

TROY TECHNICAL

# OPTICAL COMMUNICATIONS & PHOTONICS WEEKLY REPORT

September 12 - September 18, 2026 | Issue 2026-W37

**Link budget, packaging, thermal reliability and  
deployable supply**

**36**

ANALYZED ARTICLES

**10**

PRIORITY THEMES

Issued 2026-09-18 | English edition | fixed approved cover artwork



# Optical Communications & Photonics: the boundary moved from isolated claims to qualification evidence

36 English articles were reviewed independently from the Japanese edition. Ten themes are retained for management decisions.

SIGNAL 01 | LIGHT SOURCE

**Nokia Partners with Telxius to Deploy 800G Coherent Pluggable Optics Across Europe, US**

Nokia has secured a strategic agreement with Telxius to deploy 800G coherent pluggable optical modules across networks in Europe, the US, and Latin America, actively pursuing opportunities within the AI-driven "supercycle." This initiative addresses the.

SIGNAL 02 | PHOTONIC DEVICE

**Ayar Labs Secures Additional \$150M, Totaling \$650M for 2026, to Scale Co-Packaged Optics**

Ayar Labs has raised an additional \$150 million, bringing its total 2026 funding to \$650 million, to expand manufacturing capacity for co-packaged optics (CPO) targeting AI scale-up infrastructure.

SIGNAL 03 | PACKAGING

**CIOE 2026: 1.6T Optical Transceiver Orders Extend into 2027, Supply Capacity Dictates Market**

At CIOE 2026, it was revealed that 1.6T optical transceiver orders and production schedules are extending into 2027 due to rapidly increasing demand. Leading suppliers like InnoLight, Eoptolink, Coherent, and Lumentum are already in volume production.

SIGNAL 04 | NETWORK SYSTEM

**Huawei Unveils 7.2Tbps Near-Packaged Optics Module and Establishes China's First NPO MSA, Challenging**

Huawei has unveiled a 7.2Tbps Near-Packaged Optics (NPO) module and launched the "OPEN NPO" initiative, establishing China's first NPO optical interconnect Multi-Source Agreement (MSA), directly challenging the Co-packaged Optics (CPO) strategies of NVIDIA and.

DECISION

**Focus this week's management attention on link budget, packaging, thermal reliability and deployable supply. Move only when the linked evidence can be reproduced under your own operating conditions.**

THREE MANAGEMENT MOVES

1. Buyers: evaluate optical architectures by reach, power, latency, interoperability and field service.
2. Suppliers: pair optical performance with packaging yield, test, thermal drift and qualified capacity.
3. Executives: track yield, coupling loss, temperature drift, interoperability, volume and cost.

EVIDENCE DISCIPLINE

FACT states what the collected English source reports. BUSINESS READ and ACTION are editorial interpretations. UNKNOWN lists information that the source file does not establish. A linked article is not treated as independent confirmation of every claim.

Five numbers or evidence anchors that require conditions

800G

A29

SOURCE-BOUND CONDITION

Nokia has secured a strategic agreement with Telxius to deploy 800G coherent pluggable optical modules across networks in Europe, the US, and Latin America, actively pursuing opportunities within the AI-driven.

\$150 mil  
lion

A02

SOURCE-BOUND CONDITION

Ayar Labs has raised an additional \$150 million, bringing its total 2026 funding to \$650 million, to expand manufacturing capacity for co-packaged optics (CPO) targeting AI scale-up infrastructure.

400G

A23

SOURCE-BOUND CONDITION

This deployment follows a record-breaking demonstration where Nokia's ICE-X 800G ZR+ coherent pluggable optical modules achieved 400Gb/s per wavelength over 5,600km on the BRUSA submarine cable.

\$275 mil  
lion

A30

SOURCE-BOUND CONDITION

Celero Communications has raised \$275 million for next-generation 1.6T to 3.2T AI optical interconnects, following successful verification of its 2nm coherent DSP silicon.

P05

A23

SOURCE-BOUND CONDITION

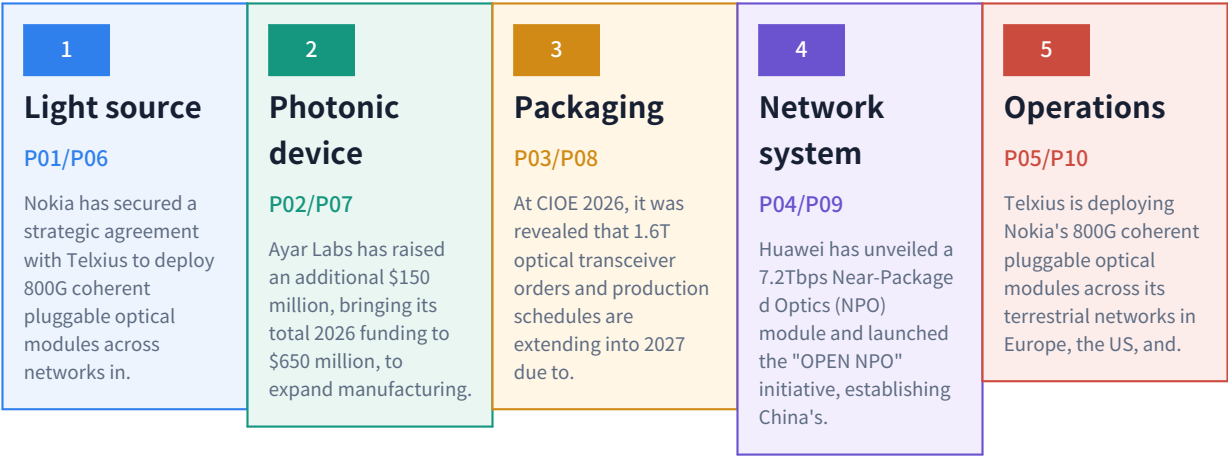
Telxius is deploying Nokia's 800G coherent pluggable optical modules across its terrestrial networks in Europe, the US, and Latin America to meet the escalating demand for high-capacity connectivity.

HOW TO USE THESE NUMBERS

Each value is shown with the condition stated in the collected English article. Do not compare values across different test methods, device sizes, operating temperatures or commercial stages without normalizing those conditions.

## Where the value chain moved

Each stage combines one leading theme and one supporting theme. The report treats handoffs as evidence transfers, not decorative arrows.



### EVIDENCE REQUIRED AT EACH HANDOFF

|                                 |                                                                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Light source to Photonic device | Transfer test conditions, acceptance criteria, failure data, owner and decision date.<br>Recheck yield, coupling loss, temperature drift, interoperability, volume and cost. |
| Photonic device to Packaging    | Transfer test conditions, acceptance criteria, failure data, owner and decision date.<br>Recheck yield, coupling loss, temperature drift, interoperability, volume and cost. |
| Packaging to Network system     | Transfer test conditions, acceptance criteria, failure data, owner and decision date.<br>Recheck yield, coupling loss, temperature drift, interoperability, volume and cost. |
| Network system to Operations    | Transfer test conditions, acceptance criteria, failure data, owner and decision date.<br>Recheck yield, coupling loss, temperature drift, interoperability, volume and cost. |

#### COMMON CONTROL POINT

**No theme moves to a commercial commitment until a named owner has reproduced the relevant evidence and documented yield, coupling loss, temperature drift, interoperability, volume and cost.**

Priority map: maturity and business impact



|     |                                                                                                               |
|-----|---------------------------------------------------------------------------------------------------------------|
| P01 | Nokia Partners with Telxius to Deploy 800G Coherent Pluggable Optics Across Europe, US                        |
| P02 | Ayar Labs Secures Additional \$150M, Totaling \$650M for 2026, to Scale Co-Packaged Optics                    |
| P03 | CIOE 2026: 1.6T Optical Transceiver Orders Extend into 2027, Supply Capacity Dictates Market                  |
| P04 | Huawei Unveils 7.2Tbps Near-Packaged Optics Module and Establishes China's First NPO MSA, Challenging         |
| P05 | Telxius Deploys Nokia 800G Coherent Pluggable Optics Across Global Networks in Europe, US                     |
| P06 | NPO Consortium Establishes International Standards for Near-Packaged Optics; Huawei Unveils 7.2T Product      |
| P07 | Celero Communications Secures \$275 Million for 1.6T/3.2T AI Optical Interconnects After Verifying 2nm        |
| P08 | Tower Semiconductor and NewPhotonics Initiate High-Volume Shipments of Laser-Integrated PICs for 800G/1.6T AI |
| P09 | Ciena Unveils AI Networking Innovations at ECOC 2026: Showcasing 1.6T Coherent Optical Modules                |
| P10 | AIM Photonics Showcases Integrated Photonics for Diverse Military Applications at Pentagon Event, Featuring   |

**REPRODUCIBLE POSITIONING RULE**  
Horizontal position uses five discrete stages: Research, Prototype, Joint evaluation, Product adoption and Scale. Vertical position uses three impact levels: single use, multiple customers and multiple supply tiers. Bubble diameter reflects the editorial score inherited from the weekly selection rubric.

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P01

Nokia Partners with Telxius to Deploy 800G Coherent Pluggable Optics Across Europe, US

A29 | Light source | Product adoption

Date not stated

FACT

Nokia has secured a strategic agreement with Telxius to deploy 800G coherent pluggable optical modules across networks in Europe, the US, and Latin America, actively pursuing opportunities within the AI-driven "supercycle." This initiative addresses the escalating demand for high-capacity connectivity fueled by cloud services and AI workloads.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P01.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 22/25 | MATURITY 4/5 | IMPACT 3/3

P02

Ayar Labs Secures Additional \$150M, Totaling \$650M for 2026, to Scale Co-Packaged Optics

A02 | Photonic device | Product adoption

Date not stated

FACT

Ayar Labs has raised an additional \$150 million, bringing its total 2026 funding to \$650 million, to expand manufacturing capacity for co-packaged optics (CPO) targeting AI scale-up infrastructure. The company's CPO approach, based on its TeraPHY optical engine, integrates optical connectivity close to compute silicon, addressing bandwidth, reach, and power constraints of electrical I/O.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P02.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 22/25 | MATURITY 4/5 | IMPACT 3/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P03

## CIOE 2026: 1.6T Optical Transceiver Orders Extend into 2027, Supply Capacity Dictates Market

A09 | Packaging | Product adoption

Date not stated

### FACT

At CIOE 2026, it was revealed that 1.6T optical transceiver orders and production schedules are extending into 2027 due to rapidly increasing demand. Leading suppliers like InnoLight, Eoptolink, Coherent, and Lumentum are already in volume production. The adoption of Near-packaged Optics (NPO) is broadening, driving demand for high-power light sources and fiber arrays.

### WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

### BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

### ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P03.

### UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 2/3

P04

## Huawei Unveils 7.2Tbps Near-Packaged Optics Module and Establishes China's First NPO MSA, Challenging

A10 | Network system | Research

Date not stated

### FACT

Huawei has unveiled a 7.2Tbps Near-Packaged Optics (NPO) module and launched the "OPEN NPO" initiative, establishing China's first NPO optical interconnect Multi-Source Agreement (MSA), directly challenging the Co-packaged Optics (CPO) strategies of NVIDIA and Broadcom. NPO integrates at the printed circuit board level, offering a pluggable architecture for individual component replacement.

### WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

### BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

### ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P04.

### UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 21/25 | MATURITY 1/5 | IMPACT 2/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P05

Telxius Deploys Nokia 800G Coherent Pluggable Optics Across Global Networks in Europe, US

A23 | Operations | Product adoption

Date not stated

FACT

Telxius is deploying Nokia's 800G coherent pluggable optical modules across its terrestrial networks in Europe, the US, and Latin America to meet the escalating demand for high-capacity connectivity. This deployment follows a record-breaking demonstration where Nokia's ICE-X 800G ZR+ coherent pluggable optical modules achieved 400Gb/s per wavelength over 5,600km on the BRUSA submarine cable.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P05.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 2/3

P06

NPO Consortium Establishes International Standards for Near-Packaged Optics; Huawei Unveils 7.2T Product

A12 | Light source | Product adoption

Date not stated

FACT

An NPO Standards Industry Summit has achieved consensus on international standards for Near-Packaged Optics (NPO), laying the groundwork for widespread commercial adoption and industry upgrades in AI infrastructure. NPO is positioned as a pragmatic alternative to Co-Packaged Optics (CPO), offering lower risk and higher ROI by avoiding CPO's inherent challenges like closed supply chains.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P06.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 3/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P07

Celero Communications Secures \$275 Million for 1.6T/3.2T AI Optical Interconnects After Verifying 2nm

A30 | Photonic device | Product adoption

Date not stated

FACT

Celero Communications has raised \$275 million for next-generation 1.6T to 3.2T AI optical interconnects, following successful verification of its 2nm coherent DSP silicon. This substantial funding highlights significant industry investment in advanced optical interconnects for AI data centers. Rapid progress is underway towards higher-capacity solutions, focusing on both traditional pluggable optical modules and innovative architectures like CXL-over-optics to optimize data center operations.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P07.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 21/25 | MATURITY 4/5 | IMPACT 2/3

P08

Tower Semiconductor and NewPhotonics Initiate High-Volume Shipments of Laser-Integrated PICs for 800G/1.6T AI

A06 | Packaging | Research

Date not stated

FACT

Tower Semiconductor and NewPhotonics have commenced high-volume shipments of laser-integrated optical engine Photonic Integrated Circuits (PICs) for AI interconnect applications, supporting 800G to 1.6T data rates. These PICs leverage Tower's PH18DA Silicon Photonics Platform, which monolithically integrates indium phosphide lasers, modulators, and photodetectors onto a single silicon chip.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P08.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 20/25 | MATURITY 1/5 | IMPACT 2/3

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P09

Ciena Unveils AI Networking Innovations at ECOC 2026: Showcasing 1.6T Coherent Optical Modules

A24 | Network system | Product adoption

Date not stated

FACT

Ciena is showcasing groundbreaking innovations for AI data center networking at ECOC 2026, featuring solutions for high-speed, high-capacity connectivity including 1.6T coherent optical modules, multi-rail photonics, and high-performance electrical and optical interconnects.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P09.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 20/25 | MATURITY 4/5 | IMPACT 2/3

P10

AIM Photonics Showcases Integrated Photonics for Diverse Military Applications at Pentagon Event, Featuring

A36 | Operations | Research

Date not stated

FACT

AIM Photonics demonstrated integrated photonics technologies for various military applications at the U.S. Department of Defense's Manufacturing Technology (ManTech) program's 70th-anniversary event. Key among the exhibits was real-time bioprocess monitoring using silicon photonic sensor arrays fabricated at the Albany NanoTech Complex.

WHY IT MATTERS

The decision relevance is link budget, packaging, thermal reliability and deployable supply. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, pair optical performance with packaging yield, test, thermal drift and qualified capacity.

ACTION

Within 30 days, evaluate optical architectures by reach, power, latency, interoperability and field service; record the evidence and owner against P10.

UNKNOWN

Still unproven or incompletely stated: yield, coupling loss, temperature drift, interoperability, volume and cost.

EDITORIAL SCORE 20/25 | MATURITY 1/5 | IMPACT 2/3

## Playbook and 0-5 year roadmap

| STAKEHOLDER                                   | NOW   0-30 DAYS                                                                             | NEXT   1-12 MONTHS                                                                  | LATER   1-5 YEARS                                                                   |
|-----------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Operating companies                           | evaluate optical architectures by reach, power, latency, interoperability and field service | Run production-like qualification with explicit acceptance and stop criteria.       | Build a portfolio and architecture that can absorb technology and supplier changes. |
| Materials, equipment and technology suppliers | pair optical performance with packaging yield, test, thermal drift and qualified capacity   | Create shared reliability, process-window and failure-analysis data with customers. | Standardize interfaces, traceability, lifecycle support and recovery services.      |
| Trading, investment and legal teams           | Map yield, coupling loss, temperature drift, interoperability, volume and cost.             | Contract for capacity, quality, change notice, liability, alternatives and exit.    | Diversify regional, technical and customer concentration risk.                      |

### ROADMAP

|                                                                                                                               |                                                                                                                               |                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOW   0-30 DAYS</b><br><b>Evidence ledger</b><br>Owner: Strategy + quality<br>Deliverable: claim, source, condition, owner | <b>NOW   0-30 DAYS</b><br><b>Risk screen</b><br>Owner: Procurement + legal<br>Deliverable: unknowns, alternatives, stop       | <b>NEXT   1-12 MONTHS</b><br><b>Joint qualification</b><br>Owner: R&D + supplier<br>Deliverable: process window and failure data     |
| <b>NEXT   1-12 MONTHS</b><br><b>Commercial gate</b><br>Owner: Business + finance<br>Deliverable: unit economics and capacity  | <b>LATER   1-5 YEARS</b><br><b>Platform strategy</b><br>Owner: Executive team<br>Deliverable: portfolio and interface roadmap | <b>LATER   1-5 YEARS</b><br><b>Service layer</b><br>Owner: Operations + channel<br>Deliverable: monitoring, maintenance and recovery |

### GO / NO-GO GATES

| GATE           | OWNER      | REQUIRED EVIDENCE                               | NO-GO CONDITION                         |
|----------------|------------|-------------------------------------------------|-----------------------------------------|
| G1 Evidence    | Quality    | Source, test conditions and reproducibility     | No traceable evidence                   |
| G2 Integration | R&D        | Interface, process window and failure analysis  | Cannot meet system conditions           |
| G3 Commercial  | Business   | Capacity, total cost, contract and alternatives | Economics or supply cannot be supported |
| G4 Lifecycle   | Operations | Monitoring, maintenance, change notice and exit | No accountable operating plan           |

ANALYZED ARTICLES | ITEMS 01-12

Every title and URL is displayed in full. URLs wrap without shortening and remain clickable. A verified-reference label means the translated HTML did not retain its original source URL.

