Tb/s Coherent Tech for AI Workloads

Published July 23, 2026 RCR Wireless News USA



OVERVIEW

Ciena announces a significant optical network capacity increase of 30-50% using new 800Gb/s C&L-band coherent pluggables and Hyperrail Photonics. This move directly addresses the unprecedented bandwidth demands from AI workloads, which have escalated traffic by 10-100x on specific routes. These technologies are crucial for improving connectivity, fiber density, and network efficiency to support the escalating requirements of AI data processing.

Key Findings

Ciena has successfully enhanced optical network capacity by 30-50% from existing infrastructure by deploying innovative technologies like 800Gb/s C&L-band coherent pluggables and Hyperrail Photonics. This advancement directly addresses the unprecedented bandwidth demands imposed by AI workloads, which have caused traffic to surge by 10-100 times or more on specific routes.

Technical and Performance Details

- **800Gb/s C&L-band Coherent Pluggables:** This technology enables the simultaneous transmission of multiple wavelengths over a single optical fiber pair, dramatically improving the utilization efficiency of existing fiber infrastructure. By supporting both C and L bands, the available spectral bandwidth is expanded, maximizing data transmission capacity.
- **Hyperrail Photonics:** An ultra-high-density optical integration technology that achieves high bandwidth, low latency, and power efficiency for both intra-data center and inter-data center connections. This allows for the efficient processing of the massive data flows required by AI workloads.
- **Capacity Increase:** Ciena reports that by combining these technologies, it is possible to extract an average of 30% to 50% more capacity from existing optical fiber installations. This contributes to optimizing capital expenditures by enabling network upgrades without the need for new fiber deployment.

Background and Industry Context

The recent evolution and proliferation of generative AI models have brought unprecedented data traffic and computational loads to data centers and communication networks. Unlike traditional human-centric traffic patterns, AI workloads necessitate ultra-high-speed, high-capacity data transfers within and between AI clusters. This context has led to a palpable 'bandwidth wall,' where existing copper and conventional optical technologies are insufficient, making the adoption of new optical communication technologies an urgent imperative. Ciena's efforts directly respond to this industry-wide challenge, contributing to the strengthening of communication infrastructure in the AI era.

Strategic Significance and Outlook

Ciena's technological innovation is indispensable for the continuous scaling of AI infrastructure. Further evolution towards 1.6T coherent optical technology is anticipated, which will further improve network connectivity, fiber density, and overall efficiency. This is expected to enable more sophisticated AI applications, dramatically enhance real-time processing capabilities, and accelerate innovation across diverse fields such as autonomous driving, medical imaging, and scientific computing. For investors, this signifies expanding growth opportunities for optical communication technology providers amid the surging demand for AI data centers.

Source: <https://www.verdict.co.uk/cisco-ponc-emea-2026-riding-the-wave-of-ai-traffic-demand-with-benefits-for-all/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#07 Photonic Circuit Switching and Frequency Combs Emerge to Break Copper Limits in AI Data Centers

Published July 29, 2026 Photonics Spectra USA



OVERVIEW

AI workloads are pushing cluster networks beyond the physical limits of copper interconnects, leading to the rise of optical circuit switching. This technology, particularly for domains exceeding 576 GPUs, addresses bandwidth density, reach, and power constraints via software-controlled, reconfigurable topologies. Advances in frequency combs, ultrastable lasers, and microwave/millimeter-wave photonics are also accelerating the development of next-generation optical technologies.

Key Findings

As AI workloads rapidly escalate, data center cluster networks are reaching the physical limitations of traditional copper interconnects, prompting a shift towards optical circuit switching. This technology, particularly vital for large-scale AI clusters exceeding 576 GPUs, offers a fundamental solution to challenges in bandwidth density, reach, and power consumption through software-controlled, reconfigurable topologies.

Technical Details and Applications

- **Optical Circuit Switching (OCS):** OCS overcomes the distance and bandwidth limitations of copper cabling in large-scale AI cluster interconnects. Its ability to dynamically reconfigure optical paths via software allows for network topology optimization based on specific AI workloads, achieving high bandwidth density and low latency. This significantly improves communication efficiency between GPUs, potentially reducing AI model training times.
- **Frequency Combs and Ultrastable Lasers:** These technologies play a crucial role in optical communications, precision measurement, and quantum technologies. Frequency combs enable the precise control of different laser frequencies, allowing for simultaneous transmission of multiple data channels and highly accurate time synchronization. Ultrastable lasers enhance the stability of frequency combs, leading to more reliable optical communication and sensing applications.
- **Microwave and Millimeter-Wave Photonics:** These technologies bridge wireless and optical communications, facilitating high-frequency data transmission. They are essential for efficiently processing high-speed, high-capacity data in 5G and next-generation wireless communication systems.

Background and Industry Context

The evolution of AI has revolutionized data center design and operations. The emergence of Transformer models and Large Language Models (LLMs) has led to an unprecedented expansion of AI workloads, making the immense data transfer between GPU clusters a significant bottleneck. Copper-based interconnects struggle with signal attenuation, power consumption, and physical cabling constraints, making further scaling difficult. In this context, optical technologies, especially optical circuit switching, are emerging as indispensable components for improving AI infrastructure scalability and efficiency, with the industry rapidly accelerating their adoption.

Strategic Significance and Outlook

Advances in technologies such as optical circuit switching, frequency combs, ultrastable lasers, and microwave/millimeter-wave photonics hold the potential to fundamentally transform AI data center architectures. These technologies are not only crucial for maximizing AI computational capabilities but are also expected to find applications across a wide range of fields, including precision measurement, quantum technologies, and next-generation wireless communication. Software-controlled reconfigurable optical networks, in particular, will flexibly adapt to the dynamic characteristics of AI workloads, laying the groundwork for future AI infrastructure. This will enable the development and deployment of more complex and high-performance AI models, accelerating a new wave of innovation.

Source: <https://www.photonics.com/Articles/Photonics-Spectra-Preview-for-October-2026/a72447>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#09 Infinera Secures Algar Telecom Contract with ICE6 800G Optical Engine and GX Series to Upgrade Subsea Network Capacity

Published July 23, 2026 ADVFN メキシコ



OVERVIEW

Algar Telecom has selected Infinera's ICE6 800G optical engine, GX series compact modular platform, and FlexILS open optical line system to modernize and expand its critical subsea network, including the Monet cable system. This deployment leverages advanced coherent and PIC-based technologies to dramatically enhance spectral capacity and reduce transmission costs per bit, enabling Algar Telecom to expand its market reach and foster new operator collaborations.

Background

The Latin American region is experiencing a rapid surge in data demand, propelled by accelerating digitalization, the proliferation of cloud services, and increasing AI workloads. Submarine cable systems, serving as the backbone of international communication, require enhanced capacity and reliability to sustain regional economic growth. As a pivotal telecommunications operator in this region, Algar Telecom is strategically upgrading its network infrastructure to meet these escalating demands and maintain its competitive edge. Infinera's solution directly addresses these critical market requirements, establishing a robust foundation for next-generation communication.

Key Findings

Infinera has announced that Algar Telecom, a prominent Brazilian telecommunications operator, has chosen Infinera's best-in-class coherent transport solution for the modernization and expansion of its extensive subsea network, encompassing the critical Monet submarine cable system. This strategic deployment is projected to significantly boost network capacity and reduce the transmission cost per bit for Algar Telecom.

Technical Details and Implementation

- **Infinera ICE6 800G Optical Engine:** This industry-leading 800G coherent optical engine is engineered to deliver unparalleled performance and efficiency. Its design is optimized for maximizing capacity and reach across long-haul and subsea cable systems, critical for high-bandwidth global connectivity.
- **GX Series Compact Modular Platform:** Distinguished by its high density, low power consumption, and inherent flexibility, this platform offers a scalable solution capable of adapting to diverse network requirements. It is built to ensure robust and reliable operation even within the challenging conditions of subsea network environments.
- **FlexILS Open Optical Line System:** This system provides an open and programmable optical layer, facilitating optimal performance and efficiency for Algar Telecom within a multi-vendor ecosystem. Furthermore, it offers the adaptability necessary to accommodate future technological advancements and evolutions.

- **Coherent and PIC-Based Technologies:** These core technologies are fundamental to maximizing the spectral efficiency of optical signals, thereby enabling the extraction of significantly more capacity from existing fiber infrastructure. The incorporation of Photonic Integrated Circuits (PICs) is pivotal for achieving system miniaturization, reducing power consumption, and enhancing overall system reliability and longevity.

Strategic Significance and Outlook

This collaboration is poised to enable Algar Telecom to significantly expand its network capabilities and unlock new market opportunities. The enhanced spectral capacity and reduced transmission cost per bit are expected to foster new operator partnerships and solidify the company's standing in both the domestic Brazilian and broader international markets. Infinera's advanced technological solutions will underpin sustainable growth, providing a robust foundation for the deployment of innovative future services, including advanced AI and IoT applications. For investors, this partnership underscores the increasing strategic importance of coherent optical technology within the subsea cable market and highlights the growth potential of leading providers such as Infinera.

Source: <https://mx.advfn.com/bolsa-de-valores/NASDAQ/INFN/noticias/89319137/algar-telecom-selects-infinera-best-in-class-coherent-transport-solution-to-mode>

#10 AI Data Centers Accelerate Shift to 800G/1.6T Optical Interconnects; OCI MSA Defines Common Optical Physical Layer

Published July 23, 2026 MLQ News USA



OVERVIEW

AI data centers are rapidly transitioning from copper to optical interconnects due to copper's speed limitations, with accelerated adoption of 800G pluggable transceivers and the introduction of 1.6T products. The Optical Compute Interconnect (OCI) Multi-Source Agreement, formed by AMD, Broadcom, Meta, Microsoft, Nvidia, and OpenAI, is defining a common optical physical interface for scale-up systems. This shift is critical for enabling the next generation of AI compute capabilities.

Key Findings

To meet escalating data processing demands, AI data centers are rapidly transitioning beyond the physical limits of copper interconnects towards optical interconnects. Currently, 800G pluggable transceivers are seeing rapid adoption, with next-generation 1.6T optical products beginning to enter the market. To standardize this transition and ensure interoperability within AI infrastructure, leading technology companies have formed the Optical Compute Interconnect (OCI) Multi-Source Agreement.

Technical Details and Standardization Efforts

- **Copper to Optics:** Traditional copper cables are reaching their limits in terms of signal attenuation and power consumption for the terabit-scale bandwidth, low latency, and long-distance transmission required by AI workloads. Optical fibers overcome these challenges, enabling data transmission at significantly higher speeds and efficiencies.
- **800G and 1.6T Pluggable Transceivers:** 800G pluggable transceivers are already widely adopted in AI data centers, offering easy integration into existing infrastructure. Furthermore, the development and market introduction of 1.6T products will double data transmission capacity, further enhancing the scalability of AI clusters. These devices deliver higher bit rates, longer reach, and lower power consumption.
- **OCI Multi-Source Agreement (MSA):** Industry leaders including AMD, Broadcom, Meta, Microsoft, Nvidia, and OpenAI have converged to establish the OCI MSA. This agreement aims to define a common optical physical interface specifically for scale-up systems—high-speed, high-capacity optical connections within a single rack or between adjacent racks. Standardization is crucial for ensuring interoperability, diversifying the supply chain, and reducing costs.

Background and Industry Context

The rapid advancement of generative AI and large language models (LLMs) has dramatically increased demands on communication speed and capacity between GPUs within data centers. AI clusters connecting hundreds to thousands of GPUs require each GPU to exchange massive amounts of data in real-time. Such demands are challenging for conventional data center infrastructure, making optical communication technology indispensable as a solution. This copper-to-optics shift represents one of the most critical infrastructure transformations facing the AI industry.

Strategic Significance and Outlook

The establishment of common standards by the OCI MSA will accelerate the adoption of optical interconnects in AI data centers. This will enable interoperability among optical components from various vendors, leading to supply chain stability and improved cost competitiveness. In the future, further advancements are expected in higher-density optical integration technologies and chip-level optical connections (Co-Packaged Optics, CPO). This evolution will support the further development of AI, enable the realization of larger and more complex AI models, and revolutionize diverse fields such as autonomous driving, healthcare, and scientific research.

Source: <https://mlq.ai/news/inside-the-copper-to-optics-shift-in-ai-data-centers/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#11 ZTE Achieves World-First EUCC Substantial-Level Cybersecurity Certification for Complete OTN Portfolio

Published July 29, 2026 MarketScreener China



OVERVIEW

ZTE's comprehensive OTN portfolio (backbone, metro, edge access) has become the first globally to secure EUCC Substantial-level cybersecurity certification under the EU Cybersecurity Act. This certification validates ZTE's leadership in global optical transport network security technology and demonstrates its robust commitment to compliance and cybersecurity. The achievement signifies a critical advancement for ensuring the reliability and safety of communication infrastructure worldwide.

Key Findings

ZTE's complete Optical Transport Network (OTN) portfolio, encompassing backbone, metro, and edge access, has achieved the world's first EUCC (EU Cybersecurity Certification) Substantial-level cybersecurity certification. This landmark achievement, granted under the EU Cybersecurity Act's unified certification scheme, firmly establishes ZTE's superior security technology in optical transport networks and underscores its strong commitment to international compliance.

Technical Details and Certification Significance

- **EUCC Substantial Level Certification:** This certification targets products and services demonstrating high resilience against cybersecurity threats. The Substantial level ensures robustness against common cyberattacks, making the certified portfolio suitable for deployment in critical infrastructure. ZTE's OTN portfolio met stringent security evaluation criteria across hardware, software, and system design.
- **Scope of OTN Portfolio:** ZTE's OTN portfolio covers all layers of optical communication infrastructure, from long-haul backbone networks and metropolitan area networks to edge access networks close to end-users. This comprehensive coverage ensures secure end-to-end data transmission across diverse network segments.
- **World's First Unified Certification Scheme:** The EUCC aims to standardize cybersecurity requirements for products and services within the EU market. ZTE's certification is a groundbreaking example, demonstrating the company's capability to operate in the global market, particularly the European market, with high security standards and transparency.

Background and Industry Context

With the proliferation of new technologies like 5G, cloud computing, and AI, cybersecurity risks for communication infrastructure have escalated. Optical transport networks, in particular, are vital for transmitting large volumes of sensitive data, making their security paramount for both national security and economic activity. The European Union has introduced stringent cybersecurity regulations to protect digital sovereignty and public trust, with the EUCC being a cornerstone of these efforts. ZTE's certification underscores the importance for global telecommunication equipment vendors to comply with such regulations.

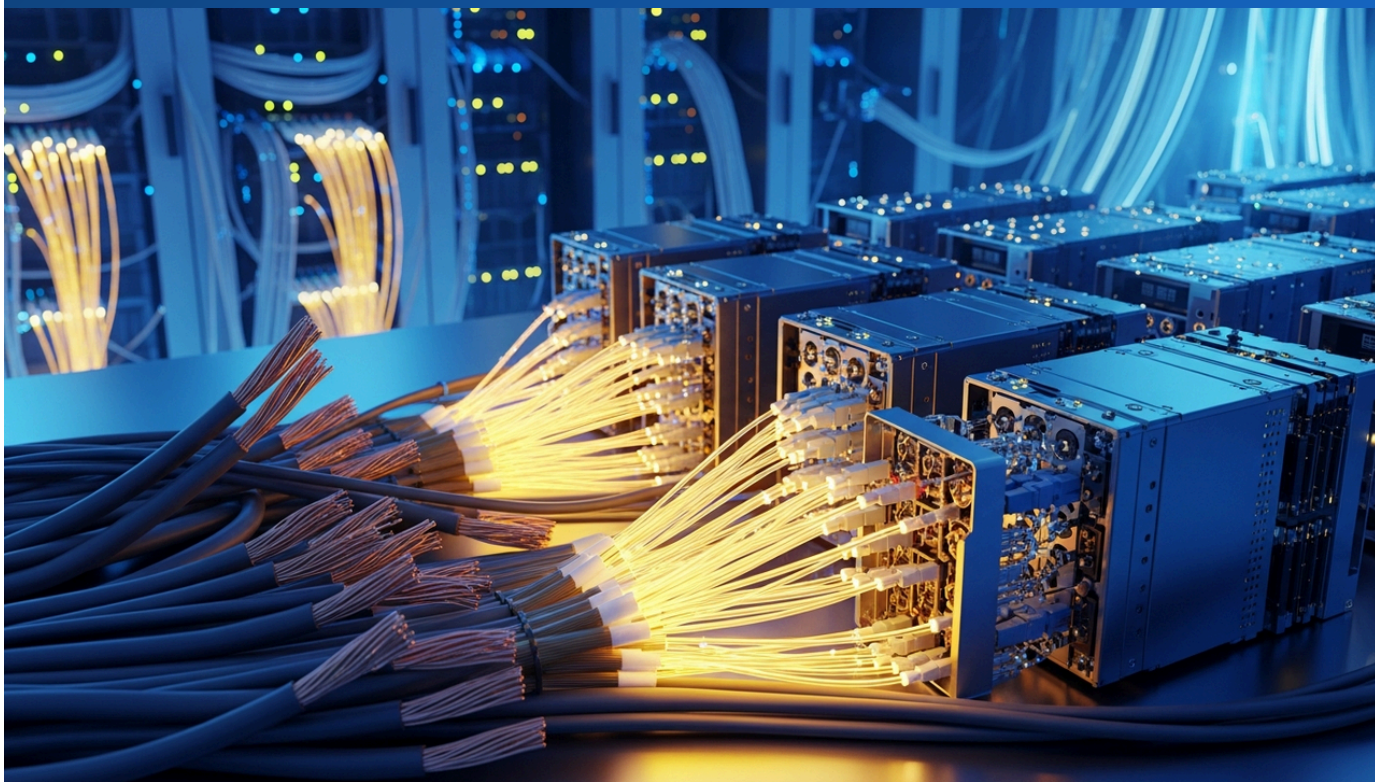
Strategic Significance and Outlook

The attainment of EUCC Substantial-level certification provides ZTE with a significant advantage in further strengthening its competitiveness in the global telecommunications market. This certification assures customers that ZTE's OTN products adhere to the highest cybersecurity standards, thereby enhancing trust, particularly in the European market. In the future, similar unified cybersecurity certification schemes may be introduced in other regions and countries, making ZTE's success a potential model for accelerating industry-wide security standardization. Investors should monitor the impact of cybersecurity certifications on market entry and growth for telecommunications equipment providers.