| ID  | FULL ARTICLE TITLE                                                                                                                               | FULL SOURCE / VERIFIED REFERENCE URL - CLICKABLE                                                                                                                                                                                                                                                            |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A01 | Silicon Photonics Dominates 1.6T Optical Transceivers, Targeted for Broad AI Data Center Deployment by 2026                                      | <a href="https://www.aicplight.com/resources/1-6t-optical-modules-and-scale-up-networks-the-dual-engines-powering-next-generation-ai-infrastructure/">https://www.aicplight.com/resources/1-6t-optical-modules-and-scale-up-networks-the-dual-engines-powering-next-generation-ai-infrastructure/</a>       |
| A02 | Ayar Labs Secures Additional \$150M, Totaling \$650M for 2026, to Scale Co-Packaged Optics (CPO) for AI Infrastructure                           | <a href="https://convergedigest.com/ayar-labs-150m-cpo-ai-scale-up/">https://convergedigest.com/ayar-labs-150m-cpo-ai-scale-up/</a>                                                                                                                                                                         |
| A03 | AI Infrastructure Startups Drive Optical Interconnect Breakthroughs Beyond Copper Limits: Ayar Labs, Lightmatter, and HyperLight Lead Innovation | <a href="https://newmarketpitch.com/blogs/news/ai-infrastructure-startup-builds">https://newmarketpitch.com/blogs/news/ai-infrastructure-startup-builds</a>                                                                                                                                                 |
| A04 | Co-Packaged Optics (CPO) Nears Mass Production: Interfaces, Yield, and Maintainability Emerge as Next Key Challenges                             | <a href="https://www.digitimes.com/news/a20260914PD208/cpo-production-ban-dwidth-optics-manufacturing.html">https://www.digitimes.com/news/a20260914PD208/cpo-production-ban-dwidth-optics-manufacturing.html</a>                                                                                           |
| A05 | GIGALIGHT Unveils 18W Ultra-Low Power 1.6T AI Interconnect at ECOC 2026, Signaling Independence from Liquid Cooling                              | <a href="https://www.gigalight.com/news-events/news-10875.html">https://www.gigalight.com/news-events/news-10875.html</a>                                                                                                                                                                                   |
| A06 | Tower Semiconductor and NewPhotonics Initiate High-Volume Shipments of Laser-Integrated PICs for 800G/1.6T AI Interconnect                       | <a href="https://www.unite.ai/tower-and-newphotonics-ship-laser-integrated-pics-for-ai-interconnect/">https://www.unite.ai/tower-and-newphotonics-ship-laser-integrated-pics-for-ai-interconnect/</a>                                                                                                       |
| A07 | NTT's IOWN AI Fund Makes Inaugural Investment in iPrionics for AI Data Center Programmable Optical Networking                                    | <a href="https://www.thefastmode.com/technology-solutions/50622-ntts-iown-ai-fund-makes-first-investment-in-iprionics-for-ai-infrastructure">https://www.thefastmode.com/technology-solutions/50622-ntts-iown-ai-fund-makes-first-investment-in-iprionics-for-ai-infrastructure</a>                         |
| A08 | FS Unveils 1.6T Scale-Out Optics with 500 km Coherent Modules for AI Fabrics, Validated on NVIDIA Quantum-X800                                   | <a href="https://www.storagereview.com/news/fs-pairs-1-6t-scale-out-optics-with-500-km-coherent-modules-and-a-handheld-toolkit-for-ai-fabrics">https://www.storagereview.com/news/fs-pairs-1-6t-scale-out-optics-with-500-km-coherent-modules-and-a-handheld-toolkit-for-ai-fabrics</a>                     |
| A09 | CIOE 2026: 1.6T Optical Transceiver Orders Extend into 2027, Supply Capacity Dictates Market Leadership                                          | <a href="https://fundaai.substack.com/p/researchoptics-cioe-takeaway-2026">https://fundaai.substack.com/p/researchoptics-cioe-takeaway-2026</a>                                                                                                                                                             |
| A10 | Huawei Unveils 7.2Tbps Near-Packaged Optics Module and Establishes China's First NPO MSA, Challenging NVIDIA and Broadcom's CPO Push             | <a href="https://www.trendforce.com/news/2026/09/11/news-huawei-unveils-7-2-tbps-near-packaged-optics-module-challenging-nvidia-and-broadcoms-cpo-push/">https://www.trendforce.com/news/2026/09/11/news-huawei-unveils-7-2-tbps-near-packaged-optics-module-challenging-nvidia-and-broadcoms-cpo-push/</a> |
| A11 | EV Group Solves Co-packaged Optics Manufacturing Challenges with Wafer Bonding and Nanoimprint for High-Density Integration                      | <a href="https://www.qualitydigest.com/inside/manufacturing-news/ev-group-meets-manufacturing-challenges-co-packaged-optics-091526.html">https://www.qualitydigest.com/inside/manufacturing-news/ev-group-meets-manufacturing-challenges-co-packaged-optics-091526.html</a>                                 |
| A12 | NPO Consortium Establishes International Standards for Near-Packaged Optics; Huawei Unveils 7.2T Product                                         | <a href="https://www.computerweekly.com/news/366650350/NPO-consortium-sets-out-international-standards-for-optics-ecosystem">https://www.computerweekly.com/news/366650350/NPO-consortium-sets-out-international-standards-for-optics-ecosystem</a>                                                         |

ANALYZED ARTICLES | ITEMS 13-24

Every title and URL is displayed in full. URLs wrap without shortening and remain clickable. A verified-reference label means the translated HTML did not retain its original source URL.

| ID  | FULL ARTICLE TITLE                                                                                                                                                             | FULL SOURCE / VERIFIED REFERENCE URL - CLICKABLE                                                                                                                                                                                                                                                                                                  |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A13 | Silicon Photonics Market Booms for AI Data Centers, Crucial for 800G and 1.6T Optical Interconnects                                                                            | <a href="https://www.c-light.com/news/details/Silicon_photonics_optical_interconnect_market.html">https://www.c-light.com/news/details/Silicon_photonics_optical_interconnect_market.html</a>                                                                                                                                                     |
| A14 | NVIDIA Adopts Hybrid Copper-Optics Strategy for AI Factories, NVLink 6 Connects 72 GPUs with Multi-Layer Resiliency                                                            | <a href="https://alphaseeker84.substack.com/p/follow-the-connection-copper-and">https://alphaseeker84.substack.com/p/follow-the-connection-copper-and</a>                                                                                                                                                                                         |
| A15 | Linear Pluggable Optics (LPO) Redefines FEC Implementation, Reducing DSP Dependence in High-Speed Optical Networks                                                             | <a href="https://www.c-light.com/news/details/What_Is_FEC.html">https://www.c-light.com/news/details/What_Is_FEC.html</a>                                                                                                                                                                                                                         |
| A16 | NTT West Expands "All-Photonics Connect powered by IOWN" Service Across Western Japan to Bolster AION Infrastructure                                                           | <a href="https://ascii.jp/elem/000/004/436/4436448/">https://ascii.jp/elem/000/004/436/4436448/</a>                                                                                                                                                                                                                                               |
| A17 | Intel and Ayar Labs Propel 224Gbps+ Scale-Up with Co-Packaged Optics, Extending NVIDIA NVLink                                                                                  | <a href="https://www.siliconcodesign.com/p/co-packaged-optics-for-224gbps-scale">https://www.siliconcodesign.com/p/co-packaged-optics-for-224gbps-scale</a>                                                                                                                                                                                       |
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# #01 Silicon Photonics Dominates 1.6T Optical Transceivers, Targeted for Broad AI Data Center Deployment by 2026

Published September 11, 2026   AICP Light   USA



## OVERVIEW

Silicon photonics is rapidly becoming the leading technology for 1.6T transceiver optics, enabling higher per-lane data rates and improved power efficiency through CMOS-compatible manufacturing. The optical communications industry anticipates widespread deployment of 1.6T optical modules for AI clusters starting in 2026. Both Linear-drive pluggable optics (LPO) and co-packaged optics (CPO) are under evaluation for power efficiency and scalability, with CPO promising significant power savings despite thermal management challenges.

### Key Findings

Silicon photonics is rapidly establishing itself as the dominant technology for next-generation 1.6T optical transceivers, leveraging CMOS-compatible manufacturing to achieve significantly higher per-lane data rates and improved power efficiency. This technological shift is expected to drive widespread deployment of 1.6T optical modules in AI clusters from 2026 onwards.

### Technical / Clinical Details

Silicon photonics integrates key optical components, such as light sources, modulators, and detectors, onto a silicon chip, enabling miniaturization, cost reduction, and enhanced performance. This approach facilitates 1.6T high-speed data transmission with reduced power consumption compared to traditional optical modules. In AI data centers, particularly within AI clusters, bandwidth bottlenecks in GPU-to-GPU and server-to-server communications are critical. The adoption of 1.6T optical modules is essential to resolve these bottlenecks and maximize AI computing capabilities.

For 1.6T connectivity, two primary approaches—Linear-drive Pluggable Optics (LPO) and Co-Packaged Optics (CPO)—are being evaluated for their power efficiency and scalability. LPO, by eliminating the Digital Signal Processor (DSP), offers practical energy efficiency and is poised for quicker market entry. CPO, conversely, promises even greater power savings by placing the optical engine directly adjacent to the Application-Specific Integrated Circuit (ASIC), thereby minimizing electrical trace lengths. However, CPO faces challenges related to thermal management and manufacturing complexity, which must be overcome for widespread adoption.

## Background & Context

The explosive growth of AI, machine learning, and High-Performance Computing (HPC) has dramatically increased data transfer requirements within data centers. AI workloads, in particular, demand the interconnection of tens of thousands of GPUs, necessitating bandwidths ranging from petabits to zettabits per second. Traditional copper-based electrical interconnects are encountering limitations in signal integrity, power consumption, and physical reach, making the transition to optical interconnects inevitable. Silicon photonics, utilizing the well-established CMOS processes of the semiconductor industry, offers a scalable and cost-effective manufacturing solution to meet these demands.

## Strategic Significance & Outlook

The widespread deployment of 1.6T optical modules will profoundly impact the design and operation of AI data centers. These silicon photonics-based modules will significantly boost the performance and efficiency of AI clusters, enabling the realization of more complex and demanding AI applications. Continued technological advancements in both LPO and CPO, coupled with optimized thermal management and manufacturing costs, are expected to solidify these optical technologies as standards in AI infrastructure. In the intensifying AI race, high-speed, low-power optical interconnects will be a critical differentiator for competitive advantage.

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Source: <https://www.aicplight.com/resources/1-6t-optical-modules-and-scale-up-networks-the-dual-engines-powering-next-generation-ai-infrastructure/>

# #02 Ayar Labs Secures Additional \$150M, Totaling \$650M for 2026, to Scale Co-Packaged Optics (CPO) for AI Infrastructure

Published September 10, 2026   Converge Digest   USA



## OVERVIEW

Ayar Labs has raised an additional \$150 million, bringing its total 2026 funding to \$650 million, to expand manufacturing capacity for co-packaged optics (CPO) targeting AI scale-up infrastructure. The company's CPO approach, based on its TeraPHY optical engine, integrates optical connectivity close to compute silicon, addressing bandwidth, reach, and power constraints of electrical I/O. Ayar Labs is collaborating with Wiwynn on rack-scale AI systems and establishing a new design center in Bengaluru, India, to support high-volume production.

### Key Findings

Ayar Labs has secured an additional \$150 million in funding, raising its total capital for 2026 to \$650 million, to significantly expand its manufacturing capacity for co-packaged optics (CPO) destined for AI scale-up infrastructure. This substantial investment aims to accelerate the mass production of its CPO technology, addressing critical data transfer bottlenecks in AI computing.

### Technical / Clinical Details

Ayar Labs' CPO technology is built upon its TeraPHY optical engine and external optical sources. This approach involves placing optical connectivity in extremely close proximity to compute silicon (e.g., GPUs and CPUs), thereby overcoming the severe limitations of bandwidth, reach, and power consumption inherent in existing electrical I/O. This enables a dramatic increase in data transfer speed and efficiency within AI clusters, both chip-to-chip and rack-to-rack. The company is actively collaborating with cloud infrastructure provider Wiyynn on the development of rack-scale AI systems, demonstrating concrete progress towards practical implementation. Furthermore, by establishing a new design center in Bengaluru, India, Ayar Labs is bolstering its product development capabilities and high-volume production support, strengthening its global manufacturing and supply chain.

### Background & Context

The explosive growth of AI workloads, particularly large language models (LLMs), has imposed unprecedented demands on both computational and data transfer capabilities within data centers. Traditional electrical interconnections for chip-to-chip and server-to-server communication have become a primary bottleneck in scaling AI cluster performance due to power consumption, signal degradation, and physical wiring length limitations. In this context, optical interconnects, especially CPO technology that integrates compute chips with optical modules, are widely recognized as the next frontier for AI infrastructure. The substantial investment in Ayar Labs reflects a strong industry-wide consensus that this technology is indispensable for AI-era data centers.

## Strategic Significance & Outlook

Ayar Labs' CPO technology holds the potential to fundamentally transform AI data center architectures. With expanded manufacturing capabilities and strategic partnerships, the company is poised to accelerate the mass production and market penetration of its CPO solutions. As CPO becomes more prevalent, AI clusters can be built on a larger scale, with greater speed and improved power efficiency, providing robust support for the development of next-generation AI applications. Ayar Labs' efforts are expected to play a critical role in shaping the future of AI computing.

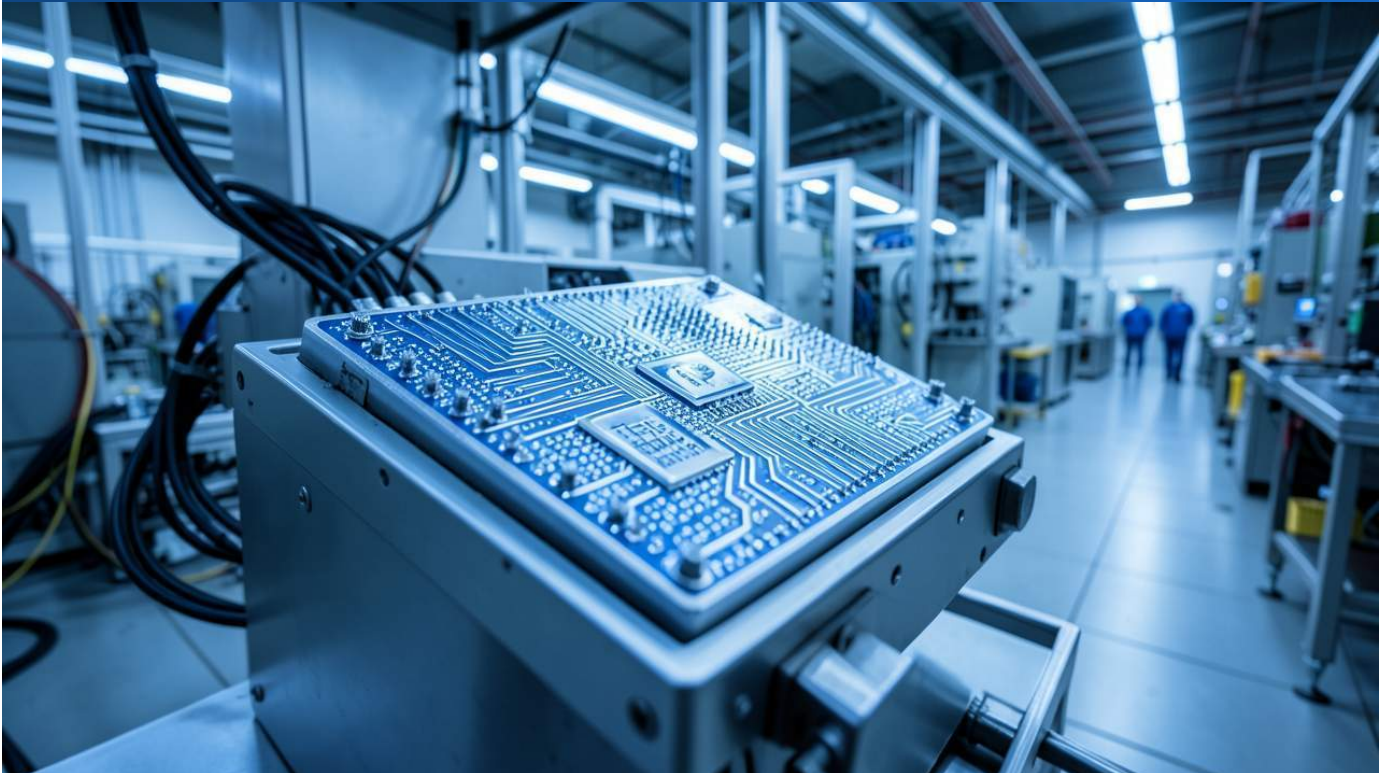
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Source: <https://convergedigest.com/ayar-labs-150m-cpo-ai-scale-up/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #03 AI Infrastructure Startups Drive Optical Interconnect Breakthroughs Beyond Copper Limits: Ayar Labs, Lightmatter, and HyperLight Lead Innovation

Published September 10, 2026   New Market Pitch   USA



## OVERVIEW

Leading AI infrastructure startups, including Ayar Labs, Lightmatter, and HyperLight, are advancing optical interconnect technologies to overcome the limitations of copper cabling. Ayar Labs is expanding production of its TeraPHY chiplets, bringing optical communication closer to processors for enhanced bandwidth and power efficiency. Lightmatter's Passage architecture utilizes photonics for optimized data movement between AI chips and racks, while HyperLight scales thin-film lithium niobate photonics. These innovations aim to feed large AI clusters with data fast enough for them to behave as a single machine.

### Key Findings

Leading AI infrastructure startups, including Ayar Labs, Lightmatter, and HyperLight, are spearheading the development and scaling of innovative optical interconnect technologies to surmount the limitations of copper-based interconnects, which have become a bottleneck for AI computing. These advancements are dramatically improving data transfer speeds and energy efficiency, enabling large-scale AI clusters to function as a single, ultra-high-speed machine.

### Technical / Clinical Details

Ayar Labs is expanding the production of its TeraPHY chiplets, which integrate optical communication directly adjacent to processors. This co-packaged optics (CPO) approach reduces electrical signal transmission distances, significantly lowers power consumption, and provides the immense bandwidth required for AI chip-to-chip communication. Lightmatter, through its Passage architecture, leverages photonics to optimize data movement between AI chips and racks. Their technology employs optical pathways to streamline data flow, bypassing the delays and power losses associated with electrical routes. Furthermore, HyperLight is advancing the scaling of thin-film lithium niobate (TFLN) photonics technology. TFLN enables high-speed optical modulation and low-loss transmission, offering a new avenue for ultra-fast, high-efficiency optical communication in AI infrastructure. Each of these companies utilizes distinct approaches to harness the advantages of light, contributing to the performance enhancement of AI data centers.

### Background & Context

The evolution of AI hinges on the ability to process vast amounts of data at extremely high speeds and to exchange information across numerous GPUs and accelerators. However, conventional electrical interconnects (copper wires) face inherent physical limitations, such as signal attenuation at high frequencies, heat generation, and escalating power consumption, which are now major impediments to scaling AI clusters. Consequently, the data center and AI infrastructure industries are rapidly transitioning towards faster, more energy-efficient optical interconnect solutions. Startups like Ayar Labs, Lightmatter, and HyperLight are at the forefront of this new technological paradigm, attracting significant capital market attention and investment.

## Strategic Significance & Outlook

The breakthroughs in optical interconnects by these startups are fundamental to shaping the future of AI infrastructure. Ayar Labs' CPO, Lightmatter's photonic data movement, and HyperLight's TFLN technology will enable the further scaling and complexity of AI models, pushing AI capabilities to new dimensions. As these technologies mature and are widely deployed, data centers will become more efficient and powerful, accelerating progress in data-intensive AI applications such as autonomous driving, drug discovery, and climate modeling. Optical interconnects are key to realizing the vision of AI computing as a 'single machine.'

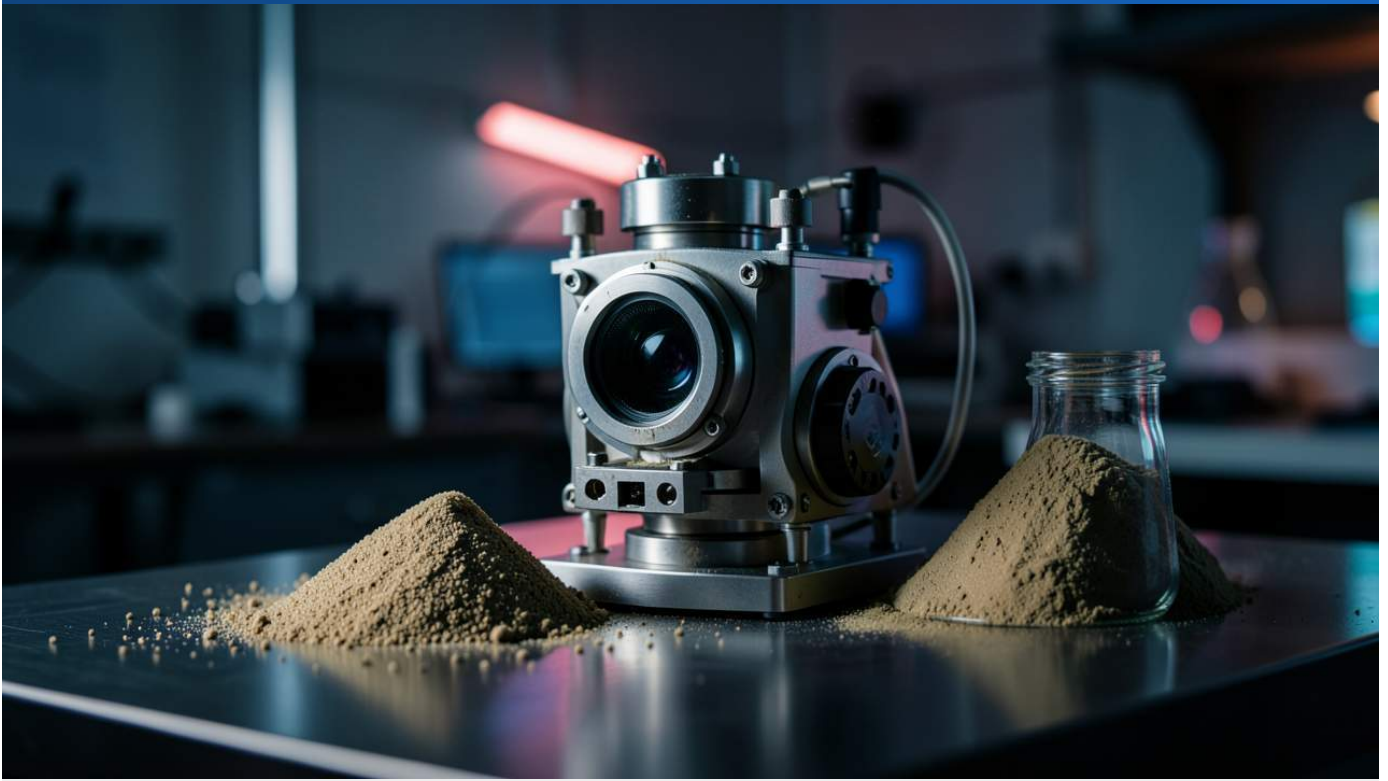
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Source: <https://newmarketpitch.com/blogs/news/ai-infrastructure-startup-builds>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #04 Co-Packaged Optics (CPO) Nears Mass Production: Interfaces, Yield, and Maintainability Emerge as Next Key Challenges

Published September 14, 2026   DIGITIMES   Taiwan



## OVERVIEW

As AI computing bandwidth demands escalate, optical interconnect architectures are shifting from pluggable optical modules to near-packaged optics (NPO) and co-packaged optics (CPO), moving closer to mass production. Successful high-volume deployment of these technologies requires addressing critical challenges beyond optical-engine performance, including precision alignment, serviceability, manufacturing yield, and advancing supply chains for light sources, packaging, and testing.

### Key Findings

Amidst the escalating bandwidth demands of AI computing, optical interconnect architectures are transitioning from conventional pluggable optical modules to chip-proximate near-packaged optics (NPO) and co-packaged optics (CPO), now approaching mass production. With this evolution, the next critical challenges revolve around establishing robust interfaces, improving manufacturing yield, and ensuring practical maintainability.

### Technical / Clinical Details

NPO and CPO technologies aim to resolve data transfer bottlenecks and significantly enhance power efficiency by integrating the optical engine near or within the same package as the electrical chip. This enables high-speed communication between GPUs and large-scale data processing within AI clusters. However, the widespread adoption of these technologies hinges on overcoming several technical and manufacturing hurdles. Specifically, establishing precise alignment techniques between optical fibers and optical engines is paramount; even slight misalignments can lead to signal loss, necessitating highly accurate assembly processes. Maintainability is another challenge: unlike traditional pluggable modules, CPO's integration with the chip makes replacement or repair more complex in case of failure. Furthermore, improving manufacturing yield is directly tied to cost reduction and mass production. This requires the development of a robust, comprehensive supply chain, including reliable light source provision, advanced packaging technologies, and efficient testing processes.

### Background & Context

The rapid advancements in AI and High-Performance Computing (HPC) are placing unprecedented demands on data transfer volumes and processing speeds within data centers. Traditional electrical interconnects are facing limitations due to signal degradation, increased power consumption, and physical distance constraints, hindering the scalability of AI infrastructure. Consequently, the shift to optical interconnects, particularly integrated solutions like CPO, is an inevitable trend. Numerous major semiconductor manufacturers and cloud service providers are investing in CPO technology, anticipating its role as a foundational element for AI-era data centers.

## Strategic Significance & Outlook

As CPO technology moves into mass production, the standardization of interfaces, optimization of manufacturing yield, and simplification of maintainability will be crucial factors determining market penetration. If these challenges can be overcome through industry-wide collaboration, CPO is poised to become the dominant technology in AI data centers, enabling further advancements and applications of AI. Innovation in related technologies such as light sources, packaging, and testing, along with the strengthening of the supply chain, will be key to CPO's long-term success.

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Source: <https://www.digitimes.com/news/a20260914PD208/cpo-production-bandwidth-optics-manufacturing.html>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #05 GIGALIGHT Unveils 18W Ultra-Low Power 1.6T AI Interconnect at ECOC 2026, Signaling Independence from Liquid Cooling

Published September 14, 2026   GIGALIGHT Press Releases   China



## OVERVIEW

GIGALIGHT showcased a hybrid technology at ECOC 2026 for 1.6T AI interconnects, achieving a significantly reduced power consumption of 18W compared to mainstream 3nm full-DSP solutions. This innovation aims to alleviate thermal pressure in high-density OSFP switch racks, enabling AI training clusters to scale without sole reliance on liquid cooling. The solution provides robust transmission and BER performance exceeding international protocol specifications, supporting 500-meter short- and medium-distance interconnects in AI clusters.

### Key Findings

At ECOC 2026, GIGALIGHT unveiled a 1.6T AI interconnect featuring a hybrid technology that drastically reduces power consumption to 18W, a significant improvement over mainstream 3nm full-DSP solutions. This breakthrough aims to mitigate thermal challenges in high-density OSFP switch racks, allowing AI training clusters to scale without exclusive reliance on liquid cooling systems.

### Technical / Clinical Details

GIGALIGHT's presented 1.6T AI interconnect utilizes an innovative hybrid technology to achieve remarkable power efficiency. Specifically, it reduces power consumption to a mere 18W, a substantial decrease from the levels typically required by current leading 3nm process technology-based full-DSP solutions. This significant power reduction substantially alleviates thermal design challenges in AI data centers, particularly in high-density OSFP switch racks populated with numerous GPUs and accelerators. Lowering the thermal load simplifies rack cooling requirements and directly translates into reduced operational costs. The solution delivers robust transmission performance and Bit Error Rate (BER) exceeding international protocol specifications, ensuring stable operation for short- to medium-distance interconnects up to 500 meters within AI clusters. This enables high-speed, reliable data transfer for AI workloads and facilitates flexible deployment and scaling of AI clusters even in environments where liquid cooling is not mandatory.

### Background & Context

The increasing demands of AI computing are introducing new challenges for power consumption and thermal management in data centers. Particularly in AI training clusters, where a large number of GPUs operate simultaneously, the generated heat can reach levels that threaten system performance and reliability. While liquid cooling systems offer an effective solution, they often come with high implementation costs and increase infrastructure complexity. GIGALIGHT's hybrid technology addresses this issue by offering a different approach: fundamentally reducing power consumption itself. This represents a crucial step towards building more sustainable and cost-effective AI infrastructure, drawing significant industry attention.

## Strategic Significance & Outlook

GIGALIGHT's ultra-low power 1.6T AI interconnect technology holds the potential to profoundly impact the design and operation of AI data centers. The ability to reduce reliance on liquid cooling will accelerate the deployment of AI clusters, especially in environments with space constraints or limited budgets. As this technology gains wider adoption, it is expected to enhance the overall energy efficiency of AI infrastructure and facilitate the creation of larger, more distributed AI computing environments. GIGALIGHT aims to leverage this technology to establish itself as a key player in the next-generation AI data center market.

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Source: <https://www.gigalight.com/news-events/news-10875.html>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #06 Tower Semiconductor and NewPhotonics Initiate High-Volume Shipments of Laser-Integrated PICs for 800G/1.6T AI Interconnect

Published September 17, 2026   Unite.AI   USA



## OVERVIEW

Tower Semiconductor and NewPhotonics have commenced high-volume shipments of laser-integrated optical engine Photonic Integrated Circuits (PICs) for AI interconnect applications, supporting 800G to 1.6T data rates. These PICs leverage Tower's PH18DA Silicon Photonics Platform, which monolithically integrates indium phosphide lasers, modulators, and photodetectors onto a single silicon chip. This advancement promises enhanced power efficiency and performance for AI data center networking, addressing the critical demand for higher bandwidth and lower latency.

### Key Findings

Tower Semiconductor and NewPhotonics have marked a significant milestone in AI interconnect technology by initiating high-volume shipments of laser-integrated optical engine Photonic Integrated Circuits (PICs). These advanced PICs are designed to support data rates ranging from 800G to 1.6T, directly addressing the burgeoning demands of next-generation AI data centers. The integration of lasers directly onto the PICs is a crucial breakthrough, eliminating traditional bottlenecks in optical transceiver modules and leading to substantial improvements in power efficiency and overall performance.

### Technical / Clinical Details

The newly commercialized PICs are built upon Tower Semiconductor's PH18DA Silicon Photonics Platform, a cutting-edge technology characterized by its heterogeneous integration capabilities. This platform allows for the monolithic integration of high-performance indium phosphide (InP) optical components, such as lasers, modulators, and photodetectors, directly onto a silicon chip. This innovative approach results in miniaturized optical engines, reduced manufacturing costs, and enhanced reliability. These PICs are compatible with widely adopted pluggable transceiver modules like QSFP-DD800 and OSFP-800, and are also engineered to support future Co-packaged Optics (CPO) and Near-packaged Optics (NPO) socket pluggable solutions, promising to revolutionize chip-to-chip and rack-to-rack communication within AI clusters.

### Background & Context

The exponential growth of AI workloads has intensified the challenges associated with bandwidth, latency, and power consumption in data center interconnects. Traditional electrical interconnects are increasingly struggling to keep pace with scaling requirements, making a transition to optical communication inevitable. Silicon photonics, benefiting from mature semiconductor manufacturing processes, offers a compelling solution due to its cost-efficiency and scalability. The collaboration between Tower and NewPhotonics leverages advanced materials science and semiconductor fabrication expertise to bring high-performance optical interconnects to fruition for the AI era.

## Strategic Significance & Outlook

The high-volume shipment of these laser-integrated PICs is set to profoundly impact both the design and operational aspects of AI data centers. By enabling faster and more energy-efficient interconnects, these solutions will allow for the full potential of GPUs and AI accelerators to be realized, thereby accelerating the training and inference of large-scale AI models. It is anticipated that such integrated photonics solutions will become a standard component of AI infrastructure, contributing significantly to reducing data center power consumption and improving cost efficiency. This success also solidifies the growing presence of silicon photonics in the broader optical communication market.

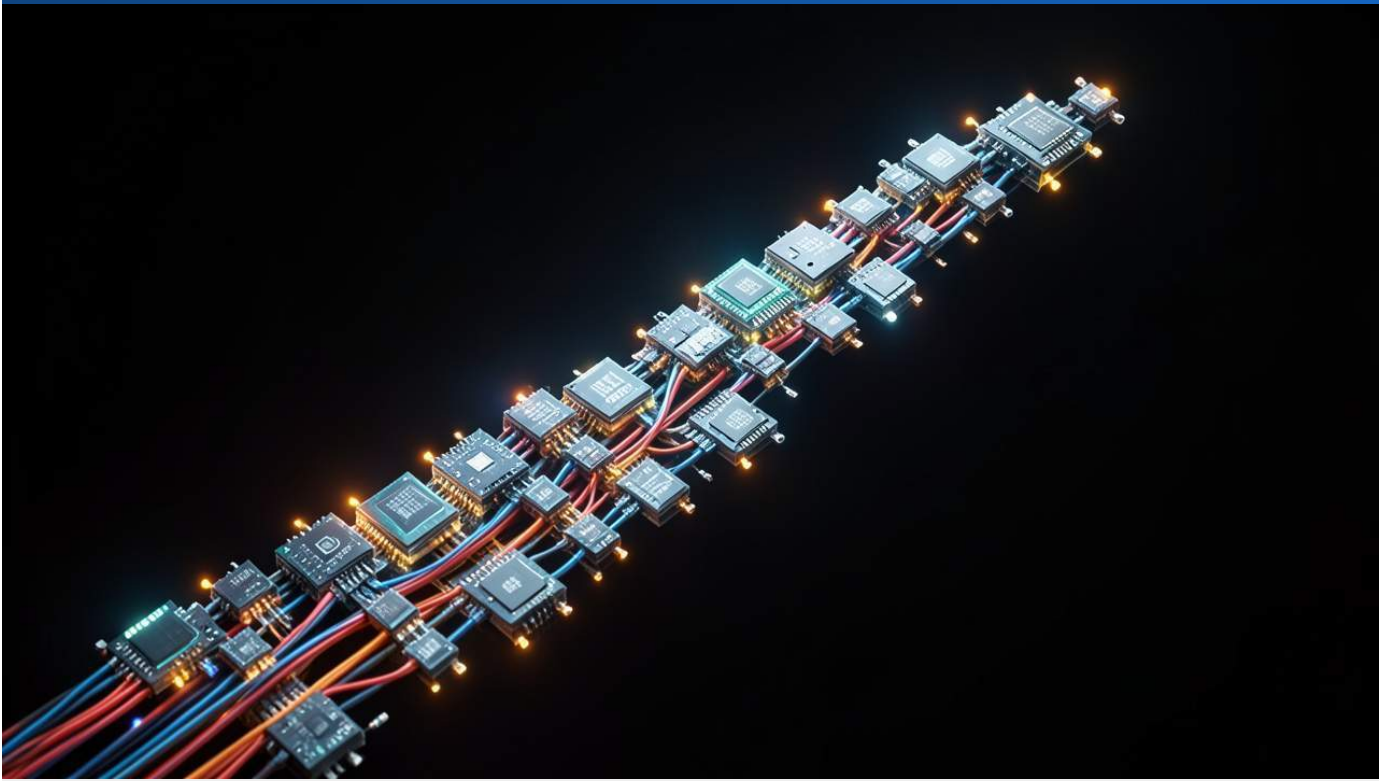
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Source: <https://www.unite.ai/tower-and-newphotonics-ship-laser-integrated-pics-for-ai-interconnect/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #07 NTT's IOWN AI Fund Makes Inaugural Investment in iPronics for AI Data Center Programmable Optical Networking

Published September 16, 2026   The Fast Mode   Japan



## OVERVIEW

NTT's IOWN AI Fund has made its first investment in iPronics, a developer of programmable optical networking technology for AI data centers. iPronics' silicon photonics-based platform dynamically reconfigures optical connectivity within and across racks, boosting GPU utilization and cutting energy consumption. This strategic investment aligns with IOWN's vision for high-capacity, power-efficient, and flexible next-generation AI infrastructure, with NVIDIA also participating in the funding round.