Source: <https://www.marketscreener.com/news/zte-s-complete-otn-portfolio-secures-eucc-substantial-level-certification-ce7f51d2df8efe21>

#12 Lumentum CEO Predicts Imminent Shift from Copper to Optical Interconnects in AI Data Centers, Citing InP Manufacturing as Key Bottleneck

Published July 29, 2026 Teahose USA



OVERVIEW

Lumentum CEO Michael Hurlston forecasts a shift from copper Ethernet cables to optical interconnects in AI data center server racks within 12 months due to physical limitations. The current inability of Lumentum's Indium Phosphide (InP) manufacturing capacity to meet soaring demand suggests optical components are becoming a structural growth bottleneck for AI infrastructure. This highlights the indispensable role of optical technology in shaping the future of AI computing and the urgent need for increased investment in the sector.

Key Findings

Lumentum CEO Michael Hurlston made a significant prediction that copper Ethernet cables within server racks in AI data centers will begin to be replaced by optical interconnects within the next 12 months, driven by physical limitations. This transition is underscored by Lumentum's current Indium Phosphide (InP) manufacturing capacity struggling to meet the surging AI-related demand, suggesting that optical components are becoming a structural growth bottleneck for AI infrastructure.

Technical Challenges and Indium Phosphide's Importance

- **Limits of Copper:** The immense data transfer rates and low latency demanded by AI workloads pose significant challenges for traditional copper cables. Issues such as signal attenuation, power consumption, and physical cabling constraints hinder performance improvements for intra-rack connectivity. CEO Hurlston's prediction indicates that these limits are now widely recognized, prompting the industry to seek new solutions.
- **Shift to Optical Interconnects:** Optical fibers vastly outperform copper in terms of high bandwidth, low loss, and long-distance transmission capabilities. High-speed communication between GPUs is critical in AI data centers, making optical interconnects an indispensable element for enhancing AI cluster scalability and efficiency.
- **Indium Phosphide (InP) Bottleneck:** Lumentum is a leading manufacturer of Indium Phosphide (InP) substrates and devices, which are crucial for producing high-performance optical components. InP serves as the foundational material for advanced optical devices such as high-speed lasers and modulators used in data centers. However, the current manufacturing capacity's inability to keep pace with the explosion in AI demand represents a critical bottleneck determining the speed of this technological transition.

Background and Industry Context

The evolution of generative AI models and the expansion of hyperscale data centers are revolutionizing data center infrastructure. AI clusters, connecting hundreds to thousands of GPUs, require terabit-scale data exchange in real-time between them, often making network bandwidth and efficiency a bottleneck. The industry is accelerating the adoption of co-packaged optics (CPO) and optical interconnects to resolve this challenge, but stable supply and expanded manufacturing capacity of foundational materials like InP are essential for their realization.

Strategic Significance and Outlook

This prediction presents both a significant business opportunity and an urgent challenge for the optical communications industry—the need for increased manufacturing capacity. Leading optical component suppliers like Lumentum will likely be compelled to make substantial investments in production capacity to meet AI demand. This will further accelerate innovation and adoption of optical technology, solidifying its status as an indispensable component in shaping the future of AI computing. Investors should pay close attention to companies with InP manufacturing capabilities and those offering optical interconnect solutions.

Source: https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQFEZPPEUcHFFXb90abVtXmKY-eNqC4rx8qmpnVOUC2tEErq6KKvIB8qqxxZU9xIKna0l99t7L4JHuTMmAtpkd36M0iPYiyNa_U5DN1-VuxTKPz_xJfFW9qwgLQWWCJMz57OGHBrOv7_WiKLo9ld9gG_n9_I20UqGRdrpHQsCZYkX6_H4SVI7eDA-skf6-zBvS8Y_zhz9kxnAT7KsGLYUEXXK_kIMwPJDIG-5F5PHlpHWCdrG1QCZzhJQ40QDD99nJVTElrr3qvg2B8GJX

#13 Algorithm-Designed Silicon Nitride Photonic Circuits Achieve Unprecedented Miniaturization and Optimal Performance for Next-Gen Sensing, Telecom, and Quantum Tech

Published July 24, 2026 Max Planck Institute / Harvard SEAS Germany / USA



OVERVIEW

Researchers at the Max Planck Institute and Harvard SEAS have developed ultra-compact, computer-designed photonic components like wavelength splitters and spatial mode sorters using inverse design on low-loss silicon nitride. These components exhibit optimized structures beyond human intuition, laying the groundwork for next-generation integrated photonic devices in high-precision measurement, telecommunications, and quantum technologies when combined with nonlinear optical circuits for frequency comb generation. This breakthrough marks a significant paradigm shift in photonic design.

Key Findings

Researchers from the Max Planck Institute and Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) have developed micro-scale, computer-designed photonic components using inverse design on low-optical-loss silicon nitride, achieving optimized structures beyond human intuition. This breakthrough in wavelength splitters, spatial mode sorters, and mirrors holds the potential to revolutionize next-generation integrated photonics.

Technical Details and Applications

- **Inverse Design Approach:** Unlike traditional photonics design, which relies on experience and intuition, this research employs computer algorithms to autonomously explore and optimize structures that meet specified functional goals (e.g., highly efficient light separation at a particular wavelength). This approach enables the discovery of smaller, higher-performance structures that humans might not conceive.
- **Silicon Nitride Platform:** Silicon nitride (SiN) is chosen for its low optical loss and high nonlinearity compared to silicon photonics, making it excellent for long-distance optical signal transmission and generating nonlinear optical effects. These properties are particularly advantageous for creating optical frequency combs.
- **Developed Components:** Fundamental elements such as wavelength splitters (separating light of different wavelengths), spatial mode sorters (separating spatial modes of light), and mirrors (precisely reflecting light paths) were achieved at unprecedented small sizes and efficiencies compared to conventional designs. These components pave the way for more densely integrated nonlinear and quantum photonic circuits.
- **Application Areas:** These miniaturized, highly efficient components, when used for generating optical frequency combs, are expected to have applications in ultra-precise measurements, high-speed telecommunications, and cutting-edge quantum technologies like quantum computing and quantum sensing.

Background and Industry Context

Photonics technology is becoming increasingly vital across diverse fields including information and communication, sensors, and healthcare. Integrated photonics, in particular, is key to miniaturizing, accelerating, and power-optimizing devices by integrating optical circuits onto a chip. However, traditional design methods have faced challenges with performance-size trade-offs. Inverse design, leveraging AI and machine learning, is emerging as a new paradigm to overcome these challenges and significantly expand the design space. This research clearly demonstrates the role of AI in the future of optical circuit design.

Strategic Significance and Outlook

Algorithmically designed photonic circuits are set to break the limitations of conventional design methods and accelerate the development of next-generation optical devices. This will lead to smaller, more functional optical chips, enabling various technological innovations from smartphones to supercomputers, autonomous vehicles, and medical diagnostic equipment. Especially in the realm of quantum technologies, integrated quantum photonic circuits represent a critical step towards realizing large-scale quantum computers and secure quantum communication systems. This technology is expected to push the frontiers of science and engineering, profoundly impacting society.

Source: <https://seas.harvard.edu/news/algorithm-designed-photonic-circuits-beyond-human-intuition-0>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#14 Zacks Equity Research: Cisco's Acacia Business Projects \$4B Revenue from Hyperscalers Driven by 800G Coherent Optical Device Demand

Published July 29, 2026 Zacks Equity Research USA

ZACKS Equity Research
Cisco's Acacia business going to revenue
increase in July 25, 2026, device demand.
ZACKS EQUJ.



OVERVIEW

Zacks Equity Research highlights strong growth for Cisco's Acacia business, driven by hyperscalers' deployment of 400G and 800G coherent optical devices, particularly 800G pluggables. Cisco projects approximately \$4 billion in AI infrastructure revenue from hyperscalers in fiscal year 2026, with robust traction also seen in its data center switching business. This performance underscores the significant positive impact of AI demand on the optical communications market.

Key Findings

According to the latest industry outlook from Zacks Equity Research, Cisco Systems' Acacia business unit is experiencing robust growth, significantly driven by hyperscalers' deployment of 400G and 800G coherent optical devices, with particularly strong demand for 800G pluggables. Cisco projects approximately \$4 billion in AI infrastructure-related revenue from hyperscalers in fiscal year 2026, and its intra-data center switching business also shows strong traction.

Details and Market Drivers

- **Acacia Business Growth:** Cisco acquired Acacia Communications, a leader in coherent optical interconnect technology, in 2021. This acquisition has become central to Cisco's optical networking strategy, addressing the increasing demand for coherent optical transmission in data center interconnect (DCI) and metro networks.
- **400G and 800G Coherent Optical Devices:** These high-capacity optical devices are essential for efficiently processing the massive data traffic generated by AI workloads. 800G pluggable devices offer long-distance transmission capabilities in a compact, low-power form factor, contributing to reduced operational costs and improved scalability in data centers.
- **Demand from Hyperscalers:** Hyperscalers like Google, Amazon, Microsoft, and Meta are investing billions in existing and new data center infrastructure for training and inference of large-scale AI models. This investment fuels a surge in demand for high-bandwidth optical communication components. Cisco's \$4 billion revenue projection highlights its strong market position in this sector and the direct impact of the AI boom on the optical communications market.
- **Intra-Data Center Switching Business:** AI workloads also demand high-speed, high-capacity communication between servers and GPUs within data centers. Cisco's intra-data center switching solutions address this demand, supporting AI infrastructure performance alongside optical interconnects.

Background and Industry Context

The explosive growth of AI is placing unprecedented pressure on all aspects of communication infrastructure, especially optical networking. Data volumes and speeds required now exceed what traditional network architectures can handle, and coherent optical technology has emerged as one of the most effective solutions to this challenge. The entire industry is accelerating investment in faster and more efficient optical transmission technologies, with integrated solution providers like Cisco benefiting significantly.

Strategic Significance and Outlook

The success of Cisco's Acacia business and the robust demand from hyperscalers underscore the critical importance of optical communications in the AI-driven economy. As AI models continue to grow in complexity and data volumes increase, the transition to next-generation coherent optical technologies beyond 1.6T will accelerate. This positions Cisco to further strengthen its leadership in the AI infrastructure market and enjoy long-term growth. Investors should closely monitor companies providing optical communication and networking solutions directly tied to AI demand.

Source: https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQGbHlgAIGYF8OM0XV0o5JzYU9vvGm_AO4G5NmDfKDaM8o8FMoEyVS7tSDiQkc5MW70kO0p8C

#15 Nokia Transforms Optical Fiber into Sensors with Coherent Optics and AI for Next-Gen Network Protection and Monitoring

Published July 28, 2026 Nokia.com フィンランド



OVERVIEW

Nokia has developed a groundbreaking technology that transforms optical fiber into high-precision sensors by leveraging coherent optical technology and advanced digital signal processing (DSP). This innovation extracts valuable information from minute changes in optical signals, providing real-time insights into physical phenomena and network status essential for next-generation network protection and monitoring. Integrating AI further elevates fiber from a passive data conduit to an intelligent, proactive monitoring platform, critical amidst escalating bandwidth demands from data centers and AI.

Background

In today's digital economy, exploding bandwidth demands from data centers and AI are concurrently elevating the importance of network infrastructure security and resilience. Protecting networks from threats—including physical intrusions and natural disasters, in addition to cyberattacks—is a pressing concern for telecommunication operators. Traditional monitoring systems are often limited to point-based detection, making it challenging to comprehensively cover vast networks. Fiber sensing technology offers a cost-effective and holistic solution to this critical challenge.

Key Findings

Nokia has demonstrated an innovative capability to transform optical fiber from a mere data transmission medium into a high-precision sensor by combining coherent optical technology with advanced Digital Signal Processing (DSP). This technology enhances next-generation network protection and monitoring by detecting minute changes in optical signals and converting them into real-time information about physical phenomena and network status.

Technical Details and Sensing Capabilities

- **Coherent Optical Technology:** This technology enables the detection and analysis of multiple characteristics of optical signals, including phase, amplitude, and polarization. This allows for extremely sensitive capture of subtle external factors (e.g., vibrations, temperature changes, pressure) that affect light passing through the fiber.
- **Advanced Digital Signal Processing (DSP):** Complex optical signal data detected by coherent receivers are processed digitally in real-time. DSP algorithms filter out noise, extract meaningful patterns, and identify physical changes such as physical intrusions into the fiber, precursors to breaks, or temperature increases.
- **Fiber Sensing Applications:** This technology provides the ability to continuously monitor physical and environmental changes along the entire path where the optical fiber runs. Applications are extensive, including infrastructure monitoring for railway lines, oil pipelines, and power lines; detection of seismic activity or ground subsidence; and even subtle vibration or temperature anomaly detection within data centers.

- **Role of AI:** AI is crucial for learning anomaly patterns from the vast amount of sensing data extracted by DSP, reducing false alarms while accurately identifying threats in real-time. This dramatically improves the intelligence and automated response capabilities of network protection systems.

Strategic Significance and Outlook

The integration of optical fiber sensing and AI holds the potential to become the standard for next-generation network protection. This technology will monitor the physical integrity of infrastructure and detect unknown threats early, minimizing service disruptions and reducing operational costs for telecom operators. In the future, more advanced AI models are expected to enable predictive maintenance from complex data patterns, further enhancing the network's self-healing capabilities. Investors should pay attention to the market expansion of this innovative technology, which bridges physical and digital security.

Source: https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQHmd6L4njcQzNQ_xzqNRzTv3kvC-NSt5J915mqFujN_MRA9HrYiGWevL27wtUMoEL2mGvgNOTskNb3MMieOi_gjwmBnJ2Xc4sLtu0IL143EGEMmXoz6EDXzK7hJCC11gejpbzvRoeXrQv2DZknhUaXxX0C7o_NxHafgFsfl6uS

Collected: July 31, 2026 | Automated Research System (Gemini API)

#16 Cisco's Bill Gartner on AI Data Center Optics Economics: 1.6T Devices Key to Unlocking Scalability, Not a Bottleneck

Published July 28, 2026 Light Reading USA



OVERVIEW

Cisco's Bill Gartner discussed the economic significance of 400G+ optical transceivers in AI data centers, outlining three tiers of AI infrastructure: scale-up (intra-rack), scale-out (inter-rack with 400G/800G pluggables), and scale-across (geographically dispersed data centers with coherent optics). The industry is transitioning to 1.6T optical devices, emphasizing that optical technology enables, rather than bottlenecks, AI network scaling.

Key Findings

Cisco's Bill Gartner provided a deep dive into the economic significance of 400G and beyond optical transceivers in the rapidly evolving landscape of AI data centers. He emphasized that optical devices are not a bottleneck to AI network scalability but rather a core enabler. The industry is already progressing from existing 800G to next-generation 1.6T optical devices.

Three-Tier Structure of AI Infrastructure and the Role of Optical Devices

- **Intra-Rack Connectivity (Scale-Up):** This refers to ultra-high-speed communication between GPUs or between CPUs and GPUs within a single server rack. It demands extremely high bandwidth and low latency over very short distances. In the future, chip-level optical interconnects (Co-Packaged Optics, CPO) and optical interposers are likely to become dominant.
- **Inter-Rack Connectivity (Scale-Out):** This involves connections between multiple racks within the same data center or between adjacent data centers. Here, 400G and 800G pluggable optical devices play a primary role. These devices offer excellent bandwidth, adequate reach, and power efficiency, enabling the horizontal expansion of AI clusters.
- **Geographically Dispersed Data Center Connectivity (Scale-Across):** This refers to long-distance connections between data centers located in different geographical locations. Coherent optical connectivity is indispensable here, facilitating wide-area, high-speed, high-capacity communication for distributed training and inference of large AI models, as well as disaster recovery.
- **Transition to 1.6T Optical Devices:** Gartner noted that the industry is already transitioning to 1.6T optical devices, a natural evolution to cope with the continuous increase in AI workloads. This will enable further bandwidth expansion and efficiency improvements.

Background and Industry Context

Since the advent of generative AI models, AI training and inference have demanded unprecedented data processing capabilities and network bandwidth from data center infrastructure. Traditional network architectures and copper interconnects struggle to keep pace with this surging demand, making optical communication technology an emerging solution. Data center operators are seeking ways to efficiently scale AI infrastructure while balancing performance, cost, and power consumption. Optical devices offer a cost-effective means to address these challenges.