### Key Findings

NTT's IOWN AI Fund has made its inaugural strategic investment in iPronics, a pioneering company specializing in programmable optical networking technology tailored for AI data centers. This funding is poised to bolster iPronics' silicon photonics-based platform, which promises to significantly enhance GPU utilization, drastically reduce energy consumption, and simplify network architectures within the demanding AI infrastructure landscape. This marks a critical step towards achieving the flexible and highly efficient data communication required for the evolving AI era.

### Technical / Clinical Details

iPronics' innovative platform leverages advanced silicon photonics to enable software-defined, dynamic reconfiguration of optical connectivity both within and between racks in AI data centers. Unlike traditional fixed optical links, this technology allows for flexible bandwidth allocation that adapts to fluctuating data traffic patterns, thereby resolving GPU resource bottlenecks and maximizing their utilization. Furthermore, by optimizing optical signal routing, the system minimizes the number of electrical signal conversions, which is expected to lead to substantial energy consumption reductions associated with intensive AI processing. NVIDIA's participation in this funding round underscores the potential for iPronics' technology to play a pivotal role across the broader AI ecosystem.

### Background & Context

The rapid advancement of AI places unprecedented demands on data center infrastructure. High-speed and efficient data transfer between GPUs is a critical factor for training large-scale AI models. NTT's IOWN (Innovative Optical and Wireless Network) initiative aims to create an all-photonic network to dramatically improve power efficiency and high-speed communication performance. The investment in iPronics represents a concrete approach within the IOWN concept to leverage optical technologies for solving AI infrastructure challenges. Programmable optical networks are ideally suited to the dynamic nature of AI workloads, facilitating optimal resource utilization and reduced operational costs.

## Strategic Significance & Outlook

This investment from the NTT IOWN AI Fund is expected to accelerate iPronics' research, development, and market penetration of its programmable optical networking technology. Widespread adoption of this technology across data centers would not only enhance AI computational capabilities but also contribute to a reduction in the total cost of ownership (TCO) for data centers. The involvement of major AI hardware vendors like NVIDIA further strengthens the likelihood of iPronics' technology becoming an industry standard. Looking ahead, this programmable optical networking is anticipated to play a crucial role in next-generation computing paradigms such as quantum computing and edge AI, owing to its inherent flexibility and efficiency.

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Source: <https://www.thefastmode.com/technology-solutions/50622-ntts-iown-ai-fund-makes-first-investment-in-ipronics-for-ai-infrastructure>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #08 FS Unveils 1.6T Scale-Out Optics with 500 km Coherent Modules for AI Fabrics, Validated on NVIDIA Quantum-X800

Published September 14, 2026   StorageReview.com   USA



## OVERVIEW

FS has introduced a new AI optics portfolio featuring 1.6T scale-out transceivers for GPU cluster links and 500 km coherent modules for inter-site connections. The 1.6T OSFP-DR8-1.6T and OSFP-2FR4-1.6T modules, designed for InfiniBand XDR networks, utilize silicon photonics and a Broadcom 3nm DSP to deliver 200G PAM4 electrical lanes. These modules are validated on NVIDIA Quantum-X800 switches, addressing high-speed, short-reach interconnect demands.

### Key Findings

FS has announced a comprehensive AI optics portfolio, introducing 1.6T scale-out transceivers specifically designed for GPU cluster links and 500 km coherent modules for extended inter-site connections. This new offering aims to significantly enhance the performance and scalability of AI fabrics, enabling efficient processing of next-generation AI workloads. The 1.6T modules, in particular, integrate leading-edge technologies to meet the high-density and high-bandwidth demands prevalent in advanced AI environments.

### Technical / Clinical Details

Among the newly unveiled products, the 1.6T OSFP-DR8-1.6T and OSFP-2FR4-1.6T modules, custom-engineered for InfiniBand XDR networks, stand out. These transceivers incorporate state-of-the-art silicon photonics technology alongside a high-performance 3nm Digital Signal Processor (DSP) from Broadcom. This combination enables support for 200G PAM4 electrical lanes, facilitating ultra-high-speed data transfer that is challenging with traditional copper connections. FS emphasizes that these modules have been thoroughly validated on NVIDIA Quantum-X800 switches, ensuring compatibility and optimal performance with leading AI platforms. Additionally, the 500 km coherent modules provide long-distance transmission capabilities for up to 500 km, strengthening wide-area connectivity between AI data centers and fostering regional AI cluster collaboration.

### Background & Context

As AI models grow in scale and complexity, the interconnects within data center GPU clusters have become a primary bottleneck for performance. Traditional 100G and 400G transceivers are increasingly insufficient to handle the massive volumes of data, making a rapid transition to faster 800G and 1.6T solutions imperative. Silicon photonics, with its advantages in low power consumption, miniaturization, and high integration, is an indispensable technology for realizing optical interconnects in the AI era. FS's solutions directly address this market demand, providing critical infrastructure components to enable the scaling of AI workloads.

## Strategic Significance & Outlook

FS's new AI optics portfolio offers powerful tools for data center designers and operators building next-generation AI fabrics. The introduction of 1.6T modules will maximize the computational power of GPUs, further accelerating AI research and commercial applications. Moreover, the 500 km coherent modules will simplify the integration of geographically dispersed AI resources, contributing to the construction of larger and more resilient AI infrastructures. The widespread adoption of these technologies is expected to enhance the efficiency and accessibility of AI computing, boosting AI applications across a wide range of industries.

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Source: <https://www.storagereview.com/news/fs-pairs-1-6t-scale-out-optics-with-500-km-coherent-modules-and-a-handheld-toolkit-for-ai-fabrics>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #09 CIOE 2026: 1.6T Optical Transceiver Orders Extend into 2027, Supply Capacity Dictates Market Leadership

Published September 16, 2026   Optics (FundaAI)   USA



## OVERVIEW

At CIOE 2026, it was revealed that 1.6T optical transceiver orders and production schedules are extending into 2027 due to rapidly increasing demand. Leading suppliers like InnoLight, Eoptolink, Coherent, and Lumentum are already in volume production. The adoption of Near-packaged Optics (NPO) is broadening, driving demand for high-power light sources and fiber arrays. Debates at the exhibition centered on NPO versus Co-packaged Optics (CPO), with NPO viewed by some as a preferred near-term solution for large AI computing clusters, while others believe CPO is the only viable option beyond 448G.

### Key Findings

At CIOE 2026 (China International Optoelectronic Exposition), a central theme was the extension of 1.6T optical transceiver orders and production schedules well into 2027, driven by the rapidly escalating demand from AI data centers. This situation underscores a significant imbalance where market supply capabilities are struggling to keep pace with surging demand, highlighting that supply chain stability will be a decisive factor in future market competition. While major suppliers are already in mass production, the momentum of demand continues to outstrip existing capacity.

### Technical / Clinical Details

Leading industry players, including InnoLight, Eoptolink, Coherent, and Lumentum, have already established mass production capabilities for 1.6T optical transceiver products. These companies are actively employing silicon photonics and advanced packaging technologies to meet the high-density and high-bandwidth requirements of AI workloads. Furthermore, the adoption of Near-packaged Optics (NPO) is expanding, consequently boosting demand for associated components such as high-power light sources and fiber arrays. Throughout the exhibition, there were vibrant discussions concerning whether NPO or Co-packaged Optics (CPO) would be the primary interconnect solution for future AI clusters. Some experts advocated for NPO as a more practical short-to-medium-term solution for large-scale AI computing clusters, while others maintained that CPO is the only sustainable solution for bandwidths exceeding 448G.

### Background & Context

The increasing scale and complexity of AI models have dramatically amplified the demands on bandwidth and power efficiency for interconnects within data centers. Traditional optical transceiver form factors are becoming insufficient to meet these requirements, making the transition to more highly integrated optical technologies like NPO and CPO an industry-wide trend. CIOE serves as a crucial platform to showcase the forefront of this technological innovation and to facilitate strategic discussions between suppliers and customers. The tight supply capacity observed reflects similar challenges faced by the broader semiconductor industry, now manifesting within the optical communications market.

## Strategic Significance & Outlook

With demand for 1.6T optical transceivers anticipated to continue beyond 2027, suppliers must focus on expanding production capacity and strengthening their supply chains. The technological rivalry between NPO and CPO is expected to intensify, though both technologies are likely to address different market needs and implementation scenarios. NPO may see earlier market penetration due to its adaptability to existing infrastructure, while CPO could become indispensable for next-generation AI systems striving for ultimate performance and power efficiency. This supply-driven market environment indicates that, alongside technological innovation, the optimization and scaling of manufacturing processes will be key to success.

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Source: <https://fundaai.substack.com/p/researchoptics-cioe-takeaway-2026>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #10 Huawei Unveils 7.2Tbps Near-Packaged Optics Module and Establishes China's First NPO MSA, Challenging NVIDIA and Broadcom's CPO Push

Published September 11, 2026   TrendForce   China



## OVERVIEW

Huawei has unveiled a 7.2Tbps Near-Packaged Optics (NPO) module and launched the "OPEN NPO" initiative, establishing China's first NPO optical interconnect Multi-Source Agreement (MSA), directly challenging the Co-packaged Optics (CPO) strategies of NVIDIA and Broadcom. NPO integrates at the printed circuit board level, offering a pluggable architecture for individual component replacement. The combined CPO and NPO market is projected for significant growth, with NPO favored by many cloud service providers, including Alibaba and Tencent, as a near- to mid-term transition solution.

### Key Findings

Huawei has announced a 7.2Tbps Near-Packaged Optics (NPO) module as a strategic counter-move against the Co-packaged Optics (CPO) initiatives championed by NVIDIA and Broadcom. Furthermore, the company has launched the "OPEN NPO" initiative, establishing China's first NPO optical interconnect Multi-Source Agreement (MSA), signaling a clear intent to accelerate the standardization and ecosystem expansion of NPO technology. This move is set to intensify the technological competition in AI data center interconnect architectures.

### Technical / Clinical Details

Huawei's newly introduced 7.2Tbps NPO module adopts an integration method where the optical engine is positioned on the Printed Circuit Board (PCB) in close proximity to the processor. This differs from CPO, which directly integrates the optical engine within the processor package, by maintaining a pluggable architecture that allows for the replacement of individual optical components. This design offers advantages such as simplified maintenance, adaptability to existing infrastructure, and manufacturing cost flexibility. Through "OPEN NPO," Huawei aims to ensure compatibility and interoperability among suppliers, thereby accelerating NPO adoption. According to TrendForce's projections, the combined CPO and NPO market is anticipated to experience significant growth, with many major Chinese cloud service providers, including Alibaba and Tencent, reportedly prioritizing NPO as a near-to-mid-term transition solution for AI interconnects.

### Background & Context

The burgeoning demands of AI workloads are placing unprecedented pressure on data center interconnects, necessitating extraordinary bandwidth and power efficiency. CPO and NPO have emerged as leading technologies to address these challenges, each pursuing distinct approaches to optical-electrical integration. While NVIDIA and Broadcom are focusing on CPO, Huawei is promoting NPO, aiming to provide diverse market options and strengthen its own technological ecosystem. In the Chinese market, there is a strong drive to foster domestic technologies and standardization, and the establishment of the "OPEN NPO" MSA is perceived as a strategic component of this broader initiative.

## Strategic Significance & Outlook

Huawei's announcement of the 7.2Tbps NPO module and the formation of the "OPEN NPO" MSA will significantly alter the competitive landscape of the AI data center optical interconnect market. NPO presents a practical alternative to the manufacturing complexities and maintenance challenges associated with CPO, potentially making it an attractive option for numerous cloud service providers. Moving forward, NPO and CPO are expected to leverage their respective technical and economic advantages, finding adoption in different use cases and market segments. This competition will ultimately drive improvements in AI infrastructure performance and cost efficiency, contributing to the broader proliferation of AI technologies.

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Source: <https://www.trendforce.com/news/2026/09/11/news-huawei-unveils-7-2tbps-near-packaged-optics-module-challenging-nvidia-and-broadcoms-cpo-push/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #11 EV Group Solves Co-packaged Optics Manufacturing Challenges with Wafer Bonding and Nanoimprint for High-Density Integration

Published September 14, 2026   Quality Digest   USA



## OVERVIEW

EV Group (EVG) is addressing critical manufacturing challenges for Co-packaged Optics (CPO), which integrates Photonic Integrated Circuits (PICs), lasers, and optical structures within a single package. EVG's portfolio of wafer bonding, nanoimprint lithography, and thin-wafer processing technologies enables the high-density integration required for CPO. The company is also positioning itself to support future optical I/O chiplet architectures and 3D photonic-electronic integration, aiming for tighter co-integration of silicon photonics, CMOS electronics, and laser sources.

### Key Findings

EV Group (EVG) is actively tackling the critical manufacturing challenges inherent in Co-packaged Optics (CPO), a technology poised to revolutionize next-generation interconnects in AI data centers. EVG's comprehensive portfolio, encompassing wafer bonding, nanoimprint lithography, and thin-wafer processing technologies, supports the essential processes required for high-density integration of Photonic Integrated Circuits (PICs), lasers, and various optical structures within a single package. This significantly paves the way for the mass production and widespread adoption of CPO solutions.

### Technical / Clinical Details

CPO technology aims to drastically shorten electrical trace lengths, improve signal integrity, and reduce power consumption and latency by directly integrating optical transceivers into the processor package. EVG's technologies are indispensable for realizing such complex integration. Specifically, its wafer bonding solutions enable the precise alignment and attachment of dissimilar materials and devices, facilitating heterogeneous integration of silicon photonics with CMOS electronics and III-V semiconductor lasers. Nanoimprint lithography is utilized for manufacturing intricate optical structures and waveguides with high precision and throughput. Furthermore, thin-wafer processing technologies are crucial for minimizing the overall CPO package footprint and optimizing thermal management. Beyond immediate CPO implementation, EVG is also preparing to support future chiplet-based optical I/O architectures and 3D photonic-electronic integration, aiming for an even tighter co-integration of silicon photonics, CMOS, and laser sources.

### Background & Context

The explosive growth of AI workloads has intensified the demands on bandwidth and power efficiency for interconnects within data centers. Traditional pluggable optical transceivers are increasingly struggling to scale, and CPO is expected to overcome these limitations, serving as a key enabler for the future of AI computing. However, manufacturing such advanced integrated technologies like CPO presents unprecedented process complexities, particularly concerning precision and yield when integrating diverse materials and functionalities. EVG's solutions play a central role in mitigating these manufacturing hurdles, thereby accelerating the practical realization of CPO.

## Strategic Significance & Outlook

EVG's advanced manufacturing technologies are set to accelerate the commercialization of CPO, leading to substantial improvements in the performance and power efficiency of AI data centers. The widespread adoption of CPO will fundamentally alter data center design philosophies, enabling GPUs and AI accelerators to operate at their peak performance. In the long term, EVG's technologies are poised to contribute to the standardization of optical I/O within the chiplet ecosystem and the realization of high-density 3D integration, further deepening the convergence of computing and communication. This progress is expected to powerfully propel the development of next-generation technologies not only in AI but also in HPC, autonomous driving, and IoT.

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Source: <https://www.qualitydigest.com/inside/manufacturing-news/ev-group-meets-manufacturing-challenges-co-packaged-optics-091526.html>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #12 NPO Consortium Establishes International Standards for Near-Packaged Optics; Huawei Unveils 7.2T Product

Published September 14, 2026   Computer Weekly   UK



## OVERVIEW

An NPO Standards Industry Summit has achieved consensus on international standards for Near-Packaged Optics (NPO), laying the groundwork for widespread commercial adoption and industry upgrades in AI infrastructure. NPO is positioned as a pragmatic alternative to Co-Packaged Optics (CPO), offering lower risk and higher ROI by avoiding CPO's inherent challenges like closed supply chains. Huawei demonstrated a 7.2T NPO product at the summit, leveraging advanced laser sources, silicon photonics, and electrical chips, signaling its readiness for next-gen AI demands.

### Key Findings

An NPO Standards Industry Summit successfully forged a consensus on international standards for Near-Packaged Optics (NPO), marking a pivotal development for the large-scale commercial deployment and industrial upgrading of NPO within AI infrastructure. This breakthrough was underscored by Huawei's unveiling of a 7.2T NPO product at the same event, showcasing a concrete application of these advanced optical technologies.

### Technical / Clinical Details

NPO is emerging as a pragmatic and lower-risk choice for future AI infrastructures compared to Co-Packaged Optics (CPO). While CPO fully integrates optical engines with electrical chips, facing challenges with closed industry chains and complex operational requirements, NPO offers a more adaptable approach. Huawei's 7.2T NPO product exemplifies this strategy, integrating leading-edge technologies in laser sources, silicon photonics, and electrical chips to achieve high bandwidth and energy efficiency. By placing optical components in close proximity to, but not fully integrated with, electrical chips, NPO minimizes signal degradation and power consumption over short distances, providing a substantial upgrade from traditional pluggable optics while maintaining manufacturing flexibility and compatibility with existing supply chain processes. This design principle allows for a more scalable and cost-effective transition for data center operators seeking to enhance interconnect performance for demanding AI workloads.

### Background & Context

The explosive growth of AI and its reliance on massive data processing necessitate a revolution in data center interconnects, driving the industry towards photonics-based solutions. Both NPO and CPO represent critical advancements in addressing the bandwidth, latency, and power consumption bottlenecks of conventional copper interconnects. The establishment of international standards for NPO is crucial for fostering interoperability among different vendors, accelerating market adoption, and cultivating a robust ecosystem. Huawei's proactive development and demonstration of a 7.2T NPO product signal a strong commitment to leading this technological shift and intensifying competition in the high-speed optical interconnect market.