Strategic Significance and Outlook

As AI continues its relentless evolution, the importance of optical devices will only grow. The proliferation of 1.6T optical devices will shape the next phase of AI infrastructure, enabling the realization of larger and more complex AI models. In the future, further integration and miniaturization of optical technologies (e.g., chip-to-chip optical interconnects) are expected to bring further transformation to data center design and operations. For investors, opportunities are expanding in optical communication technology providers that enable AI infrastructure scaling, particularly those leading the development of high-speed, high-capacity optical devices.

Source: <https://www.datacenterfrontier.com/machine-learning/podcast/55394057/ai-clusters-and-the-new-economics-of-data-center-optics-a-conversation-with-ciscos-bill-gartner>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#17 Japanese Consortium Launches Distributed AI Processing Infrastructure Trial Linked to KYOJO CUP, Utilizing All-Photonics Network over Power Grid Fiber

Published July 27, 2026 IBTimes JP Japan



OVERVIEW

A consortium including Nautilus Technologies, IJ, TEPCO Power Grid, Chubu Electric Power Grid, Fujitsu, and 1FINITY has initiated a demonstration project for next-generation distributed AI processing infrastructure. This project leverages fiber optics owned by power companies and communication equipment from Fujitsu and 1FINITY to build an All-Photonics Network (APN), validating the efficacy of distributed AI processing. Notably, 1FINITY's optical network interface card (NIC) aims to directly connect servers over 100km via optical signals, addressing distance and latency challenges for future AI computing.

Key Findings

A consortium comprising Nautilus Technologies, Internet Initiative Japan (IIJ), TEPCO Power Grid, Chubu Electric Power Grid, Fujitsu Limited, and 1FINITY has jointly launched a demonstration project for next-generation distributed AI processing infrastructure. This project aims to build an "All-Photonics Network (APN)" by combining existing optical fiber networks owned by electric power companies with advanced communication equipment from Fujitsu and 1FINITY, thereby validating the effectiveness of geographically distributed AI processing.

Technical Details and Demonstration Content

- **All-Photonics Network (APN):** An APN transmits and processes data entirely as optical signals, minimizing electrical conversions to achieve ultra-low latency and high bandwidth. This project utilizes the extensive optical fiber network of electric power companies to construct the APN.
- **1FINITY Optical Network Interface Card (NIC):** This NIC, currently under development by 1FINITY, directly connects servers to the network via optical signals, enabling direct server-to-server communication over distances of 100km or more. This capability allows remote data centers or AI resources to operate as if they were co-located.
- **Distributed AI Processing:** By distributing AI processing across multiple data centers and edge devices, the project aims for efficient utilization of computing resources, reduced latency, and enhanced data security. The demonstration specifically validates how large-scale AI model training and inference tasks are efficiently executed over the APN.
- **Collaboration with "KYOJO CUP":** Data from the "KYOJO CUP" women's motor race will be utilized for building the demonstration environment and acquiring data. This enables the evaluation of distributed AI processing performance in real-time environments, such as motorsport.

Background and Industry Context

With the advancement of AI technology, the demands for computational resources have exponentially increased. The emergence of AI models too large for single data centers and edge AI applications requiring low latency has driven the need for geographically distributed AI processing. The optical fiber networks owned by electric power companies represent a vast infrastructure spanning across Japan, holding significant potential for building new ultra-high-speed, low-latency communication foundations. This initiative also contributes to the concretization of Japan's proposed IOWN concept.

Strategic Significance and Outlook

The success of this demonstration project marks a crucial step towards realizing distributed AI processing infrastructure. Direct optical server-to-server connections over distances exceeding 100km will revolutionize inter-data center collaboration and significantly accelerate the development of next-generation technologies like AI, IoT, and 5G. In the future, infrastructure combining such APNs and optical NICs is expected to foster new service creation in areas such as autonomous driving, smart cities, digital twins, and advanced medical care, contributing to Japan's enhanced digital competitiveness. Investors should watch for new market opportunities arising from the convergence of power infrastructure and communication technology.

Source: <https://jp.ibtimes.com/nautilus-fujitsu-launch-kyojo-cup-linked-distributed-ai-network-trial-103070>

#18 Nokia Revolutionizes Optical Network Operations with AI-Assisted Automation and ICE-X Pluggable Coherent Optics for Reduced TCO and Enhanced Resilience

Published July 28, 2026 Nokia フィンランド



OVERVIEW

Nokia is spearheading a transformation in optical network operations by integrating AI-assisted automation with its ICE-X 100G/400G pluggable coherent optical devices. Leveraging WaveSuite and Transcend platforms, this solution enables closed-loop operations—such as autonomous capacity expansion and dynamic energy optimization—to drastically enhance network efficiency, scalability, and resilience. This strategic approach significantly reduces total cost of ownership while empowering operators to meet the burgeoning demands of the AI and 5G era.

Background

The rapid expansion of AI, 5G, and cloud services is placing unprecedented strain on global communication networks. Operators face a dual challenge: managing an explosion in data traffic, necessitating lower latency and higher reliability, while simultaneously battling escalating operational costs (OpEx) and the imperative to reduce energy consumption. To navigate this complex landscape, a fundamental shift is required from traditional manual network management to intelligent, AI-driven operations. Nokia is positioning its latest innovations to enable this crucial transformation, laying the groundwork for sustainable growth in the telecommunications sector.

Key Findings

Nokia is spearheading a significant evolution in optical network operations by synergistically integrating AI-assisted automation with its advanced ICE-X 100G/400G pluggable coherent optical devices. This combined solution enables "closed-loop operations," autonomously executing critical tasks such as network capacity expansion and dynamic energy optimization, leading to substantial reductions in operational expenditure (OpEx) and significantly enhanced network resilience.

AI-Assisted Automation with WaveSuite and Transcend

Nokia's WaveSuite and Transcend platforms are central to this transformation, continuously collecting and analyzing vast amounts of real-time network data. Leveraging sophisticated AI algorithms, these platforms derive optimal operational strategies, enabling dynamic optimization of optical paths based on evolving traffic patterns and granular device adjustments to minimize energy consumption. This dramatically reduces the need for manual intervention, thereby improving operational accuracy, efficiency, and consistency across the network.

ICE-X 100G/400G Pluggable Coherent Optical Devices

A cornerstone of Nokia's innovation, the ICE-X 100G/400G pluggable coherent optical modules represent a paradigm shift in network design. These compact, hot-swappable modules integrate directly into standard routers and switches, simplifying network architecture and significantly reducing capital expenditure (CapEx). Offering 100G and 400G transmission rates coupled with advanced coherent technology, they facilitate high-bandwidth, long-distance data transmission with remarkably low power consumption. This flexibility makes them ideal for diverse deployments, including metro, Data Center Interconnect (DCI), and long-haul networks, without requiring dedicated optical transport equipment.

Enabling Closed-Loop Operations for Enhanced Resilience

The integration of AI automation and ICE-X hardware culminates in a robust closed-loop operational system. This intelligent framework continuously monitors network status, with AI actively detecting and predicting potential issues—from traffic bottlenecks to optical signal degradation. It then automatically initiates corrective actions or proactive optimizations, significantly bolstering the network's self-healing capabilities and minimizing downtime during service disruptions. For instance, the system can automatically augment capacity on paths where overload is predicted or proactively adjust parameters to counteract detected signal degradation, ensuring continuous, high-quality service delivery.

Strategic Significance and Future Outlook

This approach to AI-assisted optical network operations is poised to be a pivotal accelerator for digital transformation within the telecommunications industry. Nokia's technology enhances network self-optimization, self-healing, and self-protection, enabling operators to deliver more services with fewer resources and adapt flexibly to a rapidly changing market environment. This creates avenues for new business models and operational efficiencies. Looking ahead, AI is expected to drive the realization of truly "autonomous networks" capable of optimizing the entire network lifecycle—from planning and design to deployment, operation, and maintenance—ultimately elevating the user experience and further advancing societal digitalization.

Collected: July 31, 2026 | Automated Research System (Gemini API)

#20 Nokia Reports 20% Optical Network Revenue Growth in Q2 FY 2026 Driven by AI/Cloud Demand, Announces €800-900M Investment in US Manufacturing Capacity

Published July 23, 2026 TelecomTV UK



OVERVIEW

Nokia announced a 20% year-over-year increase in optical network revenue in Q2 FY 2026, fueled by robust demand from AI and cloud sectors. To address soaring AI-driven growth, the company plans to invest €800-900 million in optical manufacturing capacity in 2026, including a new facility in San Jose, USA, and expanded test and packaging capabilities in Pennsylvania. This significant investment highlights Nokia's strategic commitment to securing its supply chain and strengthening market competitiveness.

Key Findings

Nokia reported a remarkable 20% year-over-year revenue growth in its optical networks business during Q2 FY 2026, driven by explosive demand from AI and cloud sectors. To cope with this surge in AI-led growth, the company announced plans to invest €800-900 million in enhancing its optical manufacturing capacity in 2026. This includes establishing a new facility in San Jose, USA, and bolstering test and packaging capabilities in Pennsylvania.

Performance and Investment Details

- **Optical Networks Revenue Growth:** Nokia's optical networks division recorded a 20% year-over-year revenue increase in Q2 2026, directly propelled by the rapid growth in data traffic due to the proliferation of AI and cloud services. This reflects strong demand for the company's solutions in Data Center Interconnect (DCI) as well as metro and long-haul optical transport.
- **Strategic Investment:** Nokia plans to invest approximately €800-900 million in optical manufacturing capacity in 2026, aiming to meet surging AI demand, strengthen its supply chain, and enhance market competitiveness. This investment specifically focuses on reinforcing its manufacturing footprint in the United States and includes the following concrete measures:
 - **New San Jose Facility:** Establishment of a new optical product manufacturing facility in San Jose, California, to expand production capacity.
 - **Pennsylvania Capacity Expansion:** Enhancement of testing and packaging capabilities at existing facilities in Pennsylvania to improve product quality control and production efficiency.
- **Integration with IP Networks:** Beyond optical networks, the IP networks division also showed robust growth. By positioning both divisions as core to its AI infrastructure strategy, Nokia is delivering high-performance, end-to-end solutions.

Background and Industry Context

The rapid proliferation of AI, particularly generative AI, is placing unprecedented demands on networks for faster speeds and higher capacities for data transfer between data centers. This has propelled the coherent optical transmission technology and pluggable optical device markets into an unprecedented growth phase, recognized as a 'supercycle.' Leading telecommunication equipment vendors like Nokia are compelled to accelerate strategic investments not only in R&D but also in manufacturing capacity to capture this demand. Geographic diversification and resilience enhancement of the supply chain are also crucial considerations amid rising geopolitical risks.

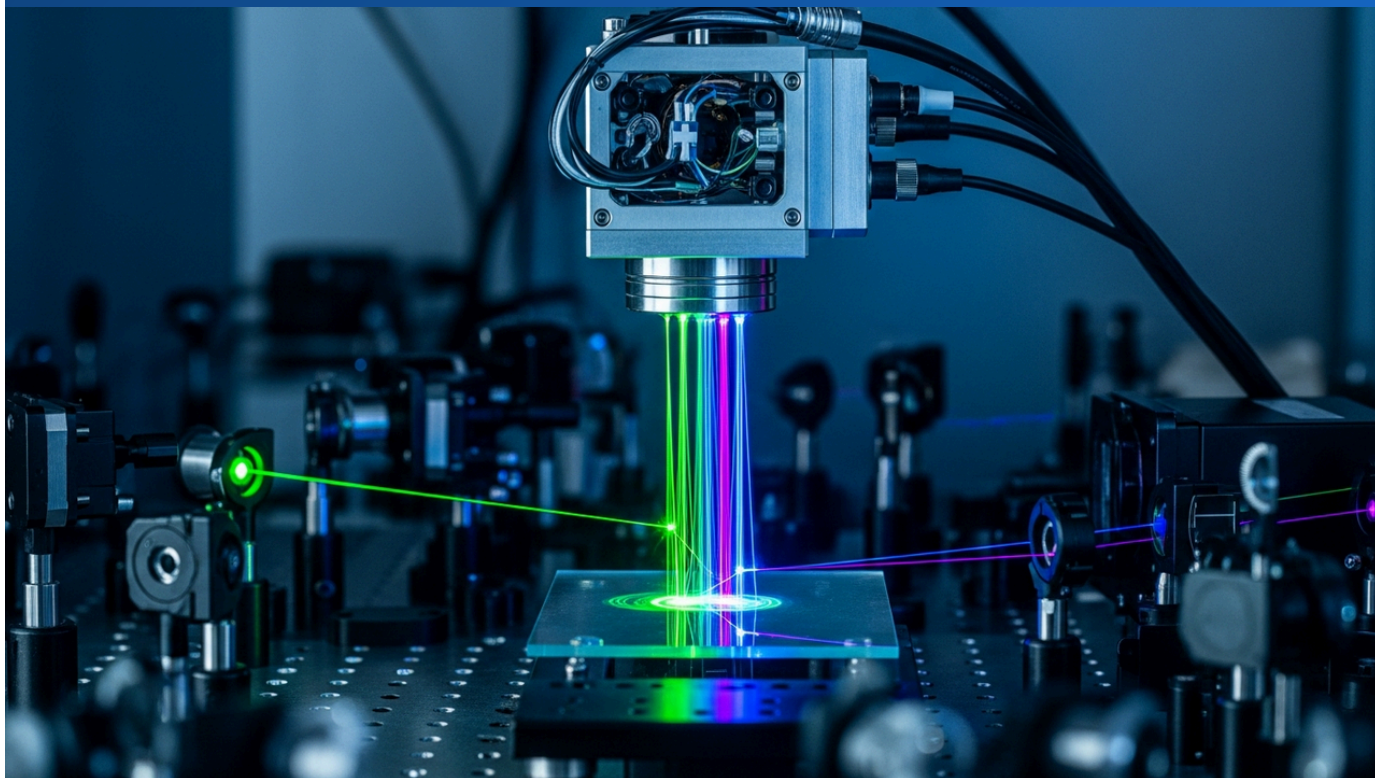
Strategic Significance and Outlook

Nokia's substantial investment in manufacturing capacity will solidify its position in the AI-driven optical network market. This is expected to ensure stable product supply to customers and expand market share. AI and cloud demand are projected to continue growing, and by positioning optical and IP networks at the core of its AI infrastructure strategy, Nokia is well-placed to capture long-term growth opportunities. Investors should closely monitor how such large-scale strategic investments contribute to improved profitability and enhanced market competitiveness.

Source: https://vertexaisearch.google.com/grounding-api-redirect/AUZIYQE5wt25VOApbPYP6wL5kyyRsq0afHgcMvLowsywT4O01gRkzZ5FbH_fdhiOdMn9ULjDfWdjZGdtglw_L_xYuYctV0M9pP2pZxL7Goe7Wj47IOCm7RK8VfLu5yyLUx55DTnukj-700gPo=

#21 Optical Frequency Comb-Based Single-Frame Spectral Interferometry Enables High-Speed, Simultaneous Multi-Parameter Measurement of Optical Flat Plates

Published July 28, 2026 APL Photonics | AIP Publishing USA



OVERVIEW

Researchers developed a high-speed, non-destructive system for multi-parameter measurement of optical flat plates using optical frequency comb-driven multi-beam spectral interferometry. This innovative system synchronously extracts thickness, refractive index, dispersion, and surface flatness from a single interference pattern. It promises high-precision measurements in precision optics manufacturing, optical sensing, and aerospace engineering, leveraging an integrated Mach-Zehnder interferometer to capture multiple signals simultaneously for enhanced efficiency and accuracy.

Key Findings

Researchers have developed a groundbreaking system for high-speed, non-destructive, multi-parameter measurement of optical flat plates, based on optical frequency comb-driven multi-beam spectral interferometry. This innovative system can simultaneously and accurately extract the thickness, refractive index, dispersion characteristics, and surface flatness of optical components from a single interference pattern. This advancement marks a significant step forward for precision optics manufacturing, optical sensing, and aerospace engineering.

Technical Details and Measurement Principles

- **Optical Frequency Comb:** At the heart of this system is the optical frequency comb, a collection of numerous discrete, equally spaced laser frequencies. It provides precise spectral information over a broad bandwidth, acting as a 'ruler' for simultaneously measuring multiple parameters.
- **Multi-Beam Spectral Interferometry:** An optical frequency comb is shone onto the optical flat plate being measured. The interference pattern generated between the reflected light and a reference light is then analyzed. Using multiple beams allows for the acquisition of interference signals containing richer information.
- **Utilization of Mach-Zehnder Interferometer:** The system employs an integrated Mach-Zehnder interferometer, which enables the simultaneous capture of multiple signals within a single interference pattern. This improves measurement speed, making it suitable for dynamic measurements or high-speed inline inspection in production lines.
- **Simultaneous Multi-Parameter Extraction:** The developed algorithm simultaneously and accurately calculates the physical thickness of the optical flat plate, the refractive index of the material, the dispersion (change in refractive index with light wavelength), and the surface flatness (minute irregularities on the surface) from a single spectral interference pattern.

Background and Industry Context

Quality control of precision optical components is crucial for determining the performance of many high-tech products, including laser systems, telescopes, cameras, and optical communication devices. Conventional measurement methods often require individual measurement of each parameter, which is time-consuming, costly, and sometimes destructive. There is a growing need for such multi-parameter simultaneous measurement technology, especially in modern manufacturing processes that demand high-speed and high-precision inline inspection. Optical frequency combs are attracting attention in precision measurement due to their excellent temporal and spectral coherence.

Strategic Significance and Outlook

This new measurement system has the potential to revolutionize quality control processes in precision optics manufacturing, significantly improving production efficiency. In the aerospace sector, it will contribute to ensuring the reliability of optical components for satellites and probes, and in optical sensing, it will facilitate the development of more sensitive and multifunctional sensors. In the future, it is anticipated that this technology will be further miniaturized and integrated, expanding into broader applications such as optical systems in smartphones and wearable devices, or precise inspection of quantum optical devices. For investors, this represents a notable new technological trend in the precision measurement and quality assurance markets.

Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQHaKqygQfczIQF_yAujEtichx-](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQHaKqygQfczIQF_yAujEtichx-MAKLU3NDwrEOal_NgScpWh2cJ_gmPeOBnRsooJkN20Hs_U6gqzer6Ohwy2CGLaXxYUeZOxFg41Ek8g2twmUESe)

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#22 AI Data Centers Rapidly Transition to Photonic Interconnects Beyond Copper Limits, Driven by 800G/1.6T Devices and OCI MSA Standardization

Published July 23, 2026 Tom's Hardware USA

Data centers of rapidly Mly wier limitations Photonic interconnects



800G/1.6T devices

800G/1.6T devices

OCI MSA

OCI MSA

OVERVIEW

AI data centers are rapidly migrating to photonic interconnects due to copper's physical limitations, with accelerating shipments of 800G pluggable devices and the introduction of 1.6T modules. The Optical Compute Interconnect (OCI) Multi-Source Agreement, founded by leading tech giants, is standardizing a common optical physical layer for scale-up systems, ensuring the scalability of AI infrastructure. This transition underscores the indispensable role of optical communication as a foundational technology for advancing AI.

Key Findings

The AI data center industry is rapidly accelerating its transition to photonic interconnects, driven by the physical limitations encountered with traditional copper interconnects. Shipments of 800G pluggable devices are surging, and next-generation 1.6T modules are beginning to emerge in the market. To facilitate this shift and ensure industry-wide interoperability, leading technology companies have formed the Optical Compute Interconnect (OCI) Multi-Source Agreement, actively defining a common optical physical layer.

Technical Details and Industry Standardization

- **Limitations of Copper Technology:** AI workloads demand several terabits per second of bandwidth and extremely low latency within GPU clusters. Copper cables face challenges such as signal attenuation, high power consumption, and physical cabling constraints when attempting to meet these requirements. Performance degradation of copper becomes particularly pronounced over longer intra-rack and inter-rack distances.
- **Advantages of Photonic Interconnects:** Optical fibers and photonic devices offer significantly higher bandwidth, lower signal loss, and greater energy efficiency compared to copper. This enables AI data centers to transmit vast amounts of data at high speeds, improving the efficiency of AI model training and inference.
- **800G and 1.6T Pluggable Devices:** 800G pluggable transceivers provide the flexibility to be easily integrated into existing network infrastructure, enabling capacity expansion for AI clusters. Furthermore, the introduction of 1.6T modules is a critical step to meet the bandwidth demands of next-generation AI applications. These devices achieve higher bit rates and energy efficiency.
- **OCI Multi-Source Agreement (MSA):** Industry giants including AMD, Broadcom, Meta, Microsoft, Nvidia, and OpenAI have formed the OCI MSA to define a common optical physical layer for scale-up systems (chip-to-chip, or connections between adjacent chips and racks). This standardization is crucial for guaranteeing interoperability, diversifying the supply chain, and enhancing cost efficiency in building large-scale AI infrastructure.

Background and Industry Context

The increasing complexity of generative AI and machine learning models is forcing fundamental changes in data center architectures. In AI clusters where hundreds to thousands of GPUs work in close collaboration, communication between nodes becomes a bottleneck that dictates overall performance. Traditional copper-dependent infrastructure cannot meet this need, compelling the AI industry to position optical communication technology as an 'essential element' and accelerate its adoption. This movement blurs the lines between the semiconductor and optical communication industries, fostering a new ecosystem.

Strategic Significance and Outlook

The establishment of common standards by the OCI MSA will further accelerate the adoption of photonic interconnects in AI data centers. This will improve interoperability among vendors, stimulate technological innovation, and lead to cost reductions. In the future, higher-density, lower-power optical integration technologies such as optical chiplets and Co-Packaged Optics (CPO) will be key to dramatically enhancing AI computing performance. This technological roadmap will support the further evolution of AI, bringing revolutionary impacts to diverse fields like autonomous driving, healthcare, scientific research, and virtual reality. Investors should recognize optical communication's role as the foundation for digital infrastructure in the AI era.

Source: <https://www.tomshardware.com/tech-industry/inside-optical-and-the-battle-for-scale-how-the-ai-industry-is-racing-to-integrate-photonic-interconnects>

#23 Cisco-Backed Eliyan Raises \$145M, Achieves \$1B Valuation to Solve AI Interconnect Bottlenecks with Electro-Optical Solutions

Published July 30, 2026 Tech Funding News UK



OVERVIEW

Silicon Valley startup Eliyan has raised \$145 million, including strategic investments from Cisco and Lumentum, pushing its valuation to \$1 billion. This funding will accelerate its expansion into electro-optical interconnect technology, addressing inter-chip and inter-rack communication bottlenecks in AI infrastructure. Eliyan claims to achieve comparable bandwidth using standard packaging, positioning it to significantly contribute to high-efficiency, high-bandwidth communication in the AI era.

Key Findings

Eliyan, a Silicon Valley startup, has successfully raised \$145 million in Series B funding, including strategic investments from major players like Cisco and Lumentum, catapulting its valuation to \$1 billion. This substantial capital injection is aimed at accelerating the expansion of its electro-optical interconnect technology to resolve the escalating bottlenecks in inter-chip and inter-rack communication within AI infrastructure.

Eliyan's Technology and Market Impact

- **Electro-Optical Interconnect Technology:** Eliyan is developing innovative interconnect technology that combines electrical and optical signals. This approach overcomes the limitations of traditional electrical wiring—speed, power consumption, and signal loss—for short to medium-range data transmission between chips and racks. The company claims to achieve bandwidth comparable to optical interconnects while utilizing standard packaging, offering significant advantages in terms of cost-efficiency and ease of deployment.
- **Addressing AI Infrastructure Bottlenecks:** Training and inference of large-scale AI models require thousands of GPUs to operate in parallel, exchanging vast amounts of data at high speeds. Conventional copper-based connections have made this communication a bottleneck, limiting the overall performance of AI clusters. Eliyan's technology is expected to alleviate this bottleneck, dramatically enhancing the scalability and efficiency of AI infrastructure.
- **Strong Investor Support:** Strategic investments from industry leaders like Cisco and Lumentum reflect strong market confidence in Eliyan's technology as essential for AI-era data center infrastructure. Achieving a \$1 billion valuation solidifies its unicorn status and indicates high future growth potential.

Background and Industry Context

The rise of generative AI, large language models (LLMs), and high-performance computing (HPC) is revolutionizing data center design and operation. Specifically, the data transfer speed between semiconductor chips like CPUs and GPUs has become a critical factor in determining overall system performance. Traditional electrical signal transmission faces issues of heat generation and signal degradation when operating at high frequencies, making a transition to optical connectivity inevitable. Eliyan's electro-optical interconnect technology offers a promising solution during this transition, delivering performance improvements while maintaining compatibility with existing infrastructure.

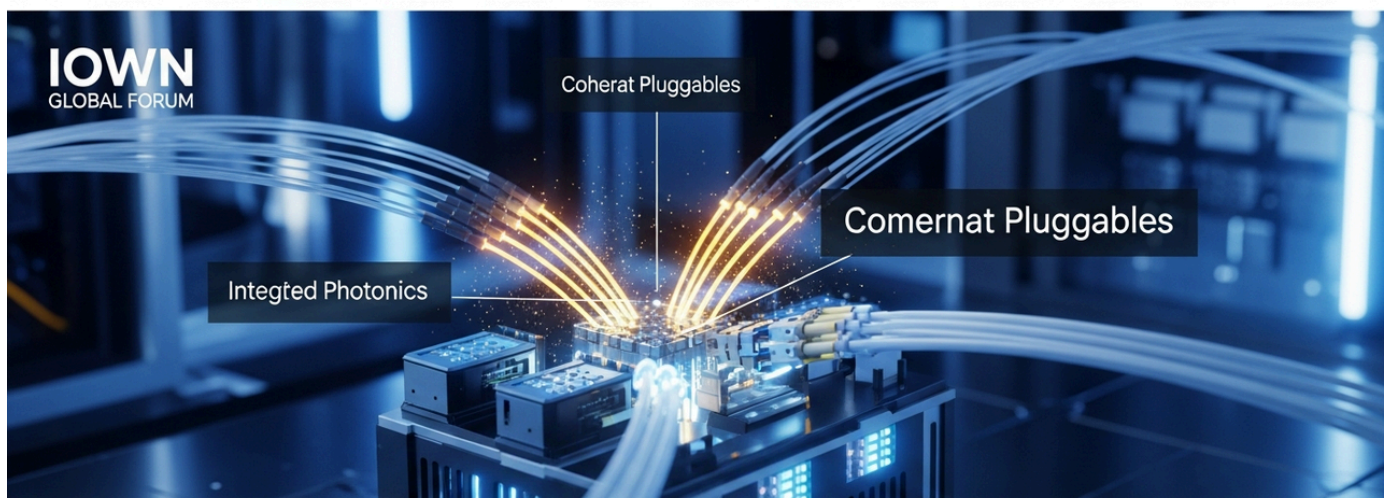
Strategic Significance and Outlook

This substantial funding round positions Eliyan to establish leadership in the electro-optical interconnect market and play a crucial role in shaping the future of AI infrastructure. The company's technology is expected to contribute to enhancing AI chip performance, reducing data center power consumption, and improving cost efficiency, thereby accelerating innovation across all AI-driven fields, including autonomous driving, healthcare, finance, and scientific research. For investors, opportunities are expanding in innovative startups developing foundational technologies for the AI era, and Eliyan could be at the forefront.

Source: <https://techfundingnews.com/cisco-backed-silicon-valley-startup-eliyan-raises-145m-at-1b-valuation-to-build-the-future-of-ai-interconnects/>

#24 IOWN Global Forum: Coherent Pluggables Drive AI Era Infrastructure Transformation by Enabling Long-Reach, High-Capacity Optical Connectivity at the Network Edge

Published July 27, 2026 IOWN Global Forum Japan



OVERVIEW

The IOWN Global Forum highlights how coherent pluggable devices are fundamentally transforming AI-era infrastructure by bringing long-reach, high-capacity optical connectivity closer to the network edge. These devices, leveraging powerful Digital Signal Processing (DSP), dramatically extend the distance optical signals can travel without complex processing or regeneration. This enables hub-and-spoke network operations across a broader infrastructure, facilitating a shift from human-scale to machine-scale latency and from best-effort to deterministic transmission.

Key Findings

The IOWN Global Forum underscored the potential of coherent pluggable devices to fundamentally transform network infrastructure in the AI era. These innovative devices facilitate the realization of more flexible, efficient, and low-latency networks by extending long-reach, high-capacity optical connectivity closer to the network edge. Crucially, powerful Digital Signal Processing (DSP) technology dramatically extends the transmission distance of optical signals, eliminating the need for complex optical signal processing or regeneration.

Technical Details and Infrastructure Impact

- **Coherent Pluggable Devices:** These modules integrate coherent optical technology (advanced optical modulation and demodulation utilizing phase, amplitude, and polarization) and Digital Signal Processing (DSP) into a small, standardized package that can be directly inserted into routers and switches. This enables efficient transmission of high-speed data, from hundreds of gigabits to terabits, over much longer distances (hundreds to thousands of kilometers) than conventional optical transmission technologies.
- **Edge Deployment of Long-Reach, High-Capacity Connectivity:** Traditionally, coherent optical transmission was limited to core and long-haul networks. However, pluggable form factors allow deployment to Data Center Interconnect (DCI), metro networks, and even the edge of access networks. This ensures that the massive data generated by AI workloads can be processed and transferred at high speeds closer to its source.
- **Transformation of Network Operations:** Advancements in DSP allow for digital compensation of optical signal degradation, eliminating the need for regenerators that convert optical signals to electrical signals for re-amplification. This simplifies network design and significantly reduces both capital (CapEx) and operational (OpEx) expenditures. Furthermore, hub-and-spoke network operations become feasible across a broader infrastructure, streamlining network management.

- **Enabling Deterministic Transmission:** Through low latency and precise transmission control, networks are transitioning from 'human-scale' latency (milliseconds) to 'machine-scale' latency (microseconds), evolving from best-effort to deterministic transmission. This is indispensable for AI, autonomous driving, industrial IoT, and other applications where real-time performance is critical.

Background and Industry Context

The rapid advancements in AI, 5G, and cloud computing are imposing unprecedented demands on network infrastructure. AI workloads, in particular, require high-speed processing of enormous data volumes and low-latency communication, pushing conventional networks to their performance limits. Against this backdrop, the IOWN (Innovative Optical and Wireless Network) concept aims to maximize the utilization of optical technology to realize power-efficient, high-speed, high-capacity, and low-latency networks. Coherent pluggable devices represent one of the core technologies within this IOWN vision.

Strategic Significance and Outlook

The proliferation of coherent pluggable devices will be key for telecommunication operators and data center operators to flexibly and efficiently meet the increasing demands of the AI era. This technology will accelerate network intelligence and automation, creating new opportunities for service provision. In the future, it is expected to lead to more densely integrated optical devices and the realization of 'autonomous optical networks' where AI self-manages the entire network, further promoting societal digitalization and efficiency. Investors should pay attention to the IOWN concept, driving AI-era infrastructure transformation, and the market growth of coherent pluggables as its core technology.

Source: <https://iowngf.org/why-coherent-pluggables-transform-infrastructure-for-the-ai-era/>

#25 University of Wisconsin Develops Full-Wave Simulation Framework for Kerr Frequency Comb Generation, Advancing Precision Measurement and Quantum Technologies

Published July 30, 2026 IEEE USA



OVERVIEW

Researchers at the University of Wisconsin-Madison have developed a new full-wave simulation framework for Kerr frequency comb generation, published in the IEEE Journal of Selected Topics in Quantum Electronics. This research facilitates the design of more complex photonic components and offers novel insights into the physical processes of Kerr comb generation. It is expected to accelerate the development of compact, integrated frequency comb devices for high-precision measurement, high-frequency communications, and quantum technologies, providing an essential foundation for next-generation optical advancements.

Key Findings

A research team at the University of Wisconsin-Madison has developed a pioneering new full-wave simulation framework for thoroughly analyzing Kerr frequency comb generation. The findings, published in the IEEE Journal of Selected Topics in Quantum Electronics, offer novel insights into the complex physical processes involved in Kerr comb generation and significantly simplify the design of next-generation photonic components.

Technical Details and Simulation Significance

- **Kerr Frequency Comb:** A Kerr frequency comb is a collection of numerous discrete, equally spaced laser light frequencies generated through nonlinear optical effects (Kerr effect) within an optical resonator. It functions as an ultra-stable 'optical ruler,' with widespread applications expected in high-precision timing, precision spectroscopy, high-capacity optical communication, and quantum technologies (quantum computing, quantum sensing).
- **Full-Wave Simulation Framework:** Traditional modeling of Kerr combs often relied on simplified approaches (e.g., envelope equations). However, this new full-wave simulation framework more rigorously describes the interaction of light and matter based on Maxwell's equations, enabling detailed analysis of the optical field's behavior within the resonator in the time domain. This allows for accurate consideration of more complex resonator geometries and material properties.
- **Simplified Design and New Insights:** The framework makes it easier for researchers to virtually explore and optimize various design parameters (e.g., resonator shape, material, pump power) that affect Kerr comb performance. Visualizing the dynamic process of comb generation also provides deeper understanding of previously unclear physical mechanisms (e.g., inter-mode coupling, role of dispersion), leading to the design of higher-performance devices.
- **Compact Integrated Frequency Comb Devices:** This simulation technology is particularly effective for designing and optimizing chip-scale frequency comb devices. It serves as a crucial tool for developing compact, robust, and efficient Kerr combs on integrated photonics platforms.

Background and Industry Context

Optical frequency combs, celebrated as '21st-century optical Nobel Prize-winning' technology due to their innovative properties, are enabling breakthroughs across many scientific and technological fields. However, their generation process involves a complex interplay of nonlinear effects, requiring advanced expertise and computational power for theoretical understanding and practical design. Specifically, the development of Kerr combs on integrated photonics is key to device miniaturization and mass production, but a lack of high-precision simulation tools has been a challenge. This research addresses that gap.

Strategic Significance and Outlook

The research results from the University of Wisconsin are highly significant for accelerating the commercialization and broad application of Kerr frequency comb technology. The availability of more reliable simulation tools will shorten R&D cycles, fostering innovation in fields where Kerr combs are indispensable, such as high-precision measurement, terabit optical communication, quantum sensors, and optical atomic clocks. This framework also holds potential for future application in the design of other nonlinear photonic devices, further expanding the frontiers of optical technology. Investors should recognize the new market opportunities presented by the advancement of Kerr comb technology.