## Strategic Significance & Outlook

The standardization of NPO and the introduction of high-performance products like Huawei's 7.2T module represent a significant step towards enabling the next generation of AI infrastructure. This move is expected to enhance supply chain efficiency and scalability, thereby accelerating innovation across AI, cloud computing, and high-performance computing sectors. As NPO gains traction, it is poised to become a dominant technology alongside CPO for ultra-high-speed, low-power interconnects within data centers. The open standards approach promises to prevent vendor lock-in and encourage broader industry participation, ultimately driving down costs and improving performance across the global digital infrastructure.

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Source: <https://www.computerweekly.com/news/366650350/NPO-consortium-sets-out-international-standards-for-optics-ecosystem>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #13 NVIDIA Adopts Hybrid Copper-Optics Strategy for AI Factories, NVLink 6 Connects 72 GPUs with Multi-Layer Resiliency

Published September 16, 2026   Elliot's Musings   USA



## OVERVIEW

NVIDIA is implementing a hybrid interconnect strategy for its AI factories, utilizing both extensive copper cabling for NVLink to connect 72 GPUs and developing integrated optical engines closer to switching chips. This dual approach tackles the challenge of delivering data to expensive processors while minimizing power, space, and cost. The interconnect market is simultaneously undergoing three major transitions: electrical-to-optical conversion, packaging shifts in optical links, and network topology changes, leading to a redistribution of revenue within the optical supply chain.

### Key Findings

NVIDIA has strategically embraced a hybrid approach, integrating both copper and optical interconnects to power its AI factories. This strategy is exemplified by NVLink 6, which uses numerous copper cables to link 72 GPUs within a single scale-up domain, while simultaneously advancing switches that embed optical engines closer to the switching chip. This dual-pronged development addresses the critical challenge of efficiently supplying data to high-cost processors while rigorously minimizing power consumption, physical footprint, and overall cost.

### Technical / Clinical Details

The core of NVIDIA's approach for the Vera Rubin platform is the NVL72 core rack-scale compute engine, designed to connect 72 Rubin GPUs into a cohesive scale-up domain. NVLink 6 ensures this connectivity primarily through extensive copper cabling, which remains effective for short-reach, high-bandwidth communication within the rack. Crucially, NVLink 6 is engineered for multi-layer resiliency, achieving a natively lossless fabric through a combination of Forward Error Correction (FEC), Physical Layer Retry (PLR), and Universal Physical Layer (UPHY) recovery. This system corrects signal errors at the silicon level with near-zero latency and employs credit-based flow control to eliminate packet drops, ensuring uncompromising reliability for demanding AI workloads. Concurrently, NVIDIA is investing in next-generation optical solutions, including Co-Packaged Optics (CPO), which involve integrating optical transceivers directly onto the same package as the switching ASIC. This will become essential for longer reaches and higher port densities, pushing beyond the limits of copper.

## Background & Context

The burgeoning demands of large-scale AI models have created unprecedented pressure on data center interconnects. Traditional copper cables are reaching their physical limits in terms of bandwidth, reach, and power consumption when connecting hundreds or thousands of GPUs. The interconnect market is currently navigating three concurrent transitions: a shift from electrical links to optical links for increased speed and reach; a move towards more integrated packaging of electronics and photonics within optical modules (e.g., CPO); and a fundamental change in how networks connect machines, evolving towards flatter, more disaggregated, and optimized topologies. These shifts are profoundly altering the optical supply chain, necessitating new design paradigms and leading to a significant redistribution of revenue as different components and integration methods gain prominence.

## Strategic Significance & Outlook

NVIDIA's hybrid strategy is a pragmatic response to the immediate and future demands of AI infrastructure, balancing proven copper technology with cutting-edge optics. While copper will continue to serve crucial short-distance roles, the long-term trend for AI factories points towards increasing reliance on advanced optical interconnects, particularly CPO, to overcome physical barriers. This strategic direction has far-reaching implications for the semiconductor and optical industries, stimulating innovation in high-speed optical components, advanced packaging, and network architectures. The continuous drive for improved power efficiency and increased bandwidth is critical for scaling AI compute capabilities, unlocking the development and deployment of even more complex AI models, and accelerating industrial innovation across various sectors globally. This evolution will solidify the foundation for a truly data-driven future.

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Source: <https://alphaseeker84.substack.com/p/follow-the-connection-copper-and>

# #14 Linear Pluggable Optics (LPO) Redefines FEC Implementation, Reducing DSP Dependence in High-Speed Optical Networks

Published September 11, 2026 C-LIGHT China



## OVERVIEW

Linear Pluggable Optics (LPO) significantly reduces or eliminates conventional Digital Signal Processor (DSP) functionality from optical modules, shifting signal processing responsibilities to the host system. While Forward Error Correction (FEC) remains integral to the overall system, its precise location and implementation become contingent on host ASICs, switches, NICs, retimers, and the optical module itself. This re-architecting of FEC impacts high-speed optical networks by offering new avenues for power and cost optimization.

### Key Findings

Linear Pluggable Optics (LPO) is fundamentally reshaping the signal processing paradigm in high-speed optical modules by largely removing or reducing conventional Digital Signal Processor (DSP) functionality. This innovative approach delegates the majority of signal processing to the host system, leading to substantial reductions in power consumption and cost at the optical module level. Consequently, this shift introduces significant changes in how Forward Error Correction (FEC) is implemented across high-speed optical networks.

### Technical / Clinical Details

Traditionally, DSP-based optical modules internally managed complex signal conditioning tasks, including dispersion compensation, jitter reduction, and FEC encoding/decoding. In contrast, LPO modules, characterized by their "linear" operation, directly pass raw electrical signals to the host's Application-Specific Integrated Circuit (ASIC), switch, Network Interface Card (NIC), or retimer, bypassing much of the on-module DSP. This design choice dramatically lowers the optical module's power draw and manufacturing cost. While FEC remains a critical component for detecting and correcting bit errors during data transmission, its implementation in an LPO-based system moves from being primarily within the optical module to being integrated within the host ASIC or strategically distributed across various system components. The exact placement and nature of FEC implementation in an LPO ecosystem are highly flexible, depending on factors such as host device capabilities, network architecture requirements, and desired error resilience levels. This distributed approach provides system designers with greater flexibility to optimize FEC placement and coordination for the entire network.

## Background & Context

The relentless expansion of AI data centers and cloud infrastructures demands ever-increasing multi-terabit communication speeds, which has, in turn, driven up the power consumption and cost of interconnects. In environments with millions of interconnected servers and GPUs, the power consumption of optical modules represents a significant portion of the total operational expenditure. LPO offers a compelling solution by potentially saving several watts per module through DSP removal, a critical advantage for hyperscale data centers. This technology is a key trend in enhancing the power and cost efficiency of next-generation optical interconnects, particularly for 400G, 800G, and 1.6T deployments, as the industry seeks sustainable scaling solutions.

## Strategic Significance & Outlook

The broader adoption of LPO will have profound implications for the design and operation of high-speed optical networks. The shift of DSP functionality to the host system necessitates closer collaboration between optical module vendors and host ASIC developers to ensure seamless interoperability and optimized performance. The efficient and robust implementation of FEC will be paramount for ensuring the reliability and low error rates of LPO-based systems. This technology is poised to become an indispensable element for improving data center power efficiency and scalability, with accelerated adoption expected in bandwidth- and latency-sensitive applications like AI/ML workloads. As a result, LPO is likely to solidify its position as a major technological trend in the optical communication industry, driving new waves of innovation across the entire ecosystem and contributing to the global digital infrastructure's evolution.

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Source: [https://www.c-light.com/news/details/What\\_Is\\_FEC.html](https://www.c-light.com/news/details/What_Is_FEC.html)

# #15 NTT West Expands "All-Photonics Connect powered by IOWN" Service Across Western Japan to Bolster ALOWN Infrastructure

Published September 18, 2026   ASCII   Japan



## OVERVIEW

NTT West is set to expand its "All-Photonics Connect powered by IOWN" Type 3 and Type 4 services across the entire western Japan region, beginning with Hokuriku in September 2027 and Shikoku in January 2028. This expansion aims to build an "AIOWN" infrastructure optimized for GPUs, networks, and power, addressing the rapidly escalating AI demand. Leveraging All-Photonics Network (APN) technology, the service delivers high-speed, large-capacity communication up to 800Gbps, enabling advanced applications like distributed GPU environments for industrial DX.

### Key Findings

NTT West has announced a significant expansion of its "All-Photonics Connect powered by IOWN" Type 3 and Type 4 services, progressively covering the entire western Japan region. This rollout, starting with Hokuriku in September 2027 and extending to Shikoku by January 2028, is a strategic move to establish a robust "AIOWN" infrastructure, specifically designed to optimize GPU, network, and power resources to meet the surging demands of artificial intelligence.

### Technical / Clinical Details

The "All-Photonics Connect powered by IOWN" service is built upon the All-Photonics Network (APN) technology, a cornerstone of the IOWN (Innovative Optical and Wireless Network) initiative championed by the NTT Group. APN ensures end-to-end optical communication, delivering unprecedented performance in terms of ultra-high speed, massive capacity, ultra-low latency, and significantly reduced power consumption. The expanded services, particularly Type 3 and Type 4, are tailored for different use cases: Type 3 is optimized for wide-area connectivity and large-volume data transfers between data centers, while Type 4 provides direct, dedicated connections between user premises and data centers. These services are capable of achieving communication speeds up to an impressive 800Gbps. This capability is critical for real-time processing of vast datasets required for AI model training and inference, facilitating the deployment of distributed GPU environments, and serving as an indispensable foundation for industrial digital transformation (DX). The pure optical layer connectivity eliminates the traditional delays and power losses associated with electrical-to-optical conversions, enhancing overall system efficiency and responsiveness.

## Background & Context

The rapid evolution of AI technologies, including generative AI, has imposed extraordinary demands on data center computing resources and network bandwidth. A key challenge for AI infrastructure is to maximize the utilization of expensive computational resources like GPUs while concurrently minimizing power consumption and operational costs. The IOWN concept, developed by the NTT Group, has garnered global attention as a comprehensive solution to these challenges. The term "AIOWN" specifically denotes the synergistic integration of AI and IOWN, aiming to unlock the full potential of AI by providing an optimal underlying infrastructure. This latest service area expansion by NTT West underscores its commitment to deploying this critical national infrastructure more broadly, supporting a wider range of enterprises and research institutions, and ultimately bolstering Japan's digital competitiveness.

## Strategic Significance & Outlook

The expansion of "All-Photonics Connect powered by IOWN" across western Japan is poised to accelerate the widespread adoption of APN, providing a powerful impetus for the societal implementation of advanced technologies such as AI, cloud computing, IoT, and the metaverse. The low-latency, high-capacity network is particularly vital for creating innovations in real-time sensitive sectors like remote healthcare, autonomous driving, smart cities, and digital twins. Furthermore, this infrastructure is expected to stimulate regional economies and foster the concentration of AI-related industries in western Japan. NTT West's strategic deployment of this advanced optical network is a clear step towards contributing to a sustainable and prosperous society, positioning Japan at the forefront of global digital innovation.

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Source: <https://ascii.jp/elem/000/004/436/4436448/>

# #16 Intel and Ayar Labs Propel 224Gbps+ Scale-Up with Co-Packaged Optics, Extending NVIDIA NVLink

Published September 14, 2026   Silicon Co-Design   USA



## OVERVIEW

Co-Packaged Optics (CPO) technology is enabling 224Gbps+ scale-up interconnects, with Intel pursuing a truly integrated approach via its Optical Compute Interconnect (OCI) that heterogeneously integrates InP lasers on a Si wafer. Ayar Labs positions itself with an open, protocol-agnostic optical I/O chiplet platform, utilizing TeraPHY chiplets and SuperNova multi-wavelength light sources to extend GPU-to-GPU fabrics such as NVIDIA NVLink. Key CPO switch solutions from NVIDIA, Marvell/Celestial, and Broadcom aim to overcome the bandwidth, latency, and power efficiency limitations of traditional copper interconnects.

### Key Findings

The landscape of high-performance computing is being reshaped by Co-Packaged Optics (CPO), enabling data transfer speeds exceeding 224Gbps for scale-up architectures. Intel is pioneering a truly integrated CPO solution with its Optical Compute Interconnect (OCI), featuring heterogeneously integrated Indium Phosphide (InP) lasers directly on silicon wafers. Concurrently, Ayar Labs is advancing an open, protocol-agnostic optical I/O chiplet platform, designed to extend GPU-to-GPU fabrics like NVIDIA NVLink through its TeraPHY chiplets and SuperNova multi-wavelength light sources. These advancements collectively address the critical bandwidth, latency, and power efficiency challenges inherent in conventional copper interconnects for AI infrastructure.

### Technical / Clinical Details

CPO integrates optical transceivers directly into the same package as electrical switching chips, dramatically shortening electrical trace lengths and thereby reducing signal loss, latency, and power consumption. Intel's Optical Compute Interconnect (OCI) represents a sophisticated approach, achieving deep integration by heterogeneously combining InP lasers, a III-V compound semiconductor, onto a silicon photonics wafer manufactured through standard CMOS processes. This enables chip-level optical interconnects, resolving many issues associated with traditional pluggable optical modules. Ayar Labs' platform offers a different but complementary strategy: it leverages TeraPHY optical I/O chiplets and SuperNova multi-wavelength light sources to enhance data movement between computational elements like GPUs, CPUs, and memory. Being open and protocol-agnostic, their solution is designed to opticalize existing electrical fabrics, such as NVIDIA's NVLink and PCIe, extending their reach and performance capabilities significantly. Prominent CPO switch solutions, including NVIDIA Quantum-X Photonics, Marvell/Celestial Photonic Fabric, and Broadcom TH5/TH6, are also playing crucial roles, each contributing unique innovations to bolster data center interconnect performance and form the backbone of next-generation AI infrastructure.

## Background & Context

The escalating scale and complexity of AI models have led to an exponential increase in data transfer requirements within data centers. Traditional copper-based interconnects are encountering severe limitations at data rates exceeding 224Gbps, struggling with signal integrity, power consumption, electromagnetic interference, and physical manageability. These issues create bottlenecks in bandwidth, latency, and power efficiency, particularly for GPU-to-GPU connections where extremely high bandwidth, as demanded by technologies like NVLink, is critical. CPO has emerged as one of the most promising technologies to overcome these limitations by placing optical engines much closer to the compute chips, thereby mitigating electrical constraints. This allows for higher density and more power-efficient designs for AI supercomputers and hyperscale data centers, paving the way for further advancements in AI computational capabilities.

## Strategic Significance & Outlook

The ongoing advancements in CPO technology by Intel, Ayar Labs, and other leading vendors are poised to profoundly impact the future of AI infrastructure. The capability for 224Gbps+ scale-up is indispensable for meeting the demands of upcoming AI workloads. The broader adoption of CPO will significantly influence the optical module market, semiconductor manufacturing, and advanced packaging technologies across the entire supply chain, fostering new innovations and business models. An open platform strategy is key to enhancing vendor interoperability and accelerating the growth of the CPO ecosystem. Ultimately, CPO is expected to revolutionize data center and AI compute architectures, leading to substantial improvements in power efficiency and unlocking virtually unlimited bandwidth, thereby strongly propelling the further evolution and societal implementation of AI globally.

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Source: <https://www.siliconcodesign.com/p/co-packaged-optics-for-224gbps-scale>

# #17 Coherent Optical Transceiver Market Accelerates Shift to 800ZR/ZR+ and 1.6T Pluggable Solutions Driven by AI and Cloud Demand

Published September 12, 2026   C-LIGHT   China



## OVERVIEW

The coherent optical transceiver market is rapidly transitioning towards higher-speed 800ZR/ZR+ and 1.6T pluggable solutions, fueled by the expansive growth of AI infrastructure and cloud services. This shift mandates advancements in 200G/lane optical-electrical technology, sophisticated DSPs, silicon photonics, and efficient thermal management. Miniaturization and power efficiency are critical for Data Center Interconnect (DCI) and metro links, posing challenges in maintaining optical performance and managing thermal constraints at higher speeds.

### Key Findings

The coherent optical transceiver market is experiencing a rapid transition towards higher-speed 800ZR/ZR+ and 1.6T pluggable coherent optical solutions. This acceleration is predominantly driven by the exponential growth of AI infrastructure and the escalating demand for cloud services, necessitating superior bandwidth and operational efficiency in modern networks.

### Technical Details

- **Pluggable Module Dominance:** The industry is moving away from traditional fixed optical modules to pluggable coherent modules that can be directly inserted into router ports. This enhances network flexibility, simplifies deployment, and reduces operational expenditure.
- **Technological Pillars:** This speed increase is underpinned by innovations in 200G/lane optical-electrical technologies, advanced Digital Signal Processors (DSPs) for complex signal modulation, and silicon photonics for miniaturization and lower power consumption. The synergistic integration of these technologies is pivotal to current market trends.
- **Thermal Management Imperative:** As modules become more compact and power-dense, efficient thermal management becomes a critical design challenge. Effective heat dissipation is essential to maintain optical performance, ensure device reliability, and prolong component lifespan.

### Background & Context

The burgeoning demands of AI training/inference and pervasive cloud applications have driven data center interconnect (DCI) traffic to unprecedented levels. Consequently, DCI and metro networks require solutions offering higher bandwidth, lower latency, and superior energy efficiency. Coherent optical technology, with its inherent advantages in long-haul signal integrity and wavelength-division multiplexing (WDM) capabilities, is the fundamental technology addressing these critical requirements.

## Strategic Significance & Outlook

The coherent optical transceiver market is poised for continued evolution, with ongoing R&D focused on further miniaturization, reduced power consumption, and even higher bit rates. The convergence of silicon photonics and advanced DSPs will be key enablers for achieving these objectives, fostering sustainable growth within the network infrastructure sector. This technological progression is vital for supporting the relentless advancement of AI and cloud computing, thereby reshaping the future of high-speed data communications globally.