Source: https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQGGfj_5MbWwr8HImPLgmzKib_DXDAB5jIDWzNWNEavkWfltGkXUGJk2QhmSiJq4syFmnWhQT0TcR5k7HQNZMA9OkADKpcZEULpCEP94oFGGMh7we6mijXa9k8ptO4hCISOrdMweolgojHq0HV5Ou_71nVnAjewaMD5rsl1iGyZ29wvyeour4z87q_RIRUgTr6LNiQ_dV_uXULgpOjJwPoYXSWdrSw9qlcA=

#26 PsiQuantum Secures \$125M DARPA Quantum Benchmarking Initiative Award for Photonic Quantum Computer Validation

Published July 23, 2026 Intelligence Community News USA



OVERVIEW

PsiQuantum has been awarded a substantial \$125 million contract under Stage C of DARPA's Quantum Benchmarking Initiative (QBI), aimed at independently validating its photonic quantum computing architecture. This funding will facilitate the rigorous assessment of their silicon photonics-based quantum systems, including cryogenic infrastructure, advanced manufacturing at PsiFactory, and live benchmarking of algorithmic resources. The award underscores the U.S. government's commitment to accelerating practical-scale quantum computing and solidifying American leadership in the quantum race.

Key Findings

PsiQuantum has secured a significant \$125 million expanded task agreement from the Defense Advanced Research Projects Agency (DARPA) under Stage C of its Quantum Benchmarking Initiative (QBI). This substantial award is dedicated to the independent validation of PsiQuantum's photonic quantum architecture, which utilizes silicon photonics as qubits, paving the way for the development and operation of fault-tolerant quantum computers at scale.

Technical / Clinical Details

The core of this DARPA funding will drive the validation of PsiQuantum's unique approach to photonic quantum computing. This includes evaluating system-level cryogenic infrastructure, verifying advanced materials manufacturing capabilities at their PsiFactory, and conducting live benchmarking of algorithmic resources using their proprietary Construct software platform. PsiQuantum's strategy leverages the advantages of photonic qubits, which can operate at room temperature and are compatible with existing optical networks and commercial CMOS fabrication processes. The company aims to achieve a practical-scale system by 2029, relying on silicon photonic chips manufactured by GlobalFoundries to scale to a million-qubit, fault-tolerant system.

Background & Context

DARPA's QBI is a critical U.S. government endeavor to assess viable commercial pathways to practical-scale quantum computing. PsiQuantum's selection as one of only two companies in Stage C highlights the perceived strategic importance and maturity of its technology within national security and industrial applications. The quantum computing landscape features diverse modalities, including superconducting, ion trap, and topological qubits, but photonic quantum computing holds particular promise due to its inherent scalability and compatibility with established semiconductor manufacturing. This significant government investment is a clear indication of a national effort to bolster U.S. leadership and establish a strategic advantage in the rapidly evolving field of quantum technology.

Strategic Significance & Outlook

This DARPA contract is expected to significantly accelerate PsiQuantum's progress toward its goal of building a fault-tolerant quantum computer with a million qubits. Successful technical validation could unlock transformative advancements across various sectors, including finance, healthcare, logistics, and defense. The ability to leverage existing industrial infrastructure and CMOS fabs for manufacturing offers a considerable advantage for future mass production and cost reduction, bringing the commercialization of quantum computing closer to reality. This positions photonics to play a central role in shaping the future of quantum information processing, fostering innovation and maintaining technological supremacy for the United States.

Source: <https://intelligencecommunitynews.com/psiquantum-secures-125m-darpa-qbi-award/>

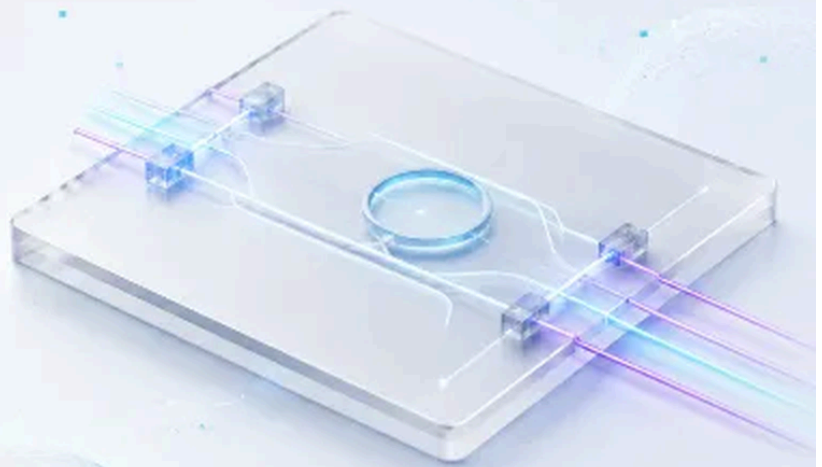
Collected: July 31, 2026 | Automated Research System (Gemini API)

#27 PsiQuantum Signs \$100M U.S. Commerce LOI Under CHIPS Act for Quantum Computing Development

Published July 23, 2026 Investopedia USA



Photonic Quantum Technology Companies



OVERVIEW

PsiQuantum has signed a \$100 million Letter of Intent with the U.S. Department of Commerce under the CHIPS and Science Act, accelerating U.S. leadership in quantum computing and semiconductors. The company aims for a practical-scale fault-tolerant quantum computing system by 2029, leveraging GlobalFoundries' silicon photonic chips. This initiative highlights the advantages of photonic quantum computing, such as room-temperature operation and compatibility with existing optical networks, attracting broad industrial interest.

Key Findings

PsiQuantum has secured a significant \$100 million Letter of Intent (LOI) with the U.S. Department of Commerce under the CHIPS and Science Act, marking a pivotal step to advance American leadership in quantum computing and semiconductor technology. This investment directly supports PsiQuantum's ambitious goal of achieving a practical-scale, fault-tolerant quantum computing system by 2029.

Technical / Clinical Details

PsiQuantum's approach centers on fault-tolerant quantum computing using silicon photonic chips manufactured by GlobalFoundries. Photonic quantum computing, which employs photons as qubits, offers distinct advantages, including the capability for room-temperature operation and high compatibility with existing optical networking infrastructure. These characteristics are anticipated to significantly simplify implementation and enhance scalability compared to other quantum technologies that necessitate complex cryogenic cooling systems. The LOI aligns with the broader objectives of the CHIPS Act, which seeks to accelerate research and development and foster domestic manufacturing capabilities for advanced semiconductors.

Background & Context

Quantum computing is a globally competitive frontier technology poised to transcend current computational limitations. Through the CHIPS and Science Act, the U.S. is strategically investing to secure its technological preeminence in this domain. The \$100 million investment in PsiQuantum underscores the growing recognition of the photonic approach, particularly for its potential robustness and scalability, which has garnered widespread industry interest. By leveraging existing semiconductor ecosystems, photonic quantum computing is seen as potentially circumventing manufacturing challenges faced by other quantum modalities, offering a faster path to commercialization.

Strategic Significance & Outlook

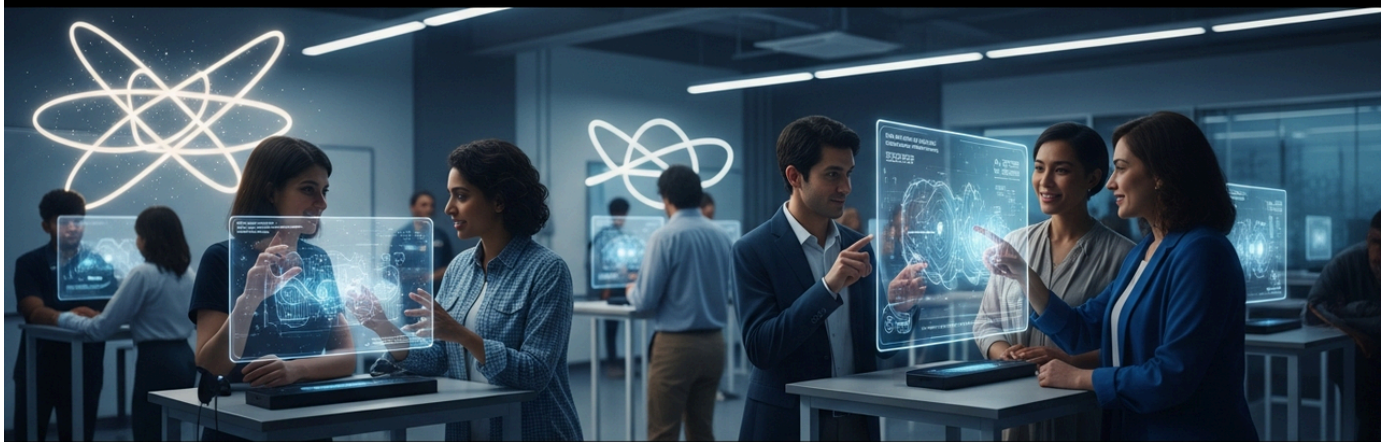
This partnership with the Department of Commerce represents a crucial milestone for PsiQuantum in realizing its objective of building a practical-scale system by 2029. The funding is essential for accelerating R&D and establishing an ecosystem that supports advanced semiconductor manufacturing domestically. In the long term, this initiative contributes to a national strategy ensuring the U.S. maintains a leading role in quantum computing, fostering breakthroughs that could revolutionize numerous industries, including finance, healthcare, logistics, and defense. As photonic quantum computing technology matures, its broad applicability and compatibility with existing infrastructure position it to shape the next frontier of the digital economy.

Source: https://www.zetik.ai/news/article/story_id-p008-172405

Collected: July 31, 2026 | Automated Research System (Gemini API)

#28 PsiQuantum Invests \$250,000 in South Chicago Quantum Education and Workforce Development Programs

Published July 29, 2026 The Citizen Newspaper Group USA



OVERVIEW

PsiQuantum has announced a \$250,000 philanthropic investment in South Chicago schools, higher education institutions, and STEM programs to cultivate the next generation of quantum innovators. As an anchor tenant of the Illinois Quantum Microelectronics Park (IQMP), the company is committed to providing local youth with educational opportunities and career pathways into the growing quantum workforce. This initiative aims to address the critical talent shortage in the rapidly expanding quantum technology sector.

Key Findings

PsiQuantum, a leader in quantum computing, has pledged a significant \$250,000 philanthropic investment in schools, higher education institutions, and STEM programs across South Chicago. This initiative is designed to nurture the next generation of quantum innovators by creating accessible educational and career pathways into the rapidly expanding quantum workforce.

Technical / Clinical Details

The investment specifically targets educational programs focusing on science, technology, engineering, and mathematics (STEM) within South Chicago. As an anchor tenant of the Illinois Quantum Microelectronics Park (IQMP), PsiQuantum is not only committed to advancing quantum technology but also deeply invested in the development of the local talent pool. The support is expected to facilitate curriculum development in quantum computing fundamentals and applications, as well as provide practical skill-building programs, thereby cultivating future innovators and engineers essential for the field. This direct engagement ensures that local youth are exposed to cutting-edge technology and prepared for high-demand careers.

Background & Context

The quantum computing sector is experiencing exponential growth, creating a global demand for a skilled workforce with specialized expertise. Nations worldwide are vying for leadership in quantum technologies, with concerted efforts from both government and private sectors to build robust talent pipelines. PsiQuantum's investment transcends mere financial aid; it aims to foster economic development and educational equity within the community, contributing to the sustainable growth of the broader quantum ecosystem. Illinois, in particular, is emerging as a significant hub for quantum information science, and PsiQuantum's commitment further solidifies this regional prominence.

Strategic Significance & Outlook

This investment in South Chicago holds the potential to serve as a scalable model for quantum workforce development in other regions. PsiQuantum's long-term vision involves connecting local talent with global innovation, thereby establishing a diverse and robust pipeline for the quantum technology sector. By doing so, the company not only accelerates the commercialization of quantum computing but also contributes significantly to the economic revitalization and educational advancement of the local community. Increased exposure to quantum technologies for young individuals is expected to spark greater interest in future scientific and technological fields, laying a foundational groundwork for sustained innovation for decades to come.

Source: <https://citizennewspapergroup.com/news/2026/jul/29/psiquantum-announces-major-investments-in-south-chicago-training-education-and-quantum-workforce-development-programs/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#29 Ouster Stock Hits 52-Week High Following Strategic Partnership with ARGUS Interception to Integrate Digital LiDAR into Counter-Drone Interceptors

Published July 31, 2026 Stocktwits USA



OVERVIEW

Ouster Inc.'s stock surged to a 52-week high after announcing a strategic partnership with Germany's ARGUS Interception. This collaboration will integrate Ouster's digital LiDAR into ARGUS's A1-Falke interceptor, significantly enhancing drone detection and capture precision in non-kinetic counter-drone operations. The technology aims to provide accurate threat localization, particularly in environments where traditional methods are impractical, opening a new defense application market for Ouster's digital LiDAR.

Key Findings

Ouster Inc., a pioneer in LiDAR sensor technology, announced a strategic partnership with German defense firm ARGUS Interception, leading to a surge in its stock price to a 52-week high. This groundbreaking collaboration aims to integrate Ouster's digital LiDAR technology into ARGUS's A1-Falke interceptor, dramatically enhancing the precision of drone detection and capture in non-kinetic counter-unmanned aerial system (C-UAS) operations.

Technical / Clinical Details

Ouster's high-performance digital LiDAR sensors, capable of mapping 3D environments with millimeter-level accuracy, will be deployed on ARGUS's A1-Falke interceptor. This integration will enable high-precision detection, tracking, and classification of small drones and other aerial threats from extended ranges. The enhanced capability is particularly crucial for counter-drone efforts in challenging environments where GPS may be unavailable or jammed. Unlike traditional radar or camera systems, LiDAR can provide reliable data in adverse weather conditions or low visibility, ensuring accurate localization of drones and facilitating their capture using nets or other non-kinetic means.

Background & Context

The proliferation and malicious use of drones have escalated in recent years, posing growing threats to civilian infrastructure, public events, and military installations. In response, the C-UAS market is expanding rapidly, with LiDAR technology gaining prominence due to its superior accuracy and reliability. Ouster's partnership with ARGUS represents a significant strategic pivot, leveraging its automotive-developed LiDAR technology for defense applications, demonstrating the versatility and value proposition of its sensors across a broader market spectrum. This move aligns with an industry trend where LiDAR companies diversify their revenue streams beyond traditional automotive clients.

Strategic Significance & Outlook

This strategic alliance creates a substantial new growth opportunity for Ouster in the defense and security markets. Successful integration into ARGUS's A1-Falke interceptor could pave the way for further deployments with defense agencies and security providers worldwide. Beyond counter-drone operations, Ouster's digital LiDAR technology has potential applications in broader intrusion detection and surveillance for border security, critical infrastructure monitoring, and event security. This partnership validates the capability of Ouster's LiDAR to deliver high-precision spatial awareness in diverse operational environments, establishing a robust business foundation that contributed to its recent stock surge.

Source: <https://stocktwits.com/news-articles/markets/equity/oust-stock-52-week-high-ouster-shares-counter-drone-partnership-argus/cZgO3rwReqX>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#30 Lightmatter Joins NVIDIA NVLink Fusion Ecosystem, Accelerates Photonic Interconnect Strategy for AI Data Centers with \$850M Funding at \$4.4B Valuation

Published July 23, 2026 International Banker USA



OVERVIEW

AI hardware and silicon photonics startup Lightmatter has joined NVIDIA's NVLink Fusion ecosystem, accelerating the deployment of high-performance optical interconnects for AI infrastructure. The company is developing Co-Packaged Optics (CPO) and Near-Packaged Optics (NPO) products, aiming to reduce fiber and connector requirements by 50% and create a unified platform for AI factories. Lightmatter has raised \$850 million, valuing it at \$4.4 billion, and is developing CPO components with TSMC and GlobalFoundries for 2028 shipment.

Key Findings

Lightmatter, an AI hardware and silicon photonics startup, has announced its participation in NVIDIA's NVLink Fusion ecosystem, accelerating the deployment of high-performance optical interconnect solutions for AI infrastructure. This move comes as Lightmatter has successfully raised \$850 million in funding, achieving a current valuation of \$4.4 billion, underscoring its potential to significantly enhance energy efficiency and performance in data centers.

Technical / Clinical Details

Lightmatter is focusing on photonic interconnect technologies to address data transfer bottlenecks in AI computing. Its 'Passage' photonic interconnect and 'Guide' laser solutions are considered essential components for next-generation AI infrastructure. Through its partnership with NVIDIA, Lightmatter will provide Co-Packaged Optics (CPO) and Near-Packaged Optics (NPO) products compatible with NVIDIA's technology, aiming to build a unified platform for AI factories. This integration is expected to reduce fiber and connector requirements by up to 50%. Lightmatter projects NPO to be in the validation phase and CPO to reach commercial scale by 2027-2028, with CPO components currently under development with TSMC and GlobalFoundries targeting 2028 shipment. Laser technology, identified as a key bottleneck and market opportunity, could potentially account for half of the optical AI infrastructure market.

Background & Context

As AI models grow in scale and complexity, energy consumption and data transmission bandwidth limits in data centers have become critical bottlenecks. Networking alone accounts for approximately 20% of data center energy consumption, and conventional electrical interconnects are facing the physical limits of Moore's Law. Major players, including NVIDIA, are investing billions of dollars into photonics to overcome these challenges, recognizing optical interconnects as indispensable for faster AI systems. Lightmatter's strategy aligns with the industry trend of transitioning from pluggable optics to NPO, CPO, and interposers, seeking more integrated approaches to achieve performance and efficiency gains.