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Source: [https://www.c-light.com/news/details/Coherent\\_Optical\\_Transceiver\\_Market.html](https://www.c-light.com/news/details/Coherent_Optical_Transceiver_Market.html)

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #18 IP Infusion Highlights 800ZR Pluggable Optics for 2026, Driving Major Network Efficiency Gains through IP-Optical Convergence

Published September 17, 2026 IP Infusion USA



## OVERVIEW

IP Infusion is championing the convergence of IP and optical networks via technologies like IPoDWDM and Open ZR/ZR+, with 800ZR pluggable optical modules anticipated for commercial deployment in 2026. This integration enables routers to directly emit their own DWDM wavelengths from ports, eliminating discrete transponders and line systems. The outcome is a significant reduction in device count, lower power consumption, and enhanced operational efficiency, crucial for high-speed DCI traffic and bolstering network agility.

### Key Findings

IP Infusion emphasizes that the commercialization of 800ZR pluggable optical modules in 2026 will mark a significant milestone in dramatically improving network agility and efficiency, propelled by the ongoing convergence of IP and optical networks. This technological advancement allows routers to directly emit DWDM wavelengths from their ports, leading to simplified network architectures, reduced device counts, lower power consumption, and enhanced operational efficiency.

### Technical Details

- **IPoDWDM and Open ZR/ZR+:** The article highlights technologies such as IPoDWDM (IP over DWDM) and Open ZR/ZR+ as key enablers for integrating IP and optical layers. This integration consolidates IP traffic processing and optical transmission within the router itself, streamlining network operations.
- **Evolution of Pluggable Optics:** Coherent pluggable optical modules, including current 400ZR and OpenZR+, and the upcoming 800ZR, can be directly inserted into router ports to generate DWDM wavelengths, thereby eliminating the need for external transponders.
- **Enhanced Network Efficiency:** This integrated approach significantly improves network efficiency through several mechanisms:
  - **Device Count Reduction:** Fewer physical devices translate to reduced rack space requirements and lower infrastructure complexity.
  - **Lower Power Consumption:** Eliminating discrete transponders drastically reduces the overall system power draw.
  - **Improved Operational Efficiency:** With fewer components to manage, network provisioning, monitoring, and troubleshooting become considerably simpler.

## Background & Context

Data Center Interconnect (DCI) traffic is experiencing explosive growth due to the proliferation of AI and cloud services, necessitating faster and more cost-effective network solutions. Traditional network architectures, which utilize separate IP routers and optical transmission equipment with expensive transponders for conversion, are becoming increasingly inefficient. The convergence of IP and optical layers addresses this inefficiency, aligning with an industry-wide trend towards more scalable and agile network deployments.

## Strategic Significance & Outlook

The commercialization of 800ZR pluggable optical modules in 2026 represents a decisive step towards efficiently handling high-speed DCI traffic and boosting network agility. This technology provides a foundational platform for service providers to achieve cloud-native agility at scale, enabling flexible responses to the data transfer demands of the AI era. Looking forward, continued advancements in speed and integration are expected to fundamentally transform optical network design and operation, paving the way for future innovations in network infrastructure.

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Source: <https://www.ipinfusion.com/blog/the-great-networking-convergence-when-service-provider-scale-meets-cloud-native-agility/>

# #19 NLM Photonics and LIGENTEC Unveil First Visible-Band Quantum Organic Hybrid Modulators on Commercial SiN Platform

Published September 17, 2026 NLM Photonics USA



## OVERVIEW

NLM Photonics and LIGENTEC have jointly produced the first silicon nitride organic hybrid (NOH) modulators operating in the visible spectrum on a commercial silicon nitride (SiN) photonics platform. This achievement, enabled by adapting manufacturing processes like metallization, organic electro-optic (OEO) deposition, and poling for SiN, significantly advances hybrid integration of active components for sensing and quantum photonics. Its integration into LIGENTEC's 200mm CMOS-compatible platform signals potential for large-scale production and diverse material integration.

### Key Findings

NLM Photonics and LIGENTEC have collaborated to unveil the first silicon nitride organic hybrid (NOH) modulators operating in the visible spectrum, fabricated on a commercial silicon nitride (SiN) photonics platform. This breakthrough introduces active functionality to the conventionally passive SiN platform, paving new pathways for advancements in sensing and quantum photonics.

### Technical Details

- **Silicon Nitride Organic Hybrid (NOH) Modulators:** This device combines the high optical performance of silicon nitride with the exceptional modulation characteristics of organic electro-optic materials. Its operation in the visible light band offers significant advantages for specific sensing applications and quantum information processing that were previously challenging for conventional modulators.
- **Adapted Manufacturing Processes:** The realization of NOH modulators necessitated the development of bespoke manufacturing processes tailored to LIGENTEC's SiN platform. This included optimized metallization, precise deposition of organic electro-optic materials, and poling techniques. These processes were critical for reconciling the delicate nature of organic materials with the CMOS compatibility of SiN.
- **LIGENTEC's Platform Scalability:** LIGENTEC's integrated photonics platform is designed for hybrid integration of various materials, including thin-film lithium niobate (TFLN) and III-V semiconductors, all within a 200mm CMOS-compatible process. This provides a robust foundation for the potential large-scale and cost-effective manufacturing of NOH modulators in the future.

## Background & Context

Integrated photonics drives innovation across diverse sectors, from optical communications to sensing and quantum technologies. However, the high-performance integration of active components remains a significant challenge. Particularly in CMOS-compatible platforms like silicon and silicon nitride photonics, integrating active functionalities such as modulators and light sources is complex, often limiting system performance and application scope. Organic electro-optic materials, with their high modulation efficiency, offer a promising solution through hybrid integration.

## Strategic Significance & Outlook

The announcement of this silicon nitride organic hybrid modulator signifies a crucial advancement in the integration of active photonic components. It is expected to accelerate the development of high-precision visible-light sensing technologies and room-temperature quantum photonic chips. The integration with LIGENTEC's CMOS-compatible platform provides a strong foundation for these innovative devices to transition from laboratory research to commercial products, promising a profound impact on the future of optical communications, sensing, and quantum computing.

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Source: <https://quantumzeitgeist.com/nlm-photonics-quantum-organic-hybrid-modulators/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #20 Nokia Selected by Planters Broadband Cooperative to Build AI-Ready Fiber Network for Underserved Communities in Southeast Georgia

Published September 10, 2026    Nokia    フィンランド



## OVERVIEW

Nokia has been selected by Planters Broadband Cooperative, with partial funding from the U.S. BEAD program, to construct an AI-ready fiber optic network for underserved communities in southeast Georgia. This project will deploy Nokia's Lightspan MF-2 platform, Optical Network Terminals (ONTs), BABA-compliant PON optical modules, and the Altiplano Access Controller with Corteca software. The aim is to provide multi-gigabit broadband and advanced in-home Wi-Fi services, future-proofing the network for sustainable growth.

### Key Findings

Nokia has been chosen by Planters Broadband Cooperative to build an AI-ready fiber optic network in underserved communities across southeast Georgia, a project partially funded by the U.S. Broadband Equity, Access, and Deployment (BEAD) program. This significant initiative aims to deliver high-speed, reliable broadband access to local residents and establish sustainable infrastructure capable of meeting future digital demands.

### Technical Details

- **Nokia's Solution Stack:** The network deployment will leverage Nokia's comprehensive portfolio, including:
  - **Lightspan MF-2 Platform:** A high-density, scalable access network foundation.
  - **Optical Network Terminals (ONTs):** Devices installed at customer premises to convert optical signals to electrical.
  - **BABA-compliant PON Optical Modules:** Passive Optical Network (PON) modules adhering to "Buy America, Build America" requirements, promoting domestic manufacturing.
  - **Altiplano Access Controller with Corteca Software:** An intelligent software solution designed for network automation, management, and optimization.
- **Multi-Gigabit Broadband and In-Home Wi-Fi:** The deployed network will provide multi-gigabit broadband services and high-performance in-home Wi-Fi, addressing current bandwidth-intensive needs such as AI and cloud applications.

### Background & Context

The U.S. government, through the BEAD program, is making substantial investments to bridge the national broadband gap and strengthen digital infrastructure. Access to high-speed internet in underserved areas is deemed essential for economic growth, education, healthcare, and social participation. The concept of an "AI-ready network" signifies that the infrastructure is designed to handle the anticipated demands of future AI-driven applications, underscoring the importance of forward-thinking investment.

## Strategic Significance & Outlook

This collaboration between Nokia and Planters Broadband Cooperative to deploy an AI-ready fiber optic network is set to bring significant transformation to communities in southeast Georgia. High-speed broadband will support remote education, telemedicine, stimulate local economies, and foster new business opportunities. Furthermore, the network being "AI-ready" ensures adaptability to future technological advancements, securing long-term sustainability. This project is expected to serve as a successful model for digital inclusion and advanced infrastructure development under the BEAD program.

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Source: <https://www.nokia.com/newsroom/nokia-selected-by-planters-broadband-cooperative-to-build-ai-ready-fiber-network-for-underserved-communities-in-southeast-georgia/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #21 India's Izmo Microsystems Successfully Manufactures Quantum Modules and Thin-Film Lithium Niobate Modulators, Targets 2027 Commercial Release of AI/Cloud Optical Transceivers

Published September 15, 2026   Izmo Microsystems   India



## OVERVIEW

India's Izmo Microsystems has successfully manufactured quantum modules and thin-film lithium niobate (TFLN) modulators, demonstrating advanced packaging techniques for photonic integrated circuits. The company plans a 2027 commercial release for its optical transceiver portfolio, addressing the increasing demand for high-speed, energy-efficient optical connectivity in AI clusters and cloud infrastructure. This development underscores India's growing capabilities in advanced materials and silicon photonics for quantum and high-speed communication applications.

### Key Findings

Izmo Microsystems, an Indian company, has successfully achieved the manufacturing of quantum modules and thin-film lithium niobate (TFLN) modulators, thereby demonstrating advanced packaging techniques essential for photonic integrated circuits. The company has also previewed its optical transceiver portfolio, slated for commercial release in 2027, which is designed to meet the escalating demand for high-speed and energy-efficient optical connectivity in expanding AI clusters and cloud infrastructure. This development distinctly highlights India's enhanced capabilities in advanced materials and silicon photonics for quantum and high-speed communication applications.

### Technical Details

- **Quantum Module Manufacturing:** Izmo Microsystems has established the capability to produce high-precision photon generation and manipulation modules, which are foundational components for quantum technologies. This holds significant implications for future fields such as quantum computing and quantum communication.
- **Thin-Film Lithium Niobate (TFLN) Modulators:** TFLN is a cutting-edge material known for its excellent electro-optic effect, enabling the creation of high-speed, low-power optical modulators. The successful fabrication of TFLN modulators by Izmo Microsystems is a critical technological step for next-generation optical communication systems that demand improved data rates and optimized energy efficiency.
- **Advanced Packaging Techniques:** Photonic integrated circuits, with their high-density integration of microscopic optical elements, require sophisticated packaging to maximize performance. The company's demonstrated techniques showcase its ability to reliably integrate these complex components.
- **2027 Commercial Release of Optical Transceivers:** The previewed optical transceiver portfolio is specifically engineered to address the high-speed data transmission needs within AI clusters and cloud infrastructure. This is essential for managing the explosive growth in data traffic driven by advancements in AI processing capabilities.

## Background & Context

Amidst the global surge in demand for AI and cloud computing, the underlying network infrastructure requires unprecedented levels of speed, low latency, and energy efficiency. India is proactively investing in quantum technology and advanced photonics to bolster its international competitiveness, and Izmo Microsystems' achievements serve as tangible evidence of the nation's technological development prowess. Crucially, establishing domestic manufacturing capabilities for advanced modules contributes to supply chain resilience and technological self-reliance.

## Strategic Significance & Outlook

The successful manufacturing of quantum modules and TFLN modulators by Izmo Microsystems, coupled with the planned 2027 commercial release of optical transceivers for AI and cloud, marks a significant juncture for India's advanced photonics industry. This technology will enhance the feasibility of quantum communication and substantially improve the performance and energy efficiency of AI data centers. Consequently, India is poised to become a more significant player in the global high-speed optical communication and quantum technology markets, expected to contribute substantially to future technological innovation and economic growth.

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Source: <https://quantumzeitgeist.com/izmo-microsystems-quantum-modules-production-indias/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #22 Telxius Deploys Nokia 800G Coherent Pluggable Optics Across Global Networks in Europe, US, and Latin America, Bolstering AI-Ready Infrastructure

Published September 18, 2026    Nokia    フィンランド



## OVERVIEW

Telxius is deploying Nokia's 800G coherent pluggable optical modules across its terrestrial networks in Europe, the US, and Latin America to meet the escalating demand for high-capacity connectivity. This deployment follows a record-breaking demonstration where Nokia's ICE-X 800G ZR+ coherent pluggable optical modules achieved 400Gb/s per wavelength over 5,600km on the BRUSA submarine cable. The initiative aims to upgrade existing infrastructure through IP-over-DWDM networking, enhance network efficiency, simplify operations, and support demanding cloud services and AI workloads.

### Key Findings

Telxius is deploying Nokia's 800G coherent pluggable optical modules across its extensive terrestrial networks in Europe, the United States, and Latin America. This significant deployment addresses the rapidly growing demand for high-capacity connectivity, providing a robust foundation for AI-ready infrastructure. The move builds on the success of a record-breaking demonstration where Nokia's ICE-X 800G ZR+ coherent pluggable optical modules achieved an impressive 400Gb/s per wavelength over a distance exceeding 5,600km on the BRUSA submarine cable, showcasing the technology's exceptional long-haul performance.

### Technical / Clinical Details

The Nokia 800G coherent pluggable optical modules enable IP-over-DWDM (IPoDWDM) networking, a technology that integrates optical transponders directly into IP routers, eliminating the need for a separate optical layer. This architectural simplification significantly enhances network efficiency, reduces power consumption, and streamlines operational complexity. The ICE-X technology at the heart of these modules delivers advanced coherent optics capabilities, allowing Telxius to maximize the capacity of its existing fiber infrastructure. The demonstrated ability to transmit 400Gb/s per wavelength over 5,600km on the BRUSA cable underscores the modules' robust performance for long-distance, high-bandwidth applications, making them ideal for upgrading global backbone networks.

### Background & Context

The exponential growth of cloud services, video streaming, and particularly AI and machine learning workloads, has created an urgent need for network operators to continuously expand capacity while improving operational efficiency. Traditional optical network architectures often involve complex deployments and higher costs. Nokia's 800G coherent pluggable modules offer a compelling solution by converging IP routing and optical transport functions, thereby simplifying network management and reducing both Capital Expenditure (CAPEX) and Operational Expenditure (OPEX). This strategic upgrade allows Telxius, a major global wholesale carrier, to stay ahead of market demands and provide scalable, high-performance connectivity essential for the digital economy.

## Strategic Significance & Outlook

Telxius's deployment of Nokia's 800G coherent pluggable optical modules marks a pivotal advancement for global telecommunications infrastructure. This technology provides the fundamental building blocks for efficiently supporting high-bandwidth cloud services and data-intensive AI workloads. The gains in network efficiency and operational simplicity will not only bolster Telxius's competitive position but also serve as a blueprint for other carriers seeking to modernize their networks. This initiative is expected to accelerate the adoption of IPoDWDM solutions worldwide, contributing to the overall evolution of global digital infrastructure. It underscores a commitment to sustainable, high-performance solutions for the AI era of data communication.

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Source: <https://www.thefastmode.com/technology-solutions/50657-telxius-deploys-nokia-800g-coherent-pluggable-optics-across-global-networks>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #23 Ciena Unveils AI Networking Innovations at ECOC 2026: Showcasing 1.6T Coherent Optical Modules, Liquid-Cooled CPO, and WaveLogic 6 Nano 800G

Published September 18, 2026 Ciena Canada



## OVERVIEW

Ciena is showcasing groundbreaking innovations for AI data center networking at ECOC 2026, featuring solutions for high-speed, high-capacity connectivity including 1.6T coherent optical modules, multi-rail photonics, and high-performance electrical and optical interconnects. Demonstrations highlight intra-data center networking with Nitro Linear Drivers, an Open CPX compliant Vesta 200 6.4T CPX optical engine with liquid-cooled Co-Packaged Optics (CPO), and next-generation coherent connectivity ranging from WaveLogic 6 Nano 800G pluggables to 1600ZR+ and XPO. The company also emphasizes a 32x density improvement in distributed AI infrastructure through RLS Hyper-Rail technology.

### Key Findings

Ciena is presenting a suite of transformative innovations for AI data center networking at ECOC 2026, designed to meet the escalating demands for high-speed and high-capacity connectivity. The showcased solutions include advanced 1.6T coherent optical modules, multi-rail photonics, and high-performance electrical and optical interconnects. Highlights of their demonstrations feature intra-data center networking leveraging Nitro Linear Drivers, an Open CPX compliant Vesta 200 6.4T CPX optical engine with integrated liquid-cooled Co-Packaged Optics (CPO), and a broad range of next-generation coherent connectivity spanning from WaveLogic 6 Nano 800G pluggables to 1600ZR+ and XPO solutions. Additionally, Ciena is emphasizing a significant 32x density improvement for distributed AI infrastructure enabled by their RLS Hyper-Rail technology.

### Technical / Clinical Details

For intra-data center networking, Ciena is demonstrating solutions incorporating Nitro Linear Drivers, which are crucial for maintaining signal integrity over extended distances and reducing power loss. In the realm of Co-Packaged Optics (CPO), the Open CPX compliant Vesta 200 6.4T CPX optical engine, integrated with liquid cooling, showcases a novel approach to reduce power consumption and latency by bringing optical and electrical components into close proximity. Coherent connectivity solutions range from the compact WaveLogic 6 Nano 800G pluggable modules to the 1600ZR+ and XPO platforms, optimized for longer-reach applications. These modules enable per-wavelength transmission rates from 800G to 1.6T within DWDM systems, dramatically increasing network capacity and flexibility. The RLS Hyper-Rail technology is particularly noteworthy, designed to enhance connection density by up to 32 times in distributed AI infrastructures, thereby alleviating physical space and power constraints.