Strategic Significance & Outlook

Lightmatter's involvement in the NVIDIA ecosystem and its push for commercializing CPO/NPO technology hold the potential to revolutionize the AI infrastructure market. Improved energy efficiency and dramatically accelerated data transmission speeds are crucial for training and deploying next-generation AI models. The company's high valuation and substantial funding indicate strong market confidence in the potential value of its technology. If Lightmatter successfully achieves mass production of CPO components as planned and establishes market leadership, it could redefine data center design standards and play a central role in driving the further evolution of AI technology. The company's trajectory highlights the increasing importance of optical communications in the AI era.

Source: <https://internationalbanker.com/technology/what-is-photonics-and-why-is-this-emerging-technology-attracting-billions-of-dollars-of-new-investment/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#31 Scantinel Photonics, Now Part of MicroVision, Commercializes FMCW LiDAR-on-Chip with Over 300m Range for Autonomous Driving

Published July 30, 2026 eMove360° Europe Germany

Scantinel Photonics becoming part of MicroVision
commercializing over over 300eter FMCW LiDAR-on-Chip forDriving

30 / 2026

-eMove360°



OVERVIEW

Scantinel Photonics, a 2020 eMove360° Award winner, is advancing its FMCW LiDAR-on-Chip platform for autonomous mobility, offering a detection range exceeding 300 meters. Designed for mass production in automotive, trucking, and industrial automation, this technology marks a significant step towards practical self-driving solutions. Scantinel's integration into MicroVision in January 2026 further accelerates the commercialization of its photonic sensing technology.

Key Findings

Scantinel Photonics, an award-winning innovator, is making significant strides in bringing its Frequency-Modulated Continuous Wave (FMCW) LiDAR-on-Chip platform to reality for autonomous mobility. Offering an impressive detection range of over 300 meters, this technology is designed for mass production and diverse applications in automotive, trucking, and industrial automation. The company's integration into MicroVision in January 2026 has further propelled the commercialization of its advanced photonic sensing solutions.

Technical / Clinical Details

Scantinel Photonics' FMCW LiDAR-on-Chip technology is characterized by its high-precision distance and velocity measurements, coupled with superior resilience to interference. The detection range exceeding 300 meters is particularly crucial for high-speed autonomous driving scenarios on highways and long-haul trucking, enabling early hazard detection and safer decision-making. This LiDAR platform is engineered to meet the stringent requirements of mass production for automotive, trucking, and industrial automation sectors. Chip-level integration leads to more compact, lightweight, and cost-effective systems with enhanced reliability. The acquisition by MicroVision in January 2026 represents a strategic move to accelerate Scantinel's technology development and strengthen its transition to mass production capabilities.

Background & Context

Accurate environmental perception is fundamental for the advancement of autonomous driving technology. However, conventional LiDAR systems have faced challenges related to high cost, bulkiness, and reliability issues stemming from complex mechanical components. LiDAR-on-Chip technology is widely regarded as the key to overcoming these hurdles and meeting automotive-grade mass production demands. The FMCW approach offers distinct advantages over traditional pulsed LiDAR, including superior immunity to interference and direct velocity measurement capabilities. Scantinel's technology represents a crucial breakthrough for enhancing the safety and reliability of autonomous vehicles, potentially impacting the competitive landscape of the broader LiDAR market.

Strategic Significance & Outlook

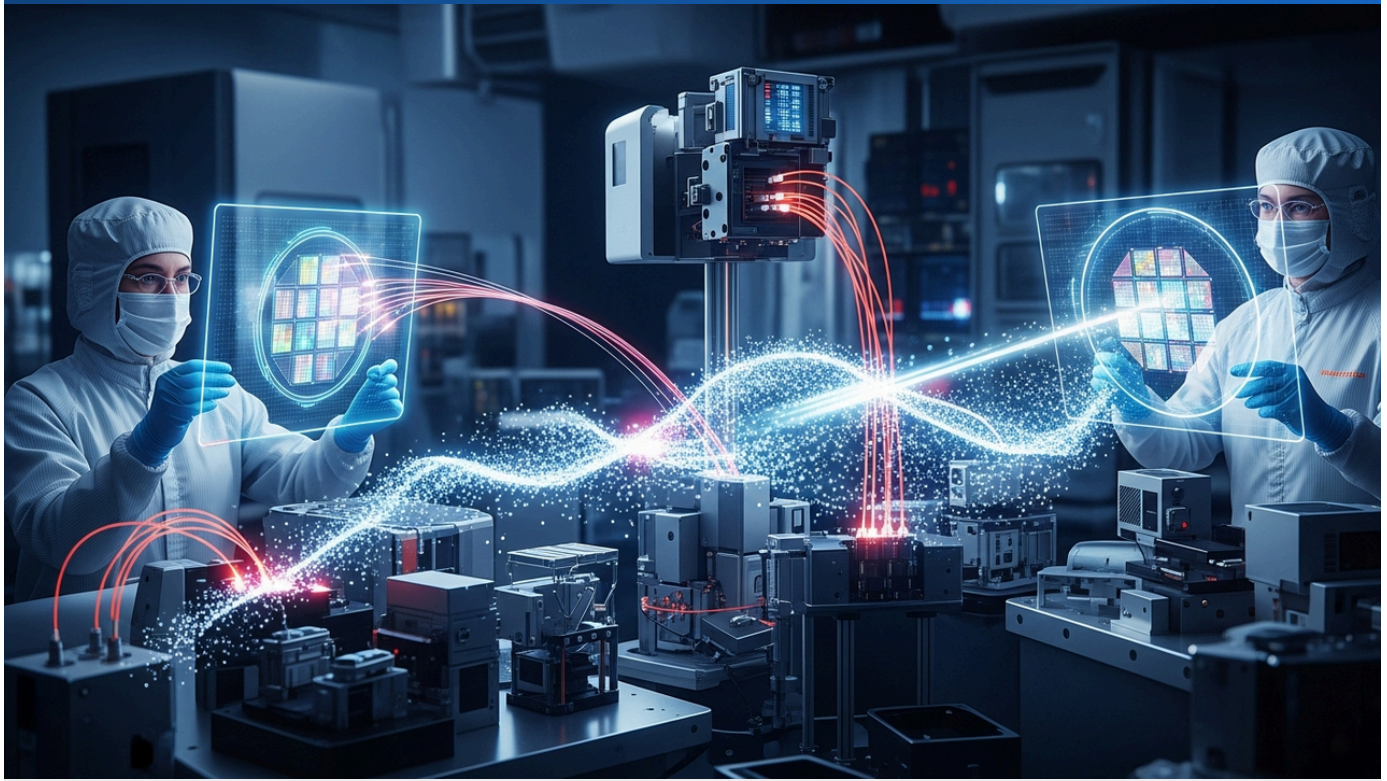
With Scantinel Photonics now part of MicroVision, the commercialization and market introduction of its FMCW LiDAR-on-Chip technology are expected to accelerate significantly. Collaborations with automotive manufacturers and Tier 1 suppliers are anticipated to drive the widespread adoption of this technology in autonomous vehicles. The combination of an over 300-meter detection range and chip-level integration makes it particularly suitable for demanding environments like trucking and industrial vehicles, potentially fostering LiDAR adoption in these markets. Scantinel's advancements mark a critical milestone for the pervasive adoption of LiDAR technology in both automotive and industrial sectors, bringing the future of fully autonomous operations closer to reality.

Source: <https://www.emove360.com/scantinel-photonics-the-2020-award-winner-bringing-lidar-on-chip-closer-to-reality/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#32 GlobalFoundries Secures \$300M U.S. Department of Commerce Award to Accelerate Silicon Photonics R&D, Bolstering U.S. Leadership

Published July 29, 2026 GlobalFoundries USA



OVERVIEW

GlobalFoundries has signed a Letter of Intent with the U.S. Department of Commerce for a \$300 million award from the CHIPS R&D Office. This funding aims to accelerate next-generation silicon photonics R&D, including optical materials, wafer technologies, and 3D hybrid bonding, to strengthen U.S. leadership in AI and high-performance computing data centers. The initiative, leveraging GF's SCALE™ platform, targets modularity, 400Gb/s performance, and a five-fold energy efficiency improvement over current implementations, while reducing reliance on foreign foundries in the silicon photonics supply chain.

Key Findings

GlobalFoundries has signed a Letter of Intent (LOI) with the U.S. Department of Commerce for a substantial \$300 million award from the CHIPS Research and Development Office. This landmark funding aims to significantly accelerate the research and development of next-generation silicon photonics technology, bolstering America's technological leadership in AI and high-performance computing (HPC) data center sectors.

Technical / Clinical Details

The grant will primarily be invested in innovations across optical materials, the development of advanced wafer technologies, and the evolution of 3D hybrid bonding techniques. These advancements are critical for overcoming data transmission bottlenecks and achieving the high-speed, low-power interconnects essential for demanding AI workloads. GlobalFoundries intends to leverage its proprietary SCALE™ platform to develop silicon photonics solutions that offer modularity and 400Gb/s performance. A particularly ambitious goal is to achieve up to a five-fold improvement in energy efficiency compared to current electrical interconnect implementations, which holds the potential to dramatically reduce operational costs and environmental impact in AI data centers.

Background & Context

The rapid evolution of AI and HPC has introduced significant challenges related to data transmission bottlenecks and escalating power consumption within data centers. Silicon photonics is emerging as a pivotal technology to address these issues, enabling high-speed, low-power data transfer both within and between chips using optical signals. This substantial investment by the U.S. government, under the CHIPS and Science Act, has a strategic intent to strengthen domestic semiconductor manufacturing and R&D capabilities, specifically addressing vulnerabilities in the silicon photonics supply chain that currently rely heavily on foreign foundries like TSMC and Tower Semiconductor. The goal is to enhance U.S. technological independence and national security.

Strategic Significance & Outlook

The \$300 million award to GlobalFoundries will serve as a powerful catalyst for the company to lead innovation in the silicon photonics domain. Successful development of these next-generation technologies promises to dramatically improve the performance and efficiency of AI data centers, consequently enabling further advancements in AI itself. This investment is also expected to create high-skilled jobs within the U.S. and strengthen the overall domestic semiconductor ecosystem. In the long term, establishing U.S. leadership in silicon photonics will provide a crucial strategic advantage in global technological competition, playing a decisive role in shaping the future of data centers in the AI era.

Source: <https://gf.com/news-and-events/news/globalfoundries-signs-letter-of-intent-with-the-us-department-of-commerce-for-a-300-million-award-to-accelerate-us-silicon-photonics-leadership/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#33 Leading Foundries Accelerate Silicon Photonics Mass Production for AI/HPC Demand: UMC Ships First 12-inch Wafers, TSMC's COUPE Enters Production

Published July 30, 2026 TrendForce Taiwan



OVERVIEW

Major foundries including TSMC, UMC, GlobalFoundries, and Tower Semiconductor are accelerating their silicon photonics efforts to meet the growing demand for data transmission bandwidth driven by increasing AI computing power. UMC's Singapore fab has shipped its first mass-produced silicon photonics wafers, while TSMC's COUPE integrated platform has entered production. Tower Semiconductor plans to convert its Arai fab in Japan to a 12-inch silicon photonics and advanced packaging platform, and GlobalFoundries is also expanding its silicon photonics capacity, reflecting increased CapEx to capture long-term AI/HPC demand.

Key Findings

In response to the escalating demand for data transmission bandwidth driven by an explosion in AI computing power, global leading foundries—including TSMC, UMC, GlobalFoundries, and Tower Semiconductor—are significantly accelerating their mass production capabilities and capacity expansion in silicon photonics. Notably, UMC has shipped its first mass-produced silicon photonics wafers from its Singapore fab, and TSMC's advanced COUPE integrated platform has already entered its production phase.

Technical / Clinical Details

UMC is advancing two silicon photonics strategies, including a 12-inch wafer solution licensed from imec, and has successfully delivered its first volume production wafers from its Singapore facility, aiming to establish a strong foothold in this high-growth market. Concurrently, TSMC's 'COUPE' (Co-Utilized Package) integrated platform combines cutting-edge packaging technologies with silicon photonics to dramatically enhance the efficiency of inter-chip communication critical for AI and high-performance computing (HPC). Furthermore, Tower Semiconductor is proceeding with plans to convert its Arai fab in Japan into a 12-inch silicon photonics and advanced packaging platform, anticipating substantial future capacity expansion. GlobalFoundries is also increasing its 2026 capital expenditure budget and expanding its silicon photonics production capabilities to address the sustained long-term demand from the AI and HPC sectors.

Background & Context

Data centers supporting AI and HPC applications face severe bottlenecks in power consumption and data transmission speeds with conventional copper interconnects, struggling to handle the immense volume of data. Silicon photonics is emerging as a breakthrough technology to overcome these challenges by transmitting optical signals on-chip. The heightened investment from foundries in this domain stems from a shared consensus that AI and HPC will be the long-term growth drivers for the semiconductor industry. Specifically, technologies like Co-Packaged Optics (CPO) are becoming indispensable for next-generation interconnects, making the securing and mass production of foundational silicon photonics technology an urgent priority.

Strategic Significance & Outlook

These large-scale investments and capacity expansions in silicon photonics by major foundries are poised to significantly shape the future of the data center and AI infrastructure markets. With UMC and TSMC entering mass production, and Tower Semiconductor and GlobalFoundries expanding their capacities, the supply of high-performance, energy-efficient optical interconnect solutions is expected to stabilize, and costs are projected to decrease. This will enable the further scaling and complexity of AI models, accelerating developments in applications such as autonomous driving, cloud computing, and quantum computing. Intensified competition among foundries will further stimulate technological innovation, paving the way for silicon photonics to become a new cornerstone of the semiconductor industry.

Source: <https://www.trendforce.com/news/2026/07/30/news-mass-production-and-capacity-expansion-accelerate-reshaping-the-foundry-landscape-in-silicon-photonics/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#34 Innoviz Technologies Secures First Defense Contract Valued at \$3.5M to Supply LiDAR Units for Counter-Drone Systems

Published July 31, 2026 The Defence Blog イスラエル



OVERVIEW

Innoviz Technologies, an Israeli LiDAR sensor provider, has secured its first defense contract, valued at approximately \$3.5 million, to supply hundreds of LiDAR units for counter-drone systems and perimeter intrusion detection. This landmark agreement leverages the company's newly launched 'Perciz' defense brand, adapting its robust automotive LiDAR technology to address the critical demand for precise threat localization in dynamic security environments.

Background

The rapid evolution and proliferation of drone technology have led to increased threats from unmanned aerial systems targeting military bases, airports, and critical infrastructure globally. This surge has fueled a substantial demand for effective counter-drone systems (C-UAS). LiDAR technology is increasingly recognized as a core component for C-UAS solutions, lauded for its high spatial resolution and robust reliability even in adverse conditions. Innoviz's strategic entry into the defense sector aligns with a broader industry trend of LiDAR companies expanding beyond the automotive market, showcasing the versatility of their technology across a diverse array of security and defense applications.

Key Findings

Innoviz Technologies, an Israel-based LiDAR sensor provider, has successfully secured a landmark defense contract valued at approximately \$3.5 million. This agreement marks the company's inaugural significant foray into the defense sector, involving the supply of hundreds of high-performance LiDAR units for counter-drone systems (C-UAS) and perimeter intrusion detection applications.

Technical Details

Innoviz Technologies develops automotive-grade LiDAR sensors, whose high-resolution and wide-field-of-view sensing capabilities are particularly well-suited for counter-drone applications. The hundreds of LiDAR units supplied under this contract will enable high-precision detection, tracking, and classification of small, fast-moving drones from extended distances, thereby facilitating accurate threat localization. The company's recently launched 'Perciz' brand, dedicated to defense applications, underscores that these LiDAR sensors are optimized to meet the stringent requirements of complex airspace surveillance, base defense, and critical infrastructure protection. This strategic technology transfer allows Innoviz to leverage the proven robustness and maturity of its existing automotive LiDAR platforms to effectively address urgent demands within the defense market.

Strategic Outlook

This inaugural defense contract represents a crucial strategic milestone for Innoviz Technologies, establishing a significant new growth driver within its business model. The successful deployment of the Perciz brand will validate the competitiveness of Innoviz's LiDAR technology not only in the automotive industry but also across the demanding defense and security markets. The initial supply of hundreds of LiDAR units carries the potential to evolve into larger-scale contracts, positioning Innoviz as a pivotal LiDAR provider in the burgeoning defense sector. This strategic diversification underscores the broader potential for advanced LiDAR technology to contribute significantly to solving critical societal challenges, ranging from urban security to national defense.

Source: <https://defence-blog.com/automotive-lidar-maker-lands-new-counter-drone-contract/?amp>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#35 Luminar Technologies Files for Bankruptcy, Volvo Completely Drops LiDAR from EX90 and ES90 Models, Offers Owner Compensation

Published July 29, 2026 Moomoo USA



OVERVIEW

Following Luminar Technologies' Chapter 11 bankruptcy filing in December 2025, automaker Volvo has announced it will completely remove LiDAR from its EX90 and ES90 models, offering compensation to affected owners for the unavailable LiDAR-based features. This decision comes after Luminar sold its LiDAR business to MicroVision and its semiconductor subsidiary to Quantum Computing Inc., highlighting a market shift from sensor specifications to supplier durability.

Key Findings

In the wake of leading LiDAR technology company Luminar Technologies filing for Chapter 11 bankruptcy in December 2025, automaker Volvo has made the critical decision to completely remove LiDAR systems from its flagship EX90 and ES90 models. Volvo has announced it will offer compensation to affected owners for the advanced LiDAR-based features that were initially promised but are now unavailable.

Technical / Clinical Details

Luminar Technologies was renowned for developing high-performance LiDAR sensors deemed essential for autonomous driving technology. However, the company's bankruptcy filing and subsequent asset sales (its LiDAR business to MicroVision and its semiconductor subsidiary to Quantum Computing Inc.) forced Volvo to re-evaluate its LiDAR strategy in vehicle design. While the EX90 and ES90 models were marketed with advanced driver-assistance systems (ADAS) capabilities centered around LiDAR, the supplier's insolvency rendered these features unattainable. Volvo will instead continue to utilize a suite of existing and mature sensors, including radar, cameras, and ultrasonic sensors, to construct its driver-assistance systems.

Background & Context

The solid-state LiDAR components market is projected for significant growth, valued at \$3.82 billion in 2025 and forecast to reach \$22.31 billion by 2035. However, the LiDAR market is characterized by a proliferation of startups, intense technological competition, and severe price pressures. The bankruptcy of even a prominent company like Luminar underscores the substantial economic and technical challenges involved in commercializing LiDAR technology for mass production in the automotive industry. This event has highlighted to the market that beyond mere technical specifications, the 'durability' of a supplier—including its financial stability and mass production capabilities—is paramount in LiDAR sensor selection.

Strategic Significance & Outlook

Volvo's decision is likely to have broad implications for LiDAR adoption strategies across the automotive industry. Many automakers integrating LiDAR will now likely re-evaluate supply chain risks and technology maturity. This presents an opportunity for financially stable companies capable of providing reliable LiDAR solutions, while simultaneously raising the barrier for new entrants. Luminar's bankruptcy and Volvo's abandonment of LiDAR suggest that the market has entered an 'era of selection,' where not only technological superiority but also the robustness of business models is being tested, potentially accelerating consolidation and restructuring among sensor vendors.

Source: <https://www.moomoo.com/community/feed/volvo-drops-lidar-for-good-on-ex90-and-es90-pays-117005156811158>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#36 Ghent University and imec Pioneer Heterogeneous Integration in Silicon Photonics with Micro-Transfer Printing

Published July 30, 2026 Photonics Online ベルギー



OVERVIEW

Researchers from Ghent University and imec have validated micro-transfer printing (MTP) as a highly promising technique for heterogeneous integration in silicon photonics. MTP effectively merges precision die-level assembly with efficient wafer-scale processing, enabling scalable industrial manufacturing. This innovation is poised to significantly enhance silicon photonic integrated circuits (PICs), driving advancements in AI infrastructure, coherent communication, and quantum technologies, and ushering in a new era for optical communication and information processing systems.

Background

The exponential growth in demand for optical communication and data center capacity necessitates increasingly faster and more energy-efficient optical interconnects and integrated circuits. Silicon photonics (SiP) has become a pivotal platform in this domain, largely owing to its CMOS compatibility, which facilitates cost-effective, large-scale manufacturing. However, silicon intrinsically possesses limitations in efficiently generating and detecting light. This deficiency makes heterogeneous integration with high-performance optical devices, such as III-V semiconductors, a critical and long-standing challenge for SiP. Addressing this, Micro-Transfer Printing (MTP) technology emerges as a scalable and economical solution, representing a significant stride toward realizing the full potential of silicon photonics.

Key Findings

Researchers at Ghent University and imec have conclusively demonstrated Micro-Transfer Printing (MTP) as an exceptionally promising and scalable approach for heterogeneous integration in silicon photonics (SiP). This innovative precision technique allows for the high-accuracy transfer of miniature dies, comprising disparate materials and devices like III-V semiconductor lasers or detectors, onto existing silicon photonic circuits. MTP uniquely combines die-level assembly with efficient wafer-scale processes, thereby enabling the industrial manufacturing of high-performance silicon PICs that leverage both silicon's excellent manufacturability and the superior optical properties of specialized semiconductor materials. This method offers significant advantages over conventional techniques such as flip-chip bonding or direct growth, including substantially higher throughput and greater flexibility in material selection, crucial for high-density integration and large-scale production demands.

This successful demonstration marks a groundbreaking achievement poised to accelerate innovation across the silicon photonics domain. As MTP technology matures and gains broader industrial adoption, it promises to alleviate critical bandwidth and power efficiency bottlenecks prevalent in AI data centers. Furthermore, it will significantly enhance the performance of next-generation coherent communication systems and enable the development of more complex, high-performance photonic circuits essential for emerging fields like quantum computing and quantum communication. MTP is thus positioned to become a foundational technology, driving higher performance and more cost-effective solutions across diverse photonic application areas and potentially redefining the future landscape of optical technology.

Source: <https://www.gophotonics.com/news/details/9111-micro-transfer-printing-paves-the-way-for-advanced-silicon-photonic-systems>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#37 U.S. Representative Moolenaar Warns of Chinese LiDAR National Security Risks in CNBC Report, Proposes Phase-Out Legislation

Published July 27, 2026 John Moolenaar (U.S. Representative) USA



OVERVIEW

U.S. Representative John Moolenaar has expressed strong concerns over potential cybersecurity and national security risks posed by Chinese LiDAR technology in a CNBC report. He remains skeptical of assurances from Chinese manufacturers regarding data security, citing the possibility of 'backdoors' in their technology. Moolenaar is proposing legislation to phase out Chinese LiDAR in the U.S., reflecting heightened geopolitical risks in technology supply chains.

Key Findings

U.S. Representative John Moolenaar has voiced significant concerns regarding the potential cybersecurity and national security risks associated with Chinese LiDAR technology, highlighted in a CNBC report. The congressman has proposed legislation aimed at phasing out Chinese-manufactured LiDAR from the U.S. market, underscoring the escalating geopolitical tensions within technology supply chains.

Technical / Clinical Details

The concerns raised by Representative Moolenaar center on the sensitive data collected by Chinese LiDAR systems, such as topographical maps, traffic patterns, and potentially personal data, which could be accessed and exploited by the Chinese government. These systems are increasingly being integrated into critical sectors including autonomous vehicles, smart infrastructure, and defense applications. Moolenaar cited general worries that Chinese companies might be compelled to provide data to their government, expressing skepticism about manufacturers' assurances of no 'backdoors.' The proposed legislation seeks to gradually eliminate Chinese LiDAR from U.S. critical infrastructure and military systems, potentially fostering diversification of the supply chain and nurturing domestic technological alternatives.

Background & Context

LiDAR technology has rapidly proliferated as an essential sensor for autonomous vehicles and smart city initiatives, with a significant portion of the market supplied by Chinese firms. The U.S. is intensifying its concerns that Chinese technology poses national security risks, drawing parallels with previous debates surrounding telecommunications giants like Huawei and ZTE. This move is part of a broader U.S. strategy to maintain technological supremacy, particularly in key sectors such as AI, semiconductors, and 5G. A potential ban on Chinese LiDAR could force a restructuring of supply chains, creating new opportunities for U.S. and allied LiDAR manufacturers, but also possibly leading to short-term cost increases and restrictions on technological choice.

Strategic Significance & Outlook

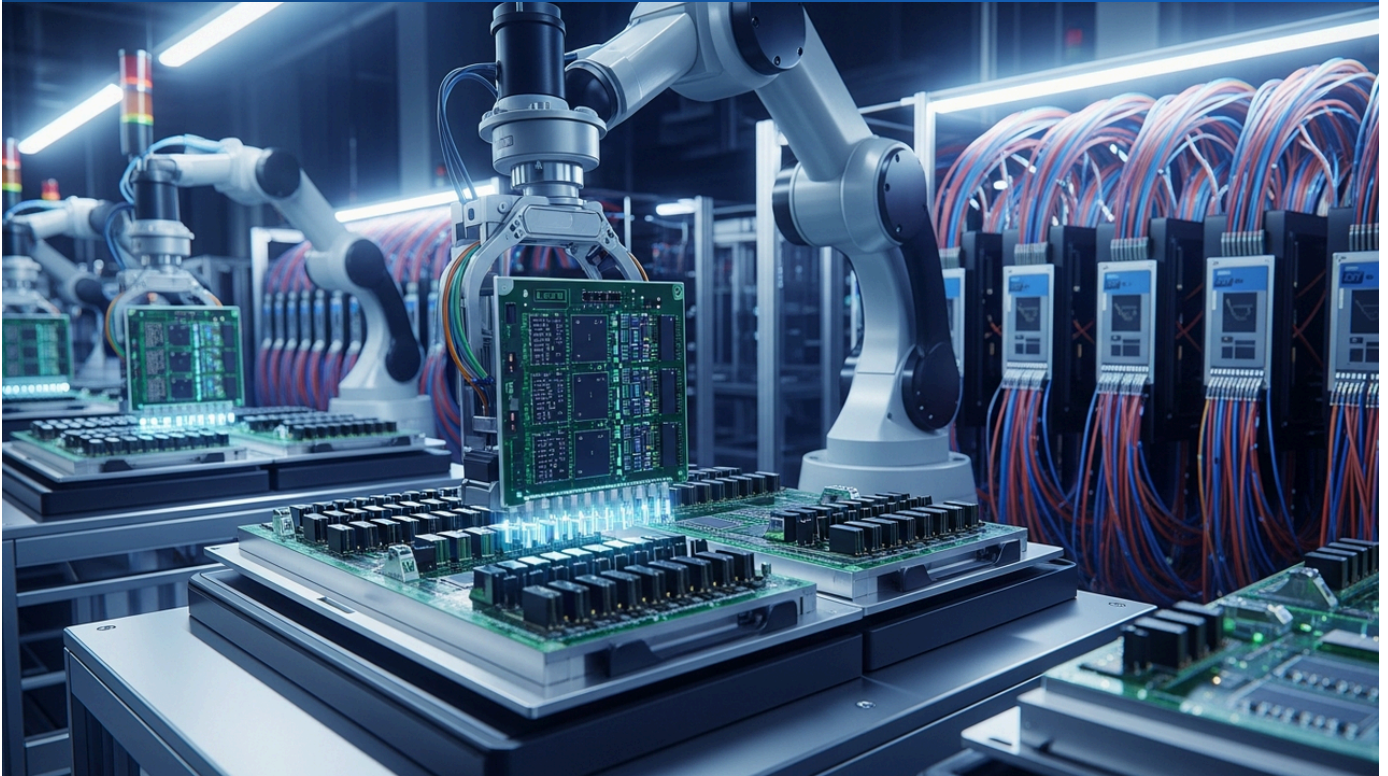
If the legislation proposed by Representative Moolenaar passes, it would significantly alter the landscape of the U.S. LiDAR market. The phase-out of Chinese LiDAR would compel U.S. automakers, smart city developers, and the defense industry to seek alternative suppliers, thereby presenting substantial business opportunities for domestic and allied LiDAR manufacturers. However, this transition could also introduce new challenges related to technical interoperability, cost implications, and supply chain stability. This regulatory trend is expected to profoundly impact global LiDAR supply chains in the coming years, deepening the international dialogue on how nations balance national security concerns with economic interests in their technology policies.

Source: <https://chinaselectcommittee.house.gov/media/press-releases/icymi-moolenaar-highlights-dangers-of-chinese-lidar-in-cnbc-report>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#38 NVIDIA and Broadcom Commence Mass Production of Co-Packaged Optics (CPO) Switches: Poised to Cut Data Center Power Consumption by Up to 3.5x

Published July 30, 2026 Electronics360 USA



OVERVIEW

NVIDIA and Broadcom have initiated mass production of Co-Packaged Optics (CPO) switches, designed to significantly reduce data center power consumption and latency. NVIDIA's Spectrum-X CPO switch, co-developed with TSMC's COUPE technology, and Broadcom's Bailly CPO switch are already in production, with further expansion expected in H2 2026. These CPO switches integrate optical engines directly with switch ASICs, aiming to cut current inter-chip interconnect power consumption by up to 3.5 times, establishing CPO as the leading architecture for next-generation high-bandwidth switches.

Key Findings

NVIDIA and Broadcom have commenced mass production of Co-Packaged Optics (CPO) switches, a pivotal development poised to enable significant advancements in data center infrastructure. This technology is positioned as the leading architecture for next-generation high-bandwidth switches, particularly in AI and high-performance computing (HPC) environments, by substantially reducing power consumption and data transmission latency.

Technical / Clinical Details

NVIDIA's Spectrum-X CPO switch, developed in collaboration with TSMC's COUPE packaging technology, has already entered its production phase. Broadcom's Bailly CPO switch is also in mass production. The core innovation of these CPO switches lies in the direct integration of the optical engine with the switch ASIC (Application-Specific Integrated Circuit). This reduces the distance for electrical-to-optical signal conversion compared to traditional pluggable optical transceivers, leading to a dramatic decrease in signal loss and power consumption. In a scenario where inter-chip interconnects consume up to 30% of current data center power, TSMC silicon photonics in NVIDIA's 1.6T CPO switch promises to reduce data center power consumption by up to 3.5 times. Further production expansion is anticipated in the latter half of 2026, and the transition to CPO is considered essential for 400Gbits/sec serdes technology, expected around 2027-2028, given the physical limits of electrical interconnects.

Background & Context

As AI models increase in scale and complexity, data centers face exacerbated challenges related to power consumption and data transmission bandwidth bottlenecks. Conventional electrical interconnects are approaching their physical limits, with escalating energy consumption and heat generation as speeds increase. To address these issues, CPO, which integrates optical communication technology at the chip level, is gaining significant industry attention as the next-generation interconnect technology. NVIDIA and Broadcom are key suppliers in the AI and HPC sectors, and their initiation of CPO mass production clearly indicates that this technology has transitioned from a research phase to commercial deployment.

Strategic Significance & Outlook

The commencement of mass production for CPO switches by NVIDIA and Broadcom is set to revolutionize data center infrastructure design and operation. The significant reduction in power consumption will contribute to lower operational costs and improved sustainability, while simultaneously boosting the processing capabilities for AI and HPC workloads. With silicon photonics modules predicted to account for 50-70% of the 800Gbit and 1.6Tbit optical module market by the end of 2026, CPO is highly likely to become a standard technology in data centers within the next few years. This foundational shift will enable the further development of AI technology and the realization of even larger and more complex AI models, accelerating the growth of the entire digital economy.

Source: <https://electronics360.globalspec.com/article/24054/cpo-switch-production-ramps-up-by-nvidia-and-broadband>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#39 Nano-Printed Scaffolds Enable Direct Molecular Access to Quantum Photonics, Advancing Sensing Capabilities

Published July 31, 2026 AZoNano Unknown



OVERVIEW

Researchers have developed innovative nano-printed scaffolds that enable direct molecular access to quantum photonics. These scaffolds feature a high numerical aperture, opening new applications in sensing and quantum photonics. Demonstrated through optofluidic spectroscopy with Rhodamine 6G solution, this technology shows potential to expand photonic system functionalities and precisely control light-matter interactions at the molecular scale.

Key Findings

Researchers have made a breakthrough by developing innovative nano-printed scaffolds that provide direct molecular access to quantum photonics. This novel technology, characterized by scaffolds with a high numerical aperture (NA), unlocks new frontiers for applications in both sensing and quantum information science.

Technical / Clinical Details

The developed nano-printed scaffolds leverage intricate structural designs to enable the precise placement of molecules within quantum photonic circuits, allowing for in-situ observation and manipulation of light-molecule interactions. The high NA of the scaffolds maximizes light confinement and collection efficiency, facilitating highly sensitive detection even for extremely weak optical signals. The research team successfully demonstrated this technology through optofluidic spectroscopy using a Rhodamine 6G solution. This demonstration proved the scaffolds' capability to interact with molecules at an atomic level and analyze their spectral properties with high precision. This breakthrough is expected to lead to the development of novel quantum devices and significant advancements in biomolecular sensing.

Background & Context

Quantum photonics is gaining immense attention as a foundational technology for future innovations in quantum computing, quantum communication, and ultra-sensitive sensing. However, achieving efficient and controllable interactions between molecules and photons has been a long-standing challenge. Traditional methods for integrating molecules into photonic elements have faced limitations in terms of precision, efficiency, and scalability. The newly developed nano-printed scaffolds offer a groundbreaking solution to these challenges, dramatically improving the interface between molecules and photonic devices. This expansion of molecular applications in quantum systems is poised to have a wide-ranging impact, from fundamental research to applied science.