## Background & Context

The explosive growth of AI, especially large language models (LLMs) training and inference, places unprecedented demands on both intra-data center and inter-data center network infrastructures. Traditional optical communication technologies are increasingly struggling to cope with the immense data movement between GPU clusters and the high-capacity requirements for data center interconnects. Ciena's announcements directly address these challenges, underscoring the industry's rapid shift towards solutions offering higher bandwidth, lower power consumption, and reduced latency. Technologies like liquid-cooled CPO and multi-rail photonics are becoming indispensable for building the foundation of next-generation AI supercomputing, poised to redefine the standards of AI-era data center design.

## Strategic Significance & Outlook

The AI networking innovations unveiled by Ciena at ECOC 2026 set a clear direction for future AI infrastructure development. Technologies such as 1.6T coherent optical modules and liquid-cooled CPO will enhance the efficiency of AI training and enable the deployment of larger, more complex AI models. The dramatic increase in connection density offered by RLS Hyper-Rail will maximize AI cluster scalability while mitigating physical footprint and power consumption challenges. These advancements are crucial for supporting the continuous growth of AI workloads, paving the way for data centers that balance high performance with sustainability. Through these solutions, Ciena aims to solidify its position as a leading innovator driving digital transformation in the age of AI.

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Source: <https://newswire.telecomramblings.com/2026/09/ciena-highlights-high-performance-ai-networking-at-ecoc-2026/>

# #24 Nokia and Orange France Successfully Complete World's First Live Service Provider Network Tomography Trial for AI-Ready Infrastructure, Optimizing Optical Networks with Real-time Visualization

Published September 10, 2026    Nokia    フィンランド



## OVERVIEW

Nokia and Orange France have successfully completed the world's first live service provider network tomography trial, supporting AI-ready infrastructure. The solution, powered by innovative Nokia Bell Labs algorithms, processes thousands of data points from coherent optical transmissions in near real-time, providing comprehensive network-wide health visualization. This capability enables early detection of issues like fiber degradation or configuration errors, allowing operators to optimize transport networks, simplify operations, and prepare for the transition to AI-driven services.

### Key Findings

Nokia and Orange France have successfully completed the world's first live service provider network tomography trial, a significant milestone in supporting AI-ready infrastructure. This pioneering solution, powered by innovative algorithms developed at Nokia Bell Labs, processes thousands of data points derived from coherent optical transmissions in near real-time. This capability provides unprecedented visibility into the health and performance of the entire network, enabling early detection of potential issues such as fiber degradation or configuration errors. The trial demonstrates a crucial advancement for operators seeking to optimize their transport networks, simplify operations, and prepare for the demands of AI-driven services.

### Technical / Clinical Details

The network tomography solution leverages the rich physical layer data made available by advanced coherent optical transmission technologies. Nokia Bell Labs' sophisticated algorithms are designed to analyze these vast quantities of optical signal characteristics (e.g., OSNR, Q-factor, non-linear effects, etc.) to precisely diagnose where and what type of issues are occurring within the network. This real-time visualization capability allows operators to detect anomalies, such as unexpected fiber bends, dirty connectors, or increased optical loss due to aging, that could impact network performance. By identifying problems proactively, operators can implement preventive measures before they escalate into significant service disruptions, thereby substantially enhancing network resilience and availability across Orange France's live infrastructure.

### Background & Context

In today's digital era, the proliferation of AI, cloud computing, and IoT places extreme demands on networks for high bandwidth, low latency, and unwavering reliability. AI workloads, in particular, require uninterrupted, high-speed data transmission, where even minor network impairments can have major consequences. Traditional network monitoring tools have often been reactive, addressing faults after they occur. However, for AI-ready infrastructures, proactive monitoring and optimization are imperative. This trial directly addresses this need by providing a means to demystify the 'black box' of optical networks, enabling more intelligent network operations. This is a vital step for network providers to offer AI-driven services and maintain a competitive edge.

## Strategic Significance & Outlook

The success of the network tomography trial by Nokia and Orange France has the potential to fundamentally transform optical network operations and management. The real-time network health visualization and early problem detection capabilities will improve operational efficiency, reduce downtime, and enhance customer satisfaction. Looking ahead, this technology is expected to be a critical step towards realizing 'autonomous networks' that leverage AI to self-optimize and perform predictive maintenance. This will enable telecommunication providers to build more robust and intelligent digital infrastructures capable of supporting 5G, 6G, edge computing, and even more advanced AI services. The initiative signifies a future where networks are more efficient, reliable, and responsive to the demands of the AI era.

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Source: <https://www.nokia.com/newsroom/nokia-and-orange-france-complete-first-worldwide-live-service-provider-network-tomography-trial-supporting-ai-ready-infrastructure/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #25 Loughborough University Researchers Develop Rice-Sized Rainbow Chip, Generating Millimeter-Wave Optical Frequency Combs for 6G Communications and Quantum Timing

Published September 17, 2026   Loughborough University   UK



## OVERVIEW

Physicists from Loughborough University and international collaborators have created a rice-sized optical frequency comb chip capable of simultaneously generating multiple millimeter-wave frequencies. This innovative system overcomes limitations of traditional microcombs by connecting a chip-based microresonator to a larger optical fiber loop, forming coupled resonators that stabilize the comb. The research focuses on generating a comb of millimeter-wave signals from a common optical reference, potentially serving as parallel channels in future 6G communications and as structured reference frequencies in measurement equipment.

### Key Findings

Physicists from Loughborough University, in collaboration with an international research team, have developed a pioneering, rice-sized optical frequency comb chip that can simultaneously generate multiple millimeter-wave frequencies. This breakthrough holds significant potential for applications in 6G communications and quantum timing, addressing long-standing stability challenges associated with traditional microcombs. The innovative system achieves a highly stable optical frequency comb by ingeniously connecting a chip-based microresonator to a larger optical fiber loop, forming a system of coupled resonators.

### Technical / Clinical Details

Unlike conventional microcomb systems that often face challenges with stability and spectral control, this new 'rainbow chip' system creates a robust, coupled resonator configuration. By linking a chip-based microresonator to a larger optical fiber loop, the system significantly enhances the stability of the optical frequency comb, enabling the precise and simultaneous generation of multiple frequencies within the millimeter-wave band. The research specifically focuses on generating a comb of millimeter-wave signals from a single, common optical reference. This capability is pivotal for establishing multiple parallel data channels in future communication systems, and for providing stable, structured reference frequencies essential for high-precision measurement instruments and next-generation quantum technologies.

### Background & Context

Millimeter-wave (mmWave) technology has been instrumental in advancing 5G communications, but the upcoming 6G era demands even broader bandwidth and greater reliability. Concurrently, the field of quantum technologies requires ultra-precise timing synchronization and frequency standards. Generating numerous mmWave signals simultaneously with conventional electronic methods has proven challenging due to limitations in cost, power consumption, and integration. Optical frequency combs offer a promising solution to this problem, but their stability and integration have been barriers to practical deployment. This research provides a significant breakthrough by achieving a stable mmWave comb from a chip scaled to the size of a grain of rice, presenting a new technological paradigm that merges optical and electronic capabilities.

## Strategic Significance & Outlook

The millimeter-wave optical frequency comb generated by this rice-sized rainbow chip is anticipated to be a crucial enabler for 6G communications. Its ability to simultaneously utilize multiple parallel channels could dramatically enhance data throughput in existing wireless communication systems. Furthermore, in the realm of quantum timing, this integrated, high-precision frequency reference source could accelerate the development of next-generation atomic clocks, quantum sensors, and quantum computers. This innovative technology is expected to unlock new application areas in mobile communications, radar systems, security scanning, and fundamental scientific research, contributing significantly to the continued advancement of optical communication and photonics technologies.

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Source: <https://www.digitaljournal.com/article/rice-sized-rainbow-chip-could-help-unlock-6g-communications-and-quantum-timing/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #26 Thin-Film Barium Titanate Emerges as Promising Material for High-Speed, Low-Loss Integrated Photonic Devices

Published September 16, 2026 [不明] Unknown



## OVERVIEW

Thin-film barium titanate (BTO) shows significant promise as an electro-optic (EO) material for high-speed, low-loss integrated photonic devices, offering wider bandwidth and negligible optical loss compared to silicon due to its strong EO coefficient. Recent advancements in epitaxial growth, patterning, and etching methods have overcome historical manufacturing hurdles, enabling BTO thin films to achieve low optical propagation losses while retaining bulk-like properties. This progress is set to strengthen the foundation for next-generation optical communication and sensing technologies.

### Key Findings

Thin-film barium titanate (BTO) has been identified as a highly promising electro-optic (EO) material for the development of high-speed, low-loss integrated photonic devices. The material is highlighted for its ability to provide wider bandwidth and negligible optical loss, primarily due to its potent EO coefficient, which significantly surpasses that of silicon platforms. This represents a crucial advancement for the creation of next-generation optical communication systems and high-performance sensors.

### Technical / Clinical Details

BTO is a ferroelectric material with a perovskite structure, possessing an EO effect that is comparable to, and in some aspects potentially superior to, lithium niobate. The article emphasizes that BTO, alongside thin-film lithium niobate (TFLN), delivers wide bandwidth and minimal optical loss thanks to its powerful EO coefficient. Crucially, recent progress in epitaxial growth techniques and precise patterning/etching methods has resolved historical manufacturing challenges associated with BTO thin films. Consequently, BTO thin films can now achieve practical levels of low optical propagation loss while retaining the excellent properties characteristic of bulk materials. These manufacturing breakthroughs are pivotal in unlocking BTO's vast potential for photonic applications.

### Background & Context

The fields of optical communications and sensing are under constant pressure to increase data rates and miniaturize devices. While silicon photonics offers high integration density, its relatively weak electro-optic effect imposes limitations on the performance of high-speed modulators. TFLN has seen rapid development in high-speed modulators, but BTO's potentially even higher electro-optic coefficient could pave the way for more advanced modulators and switching devices. The convergence of material science and advanced manufacturing techniques is key to driving these photonic breakthroughs, addressing critical needs for faster and more efficient optical components.

## Strategic Significance & Outlook

Advances in integrated photonic devices based on thin-film BTO are expected to profoundly impact various applications, including ultra-high-speed interconnects within data centers, the evolution of 5G/6G communication networks, and emerging fields such as optical computing and quantum photonics. Specifically, low-loss, high-speed modulators are indispensable for alleviating bottlenecks in future optical networks. Continued research and development in BTO are anticipated to lead to more powerful and energy-efficient optical devices, thereby significantly contributing to the advancement of digital infrastructure globally.

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Source: <https://arxiv.org/html/2609.16616v1>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #27 Coherent Expands Pluggable Optical Line Systems with Full C-Band Amplification, Enabling 800G, 25.6Tbps AI Data Center Connectivity

Published September 17, 2026 Markets Insider USA



## OVERVIEW

Coherent has expanded its portfolio of Pluggable Optical Line Systems (POLS) with full C-band amplification to power AI data center networks. The enhanced POLS supports up to 32 DWDM wavelengths on a single fiber pair, delivering up to 25.6Tbps of AI data center traffic over links ranging from 2km to 200km. By integrating key optical transmission functions into QSFP modules, which plug directly into standard transceiver sockets, Coherent addresses the high-capacity interconnect requirements of internet service providers and AI infrastructure operators, significantly enhancing data center scalability for explosive AI workloads.

### Key Findings

Coherent has significantly expanded its Pluggable Optical Line Systems (POLS) portfolio, now featuring full C-band amplification, to directly address the escalating demands of AI data center networks. This augmented product line supports up to 32 DWDM wavelengths on a single fiber pair, achieving an impressive 25.6Tbps of AI data center traffic over link distances spanning 2km to 200km. This capability is crucial for efficiently and economically managing the massive data volumes generated by modern AI workloads.

### Technical / Clinical Details

The expanded POLS solutions incorporate an innovative design that integrates key optical transmission functionalities, such as amplifiers and optical supervisory channels, directly into QSFP modules. This allows for plug-and-play operation, where modules can be directly inserted into standard transceiver sockets, thereby substantially simplifying data center deployment and management. The full C-band amplification maximizes the utilization of the entire C-band spectrum, enabling more DWDM channels and extracting maximum capacity from existing fiber infrastructure. The flexible support for link distances from 2km to 200km caters to a wide array of AI infrastructure requirements, from campus-wide data center interconnects to metropolitan area networks.

### Background & Context

The rapid advancement of AI is creating unprecedented bandwidth requirements for interconnectivity between data centers. Traditional optical modules and fixed line systems often struggle to keep pace with the surging traffic or incur prohibitive installation and operational costs. Coherent's pluggable POLS solutions offer a compelling answer by providing flexible, on-demand capacity precisely where it's needed. By embedding sophisticated optical functions within a QSFP form factor, data center operators gain the agility to rapidly scale their networks in response to fluctuating AI compute resource demands.

## Strategic Significance & Outlook

This expansion of the POLS portfolio represents a critical offering for internet service providers, cloud hosting providers, and AI infrastructure operators seeking to meet their high-capacity interconnect needs. Coherent continues to innovate across optical modules, subsystems, and materials to address the explosive growth in data traffic driven by the AI supercycle. This technology is poised to become a standard in AI-era network infrastructure, promising positive impacts on data center efficiency, scalability, and operational expenditure.

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Source: <https://markets.businessinsider.com/news/stocks/coherent-expands-pluggable-optical-line-systems-portfolio-with-full-c-band-amplification-to-enable-ai-datacenter-networks-1036555022>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #28 Nokia Partners with Telxius to Deploy 800G Coherent Pluggable Optics Across Europe, US, and Latin America, Pursuing AI Supercycle Opportunities

Published September 16, 2026   Telecoms.com   フィンランド



## OVERVIEW

Nokia has secured a strategic agreement with Telxius to deploy 800G coherent pluggable optical modules across networks in Europe, the US, and Latin America, actively pursuing opportunities within the AI-driven "supercycle." This initiative addresses the escalating demand for high-capacity connectivity fueled by cloud services and AI workloads. Nokia and Telxius also achieved an "industry record" demonstration with the ICE-X 800G ZR+ product on the BRUSA submarine cable, delivering 400Gbps per wavelength over 5,600km, reinforcing Nokia's leadership in global network infrastructure and optical innovation.

### Key Findings

Nokia is significantly expanding the deployment of its 800G coherent pluggable optical modules across networks in Europe, the United States, and Latin America through a pivotal agreement with telecommunications operator Telxius. This strategic partnership underscores Nokia's aggressive pursuit of market opportunities within the AI-driven "supercycle," aiming to bolster AI-ready infrastructure from data centers to the RAN edge.

### Technical / Clinical Details

The 800G coherent pluggable optical modules supplied by Nokia to Telxius are engineered to meet the immense bandwidth and scalability demands imposed by burgeoning cloud services and AI workloads. These modules integrate advanced coherent technology designed to maximize optical transmission efficiency and minimize data transfer latency. Furthermore, Nokia and Telxius conducted an "industry record" demonstration utilizing Nokia's ICE-X 800G ZR+ product over the BRUSA submarine cable. This demonstration achieved an extraordinary transmission speed of 400Gbps per wavelength over an ultra-long distance exceeding 5,600km, unequivocally showcasing Nokia's leadership in optical transmission technology.

### Background & Context

The rapid proliferation of AI places unprecedented demands on network infrastructure. Specifically, large-scale data processing and real-time AI applications necessitate ultra-high-speed, low-latency connectivity between data centers, and crucially, between data centers and edge networks. Pluggable optical modules have seen a surge in demand because they offer network operators the flexibility and cost-efficiency to upgrade existing infrastructure with minimal modifications. Nokia's strategy capitalizes on this market trend, differentiating itself by offering end-to-end AI-ready network solutions.

## Strategic Significance & Outlook

Nokia's deployment of 800G coherent pluggable optical modules in collaboration with Telxius is set to solidify Nokia's leadership in global network infrastructure. This technology is vital for addressing the escalating bandwidth demands brought about by the AI supercycle, providing service providers with the foundational capabilities to deliver high-performance cloud and AI services. The record-setting demonstration over long-haul submarine cables holds immense potential for substantially enhancing the capacity and efficiency of future global data communication networks, thereby contributing significantly to the evolution of international digital infrastructure.

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Source: <https://rcrwireless.com/20260916/network-infrastructure/ran-edge-to-dc-plumbing-nokia-chases-ai-supercycle-everywhere>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #29 Celero Communications Secures \$275 Million for 1.6T/3.2T AI Optical Interconnects After Verifying 2nm Coherent DSP Silicon

Published September 11, 2026 Semiconductor Engineering USA



## OVERVIEW

Celero Communications has raised \$275 million for next-generation 1.6T to 3.2T AI optical interconnects, following successful verification of its 2nm coherent DSP silicon. This substantial funding highlights significant industry investment in advanced optical interconnects for AI data centers. Rapid progress is underway towards higher-capacity solutions, focusing on both traditional pluggable optical modules and innovative architectures like CXL-over-optics to optimize data center operations.

### Key Findings

Celero Communications has successfully secured \$275 million in funding for its next-generation 1.6T to 3.2T AI optical interconnect solutions, a significant capital injection following the successful verification of its 2nm coherent Digital Signal Processor (DSP) silicon. This substantial fundraising effort underscores the robust market confidence and investment appetite for advanced optical interconnect technologies, which are crucial for meeting the burgeoning demands of AI data centers.

### Technical / Clinical Details

The 2nm coherent DSP silicon verified by Celero Communications is poised to dramatically enhance data processing capabilities and energy efficiency in optical communications. This technology forms the bedrock for enabling ultra-high-speed AI optical interconnects at 1.6T and 3.2T. These interconnects are indispensable for low-latency, high-efficiency transfer of the massive data volumes generated by AI workloads, both within and between data centers. The industry is currently pushing forward rapidly with higher-capacity solutions, focusing not only on improving traditional pluggable optical modules but also on developing innovative architectures such as CXL-over-optics (CXL-o-O). CXL-o-O has the potential to enable optical-based memory sharing between CPUs and accelerators, thereby alleviating critical bottlenecks in AI systems.