Strategic Significance & Outlook

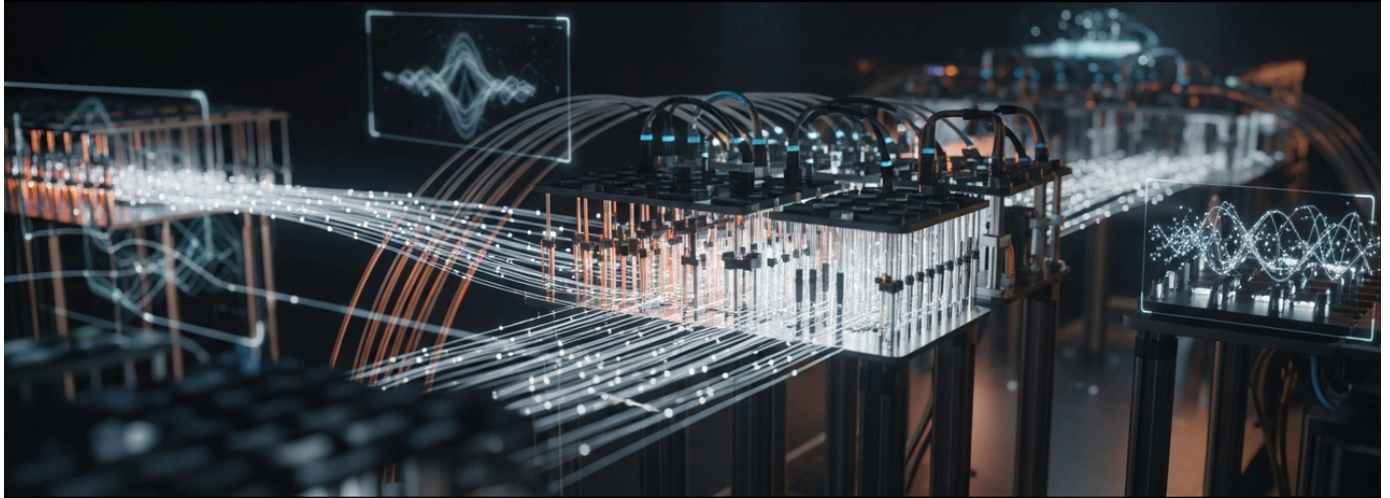
This nano-printing technology holds the potential to fundamentally expand the capabilities of quantum photonic systems. For instance, enabling the generation, control, and detection of quantum states at a single-molecule level could lead to the development of more robust qubits and new types of quantum sensors. In the field of biomolecular sensing, it could pave the way for ultra-sensitive detection platforms for early disease diagnosis and drug screening. This breakthrough is expected to accelerate research at the intersection of materials science, photonics, and quantum physics, ultimately translating into innovative products and services for society.

Source: <https://www.azonano.com/news.aspx?newsID=41781>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#40 Physics and Promise of Photonic Quantum Computing: PsiQuantum's Approach Utilizing Photons as Qubits

Published July 25, 2026 Quantagram (via Medium) USA



OVERVIEW

This article delves into the physics and promise of photonic quantum computing, highlighting the advantages of photons as qubits: their ability to travel through optical fibers, operate at room temperature, and be manufactured on silicon chips in commercial CMOS fabs. It details PsiQuantum's approach, which uses silicon photonic waveguides manufactured by GlobalFoundries, emphasizing how existing industrial infrastructure is key to scaling towards million-qubit fault-tolerant systems.

Key Findings

Photonic quantum computing, by harnessing photons as qubits, offers unique advantages such as room-temperature operation and manufacturability in commercial CMOS fabs, presenting a highly promising pathway towards large-scale, fault-tolerant quantum computing systems. This article elucidates the underlying physical principles and the innovative approach being pursued by PsiQuantum in collaboration with GlobalFoundries.

Technical / Clinical Details

The article thoroughly explains the benefits of using photons as qubits. Photons can be readily transmitted via optical fibers, forming the backbone for long-distance quantum communication and networked quantum computing. Furthermore, photons can operate at room temperature, eliminating the need for complex and costly cryogenic environments typically required by many other quantum computing modalities. This characteristic significantly reduces system complexity and expense. Crucially, the ability to manufacture these systems on silicon chips in commercial CMOS fabs means leveraging existing semiconductor industrial infrastructure, making the scaling to million-qubit systems a more tangible reality. PsiQuantum is concretizing this approach using silicon photonic waveguides fabricated by GlobalFoundries. Photons propagate within these waveguides, and quantum gate operations are performed by integrated optical elements. This scalable manufacturing process is indispensable for constructing fault-tolerant quantum computers that can effectively correct errors.

Background & Context

Quantum computing holds the potential to solve problems intractable for even the most powerful supercomputers, spanning fields such as drug discovery, materials science, and financial modeling. However, its realization is hindered by numerous technical challenges concerning qubit stability, coherence, and scalability. Photonic quantum computing has emerged as a strong candidate to address these challenges, valued for its inherent physical properties and compatibility with existing technologies. The U.S. government's substantial investments in quantum computing, notably through the CHIPS and Science Act, reflect a clear recognition of this technology's strategic importance. PsiQuantum's strategy aims to lower the barriers to commercialization by leveraging existing industrial infrastructure rather than developing expensive custom setups.

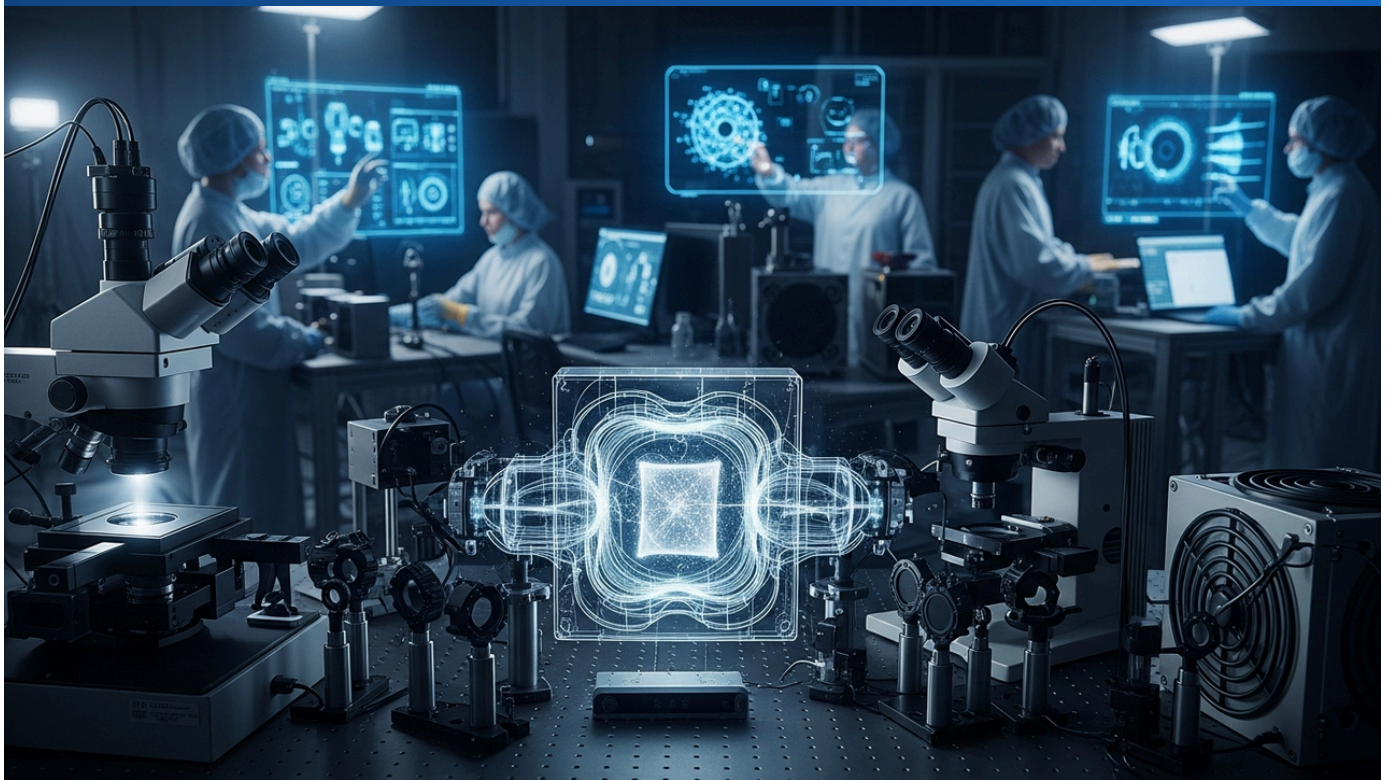
Strategic Significance & Outlook

The advancements in photonic quantum computing are a critical factor in accelerating the commercialization of quantum technologies. Due to its compatibility with existing optical networks and semiconductor manufacturing techniques, this technology is anticipated to see more rapid deployment and widespread adoption. The collaboration between PsiQuantum and GlobalFoundries serves as a clear example of a well-defined roadmap towards realizing fault-tolerant quantum computing systems. Continued research and innovation in this domain are expected to expedite the future where quantum computers solve practical problems, leading to significant societal impacts. This photon-centric approach, leveraging the fundamental properties of light, is positioned as a key to unlocking the next frontier of quantum information science.

Source: <https://quantagram.org/articles/photonic-qubits/>

#41 U.S. Naval Research Laboratory Accelerates Quantum Innovation with New Quantum Materials and Integrated Photonic Devices

Published July 24, 2026 U.S. Navy USA



OVERVIEW

The U.S. Naval Research Laboratory (NRL) is accelerating American quantum innovation by developing new quantum materials, integrated photonic devices, and scalable technologies. Researchers are focused on the intersection of fundamental science and operational needs, aiming to transition scientifically intriguing concepts into practical tools. This initiative is crucial for ensuring national security and maintaining technological superiority.

Key Findings

The U.S. Naval Research Laboratory (NRL) is significantly accelerating American quantum innovation through its proactive development of novel quantum materials, advanced integrated photonic devices, and scalable quantum technologies. This comprehensive effort aims to bolster the future operational capabilities of the U.S. Navy and establish national preeminence in the quantum technology sector.

Technical / Clinical Details

NRL researchers are actively exploring and characterizing a diverse range of new quantum materials applicable to quantum computing, quantum communication, and quantum sensing. This includes superconducting materials with improved coherence times, high-performance quantum dots, and atomic defect-based qubits. Concurrently, substantial effort is dedicated to developing integrated photonic devices designed to manipulate and transmit optical signals on-chip, which are indispensable for enhancing the efficiency and scalability of quantum information processing. These devices form the core of photonic quantum computing, utilizing photons as qubits, and quantum-encrypted communication systems. NRL places particular emphasis on transitioning scientifically compelling concepts derived from fundamental research into practical tools and systems directly aligned with the Navy's operational requirements.

Background & Context

Quantum technologies hold the potential to revolutionize all facets of national security, including defense, intelligence, communications, and sensing. To maintain technological leadership in this nascent yet critical field, the U.S. government and private sector are collaboratively investing heavily in research and development. The Navy, in particular, has a vested interest in the early adoption and utilization of quantum technologies to enable precise navigation, secure communications, and advanced reconnaissance and surveillance capabilities. NRL's initiatives are an integral part of this national strategy, aiming to develop and deploy quantum capabilities ahead of potential adversaries.

Strategic Significance & Outlook

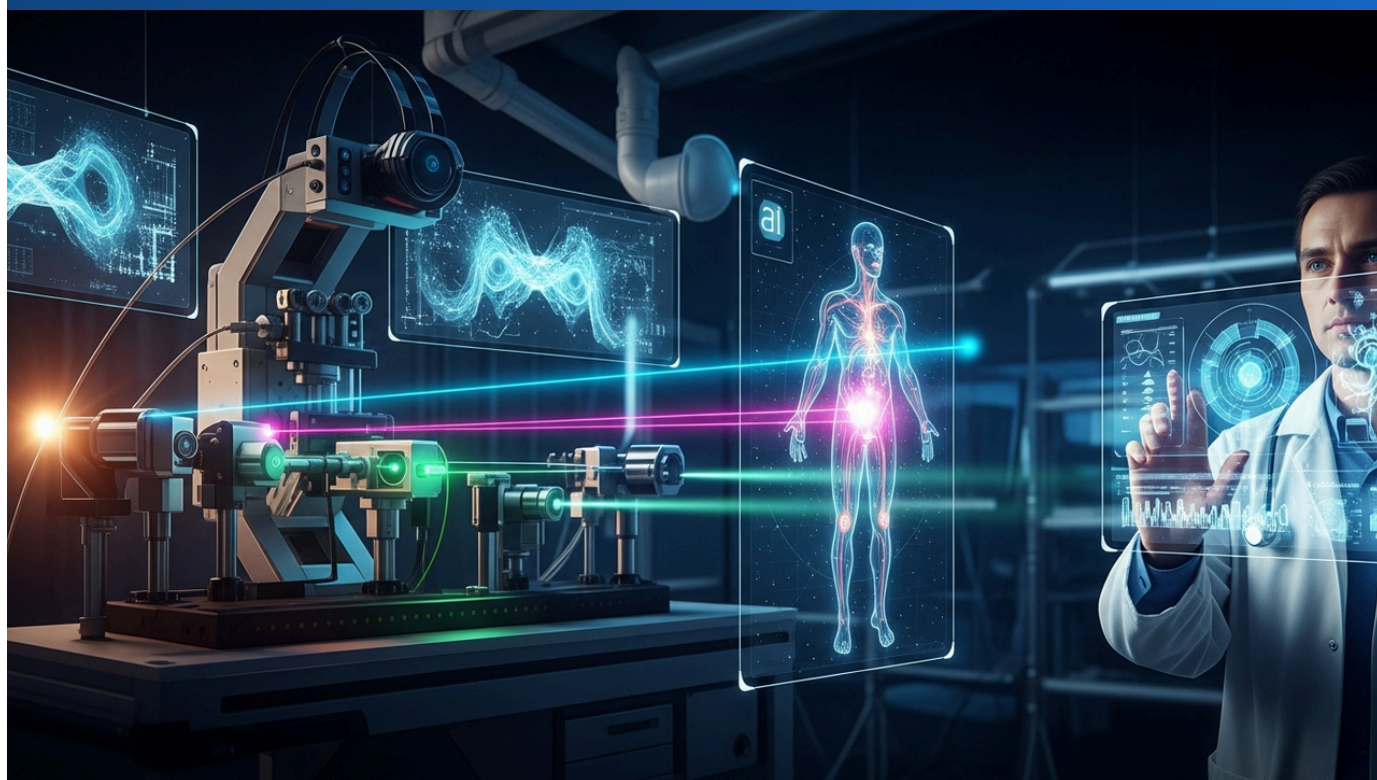
The research conducted by NRL on quantum materials and integrated photonics is set to profoundly impact the future of naval operations. As these technologies mature, they promise to unlock previously impossible operational capabilities, such as stealth communication resistant to adversary detection, highly accurate GPS-independent inertial navigation, and sensors with unprecedented sensitivity. NRL's 'science to operations' approach ensures that fundamental breakthroughs are rapidly translated into practical solutions. This will equip the U.S. Navy with powerful tools to maintain its advantage in an increasingly complex global security environment, providing a decisive edge in future conflicts and strategic competition.

Source: <https://www.navy.mil/Press-Office/News-Stories/display-news/Article/4554462/nrl-advances-the-navys-quantum-future-as-america-accelerates-quantum-innovation/>

Collected: July 31, 2026 | Automated Research System (Gemini API)

#42 Photonics21 Advocates for Preventive Medicine in Europe: Leveraging AI and Photonics for Early Disease Detection and Personalized Healthcare

Published July 24, 2026 PIC Magazine / Photonics21 ヨーロッパ



OVERVIEW

Photonics21 is advocating for a paradigm shift in European healthcare towards 'P4' medicine—Predictive, Preventive, Personalized, and Participatory—driven by the synergistic integration of photonics and AI. This initiative, championed by Professor Jürgen Popp, leverages advanced optical diagnostics and molecular sensing, combined with AI-driven analytics, to enable early disease detection and continuous health monitoring. This innovative approach promises to significantly enhance healthcare efficiency, personalization, and overall public health outcomes.

Background

Contemporary healthcare systems globally are grappling with sustainability challenges due to aging populations and a rising prevalence of chronic diseases. Traditional 'reactive' medical approaches often address diseases after they have progressed, leading to escalating healthcare costs and diminished patient quality of life. P4 medicine seeks to fundamentally change this paradigm by emphasizing intervention before disease onset or in its earliest stages, thereby offering more efficient and cost-effective healthcare. Photonics technology, owing to its non-invasiveness, high precision, and real-time capabilities, is considered a crucial enabling technology for realizing P4 medicine. Its integration with AI allows for the extraction of meaningful insights from data, enabling the large-scale deployment of personalized medical care.

Key Findings

Photonics21, the European Technology Platform for Photonics, is vigorously advocating for a transformative shift in Europe's healthcare model towards 'Predictive, Preventive, Personalized, and Participatory (P4) medicine,' driven by the synergistic application of photonics and artificial intelligence (AI). This strategic vision aims to significantly enhance the efficiency and effectiveness of healthcare systems through early disease detection and highly personalized health management.

Technical / Clinical Details

At the core of this P4 medicine model are advanced optical diagnostic techniques and highly sensitive molecular sensing technologies. Optical diagnostics, such as non-invasive imaging and endoscopic examinations, provide detailed, real-time information at the tissue and cellular levels. Molecular sensing technologies enable the detection of extremely low concentrations of biomarkers in bodily fluids like blood or saliva, allowing for the early identification of disease indicators. The vast amount of data generated by these photonic technologies is then analyzed by sophisticated AI algorithms to facilitate personalized risk prediction, disease prevention strategies, and tailored treatment choices for individual patients. Professor Jürgen Popp highlights that this combination is indispensable for providing continuous health insights and interventions that can delay or entirely prevent disease progression.

Strategic Significance & Outlook

Photonics21's commitment to P4 medicine is set to be a powerful catalyst for accelerating healthcare innovation across Europe. The integration of photonics and AI will lead to the widespread adoption of personalized health monitoring devices, wearable sensors, and smart diagnostic tools, empowering individuals to better understand and actively manage their own health. This approach is expected to strengthen disease prevention and early intervention, reducing the number of patients developing severe conditions, thereby alleviating the burden on healthcare systems and improving public health outcomes. This strategy represents a significant step for Europe to assert leadership in the global healthcare sector and enhance the quality of life for its citizens.

Source: https://picmagazine.net/article/124813/Photonics21_backs_preventive_medicine

Collected: July 31, 2026 | Automated Research System (Gemini API)