### Background & Context

The evolution of AI places unprecedented demands not only on the computational power of data centers but also on their interconnectivity capabilities. Specifically, training and inference of large-scale AI models require immense data exchange among thousands of GPUs and AI accelerators. Traditional electrical interconnects are nearing their limits in terms of transmission distance, power consumption, and signal degradation.

Consequently, optical interconnects—especially new forms like coherent technology, Near-Packaged Optics (NPO), and Co-Packaged Optics (CPO)—are emerging as key enablers for exponentially boosting AI data center performance. Celero's successful funding round further validates the intensifying investment in this critical domain.

## Strategic Significance & Outlook

The \$275 million funding secured by Celero Communications positions the company as a significant player in the AI optical interconnect market. This capital will accelerate the research, development, and commercialization of its 1.6T/3.2T optical interconnect solutions, promising substantial improvements in the performance and efficiency of AI data centers. The rapid progress toward higher-capacity solutions is expected to support the continuous growth of AI infrastructure and expand the possibilities for future AI applications. Furthermore, the introduction of innovative architectures like CXL-o-O holds the potential to transform the very philosophy of data center design.

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Source: <https://semiengineering.com/chip-industry-week-in-review-155/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #30 Lightmatter Joins Open CPX MSA, Unveils Industry's First Bi-Directional 6.4Tbps Optical Engine for AI Infrastructure

Published September 17, 2026 PR Newswire USA



## OVERVIEW

Photonic computing leader Lightmatter has announced its participation in the Open CPX Multi-Source Agreement (MSA) and introduced the Passage L20 CPX, the industry's first bi-directional (BiDi) optical engine module designed for AI infrastructure. This module delivers 6.4 terabits per second (Tbps) of bandwidth from a single socket while halving the required optical fibers and connectors. This innovation significantly alleviates fiber routing constraints in AI cluster builds, promising faster deployment, reduced failure points, and lower operational costs for next-generation data centers.

### Key Findings

Lightmatter has made a significant leap in photonic computing by joining the Open CPX Multi-Source Agreement (MSA) and introducing the Passage L20 CPX, the industry's inaugural bi-directional (BiDi) optical link technology module tailored for AI infrastructure. This module achieves an impressive 6.4 terabits per second (Tbps) of bandwidth from a single socket, dramatically reducing the necessary optical fibers and connectors by half, which is set to revolutionize the design and operational economics of AI data centers.

### Technical / Clinical Details

The Passage L20 CPX is powered by Lightmatter's Passage L20 near-package optics (NPO) platform. NPO technology integrates optical components in extremely close proximity to high-performance chips like CPUs and GPUs, thereby mitigating the bandwidth and power bottlenecks inherent in traditional electrical interconnects. The adoption of bi-directional optical links streamlines the complex fiber routing within data centers, diminishing both the physical footprint and cooling demands. This enables the construction of denser AI clusters with enhanced performance and reduced latency, all while improving power efficiency.

### Background & Context

The escalating demands of AI workloads have intensified the challenges of bandwidth and power efficiency within data center interconnects. Traditional electrical interconnect solutions are approaching their physical limits, positioning optical communication technologies as critical enablers for the next generation of AI infrastructure. Lightmatter's engagement with the Open CPX MSA underscores a concerted industry effort towards standardization, fostering interoperability and accelerating ecosystem growth. The MSA aims to standardize the deployment of near-package optics, paving the way for broader adoption of optical computing technologies.

## Strategic Significance & Outlook

This technological advancement by Lightmatter is poised to accelerate the deployment of AI clusters, decrease failure rates, and substantially lower operational expenditures. By delivering higher bandwidth with fewer fibers, it facilitates a more efficient and scalable approach to building AI supercomputers. The Passage L20 CPX and similar solutions are expected to establish new benchmarks for optical interconnects in AI data centers, driving the widespread adoption of energy-efficient, high-performance AI systems.

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Source: <https://www.prnewswire.com/news-releases/lightmatter-joins-open-cpx-msa-introduces-the-industrys-first-bidirectional-cpx-optical-engine-302881786.html>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #31 ASML and Xanadu Partner to Reduce Optical Losses in Photonic Quantum Chips via Advanced Lithography

Published September 10, 2026   Bits&Chips   Netherlands



## OVERVIEW

ASML and Canadian quantum computing firm Xanadu have announced a collaboration to enhance the manufacturing of photonic quantum processors using advanced lithography techniques. This partnership aims to reduce optical losses and improve manufacturing efficiency for photonic quantum chips, a critical component of quantum computing systems. This collaboration represents a significant step in hardware development toward realizing practical quantum computing.

### Key Findings

ASML, a leading supplier of semiconductor manufacturing equipment, and Xanadu, a Canadian quantum computing company, have announced a landmark collaboration aimed at revolutionizing the manufacturing of photonic quantum processors. This partnership seeks to leverage ASML's advanced lithography technology to significantly reduce optical losses and substantially improve manufacturing efficiency in photonic quantum chips, pointing towards critical hardware optimization for achieving high-performance quantum computing systems.

### Technical / Clinical Details

Photonic quantum chips utilize photons as information carriers to form qubits and quantum gates. The performance of these chips heavily relies on minimizing optical losses within the photonic pathways. ASML's lithography technology is essential for forming the minute structures of semiconductor chips with extreme precision, and this precision is key to minimizing photon leakage and scattering within photonic circuits. Xanadu, with its proprietary quantum algorithms and architectures, has sought high-quality photonic chip manufacturing techniques that minimize optical losses. The combination of both companies' expertise is expected to extend qubit coherence times and reduce error rates, paving the way for the development of larger-scale and more stable quantum processors.

### Background & Context

Quantum computing holds the promise of delivering computational power far beyond what current supercomputers can achieve, with potential applications in drug discovery, materials science, and financial modeling. However, a major challenge to its realization is the manufacturing of quantum processors with stable qubits and highly efficient quantum gates. Photonic quantum computing is considered one of the most promising approaches due to advantages such as room-temperature operation and compatibility with existing optical communication infrastructure. The entry of a major semiconductor manufacturing technology company like ASML into the quantum space is crucial for accelerating the maturation of quantum hardware manufacturing.

## Strategic Significance & Outlook

The collaboration between ASML and Xanadu will likely mark a significant milestone towards the commercialization of photonic quantum computing. Reducing optical losses and improving manufacturing efficiency will enhance quantum chip yields, lower costs, and ultimately facilitate the broader adoption of quantum computing. This partnership highlights the importance of manufacturing technology in the industrialization of quantum tech and is expected to pave the way for quantum computers to be widely used in practical applications in the future.

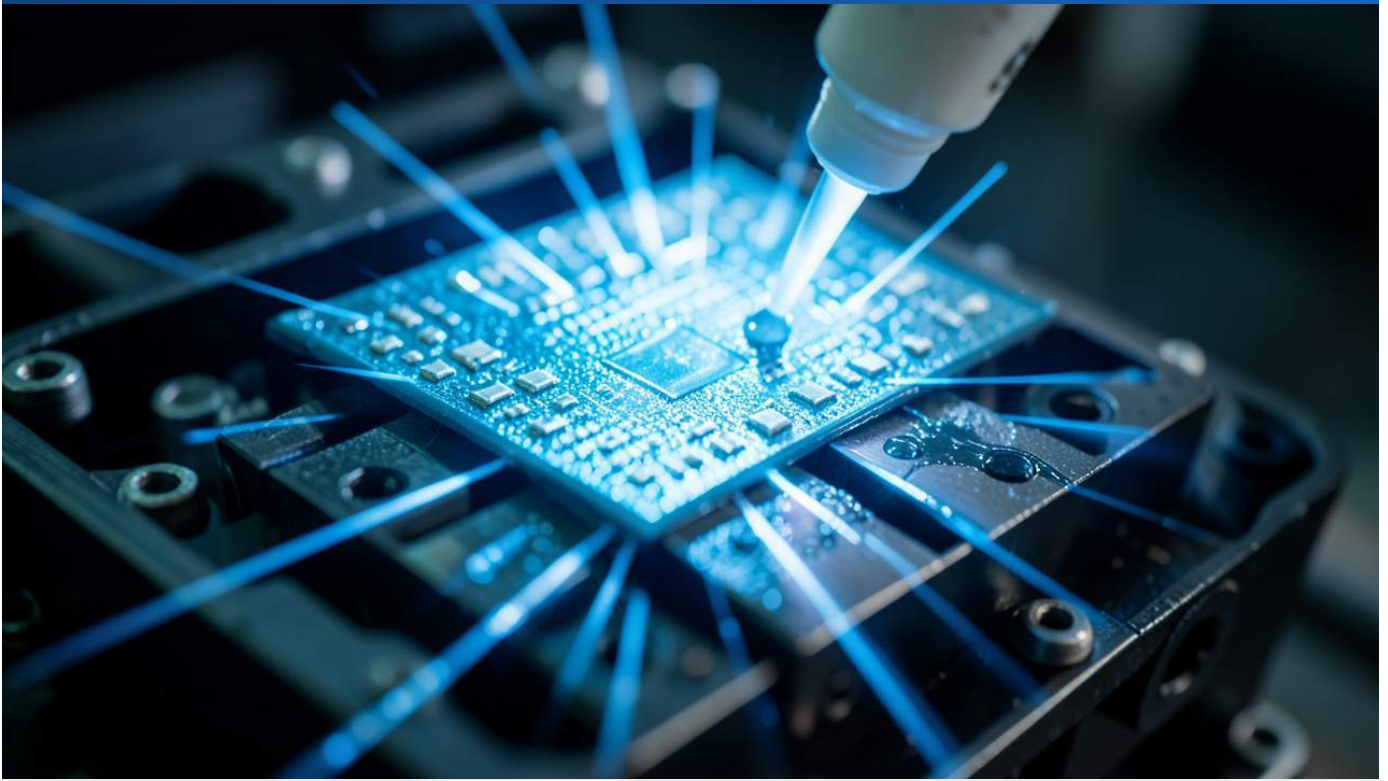
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Source: <https://bits-chips.com/article/asml-joins-xanadu-to-cut-optical-losses-in-photonic-quantum-chips/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #32 Silicon Photonics for Automotive Optical I/O: High Bandwidth, Lightweight Future Amidst Formidable Challenges

Published September 10, 2026   Design And Reuse   France



## OVERVIEW

Optical fiber offers compelling advantages for automotive high-speed zone backbones due to high bandwidth, low EMI susceptibility, and lightweight properties. Silicon photonics is a key enabler for compact, low-power, and high-reliability automotive optical I/O, integrating optical functions with CMOS on silicon. However, significant challenges remain, including automotive-grade temperature and vibration resistance, connector durability, long-term reliability, and cost, suggesting a phased adoption starting with high-bandwidth applications.

### Key Findings

Optical fiber technology is attracting significant interest in the automotive sector as a high-speed zone backbone and inter-computer link, primarily due to its inherent advantages: high bandwidth capacity, low susceptibility to electromagnetic interference (EMI), and reduced weight. Within this context, silicon photonics is positioned as a pivotal enabling technology for realizing compact, low-power, and highly reliable optical I/O solutions specifically for automotive applications.

### Technical / Clinical Details

Silicon photonics allows for the integration of optical and electronic circuits onto a single silicon chip, utilizing existing CMOS manufacturing processes. This capability facilitates significantly higher data transmission rates and lower power consumption compared to traditional copper cabling. In automotive applications, this technology is critical for handling the massive data flows between various sensors, processors, and displays within a vehicle. However, the automotive environment is notoriously harsh, demanding that solutions withstand wide temperature fluctuations (from -40°C to 125°C), high-frequency vibrations, long-term reliability, and cost-effectiveness. Connector durability is also a crucial factor to ensure stable performance over the entire lifespan of a vehicle.

### Background & Context

Modern vehicles are experiencing an exponential increase in the volume of data generated and processed due to advanced features such as autonomous driving, infotainment, and connected services. This necessitates vehicle network architectures that can support substantially higher bandwidth and lower latency. Traditional electrical wiring has reached its limits in terms of weight, EMI, and signal degradation over transmission distances, making the transition to optical communication almost inevitable. Automotive manufacturers and suppliers are actively investing in technological innovations like silicon photonics to successfully navigate this transition.

## Strategic Significance & Outlook

The adoption of silicon photonics in automotive applications is expected to begin incrementally, primarily in specific high-bandwidth applications such as data transmission from ADAS sensors and links between central computing units. As the technology matures and costs decrease, its use will likely expand to a broader range of in-vehicle networks. Overcoming the remaining challenges, particularly optimizing long-term reliability under extreme conditions and achieving cost-effectiveness, will be key to the widespread proliferation of this technology in the automotive industry. Ultimately, optical I/O is anticipated to become a standard part of automotive electronic architectures, accelerating the realization of fully autonomous driving and new mobility services.

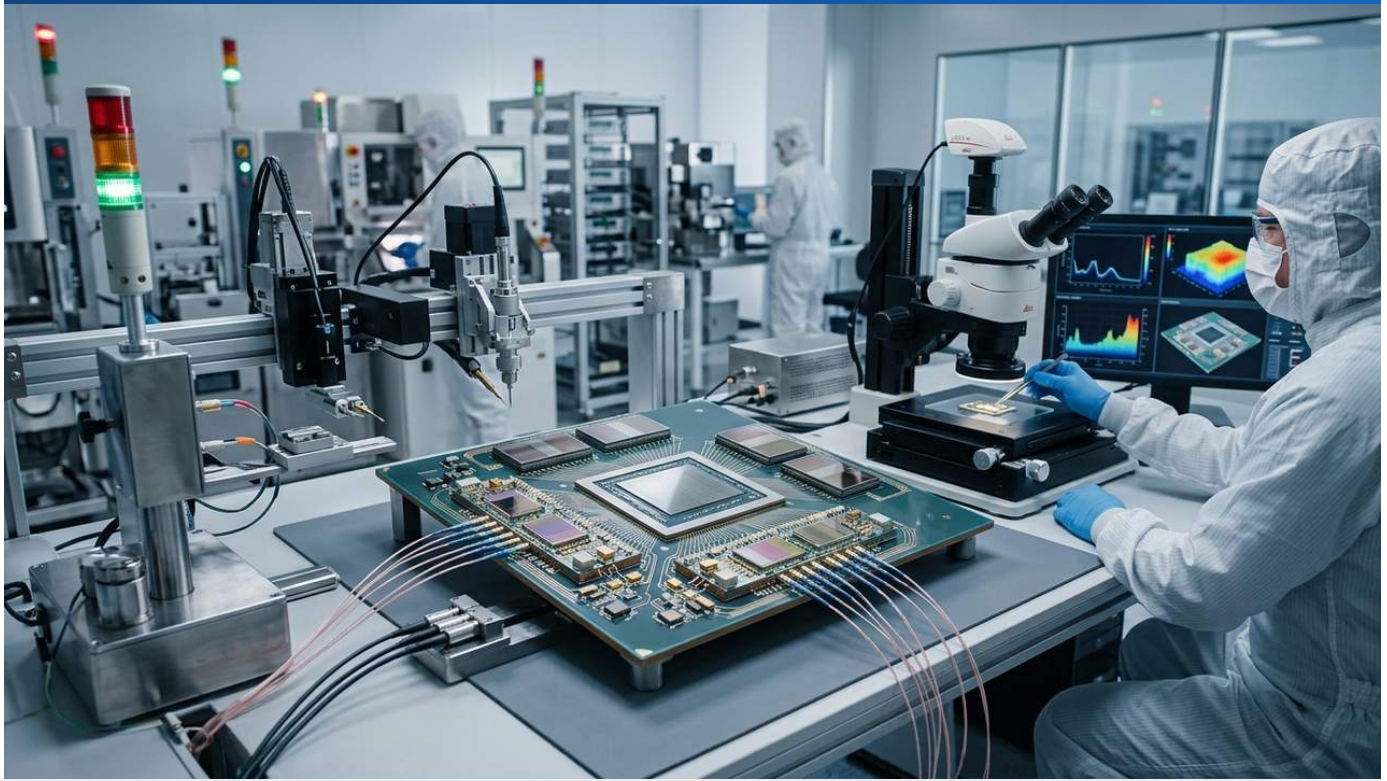
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Source: <https://www.design-reuse.com/blog/56427-serdes-ethernet-and-the-silicon-that-connects-them-why-serdes-for-high-bandwidth-sensors/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #33 TSMC Accelerates Co-Packaged Optics (CPO) Deployment, Eyes 'CPO Moore's Law' for AI Chip Performance Boost

Published September 14, 2026    KuCoin    Taiwan



## OVERVIEW

As GPU and ASIC computing power continues to advance, TSMC is accelerating the deployment of Co-Packaged Optics (CPO) to address the power consumption and signal transmission limits of traditional copper interconnects. TSMC is integrating CPO with advanced technologies like 3DFabric, CoWoS, SoIC, and silicon photonics to drive system-level integration of computing, HBM memory, and high-speed I/O. Industry experts note that overcoming challenges in packaging, optical coupling, and testing is crucial for CPO mass production, with the potential for a 'CPO Moore's Law' on the horizon.

### Key Findings

TSMC is aggressively accelerating the deployment of Co-Packaged Optics (CPO) as GPU and ASIC computing power confronts the physical limitations of conventional copper interconnects. The company is integrating CPO with its suite of advanced packaging technologies, including 3DFabric, CoWoS, SoIC, and silicon photonics, to advance system-level integration solutions that seamlessly connect computing units, HBM memory, and high-speed I/O.

### Technical / Clinical Details

CPO dramatically reduces power consumption and significantly boosts bandwidth by substantially shortening electrical interconnect paths and transmitting data via optical fibers. TSMC's strategy involves combining CPO with cutting-edge silicon wafer-level packaging (3DFabric), chiplet integration (CoWoS and SoIC), and silicon photonics—which integrates optical and electronic circuits. This approach enables AI/HPC chips to process enormous data volumes with lower power and reduced latency. However, mass production of CPO necessitates overcoming key technical challenges, including high-precision packaging of optical components, stable optical coupling with the chip, and establishing efficient testing methodologies at manufacturing scale.

### Background & Context

The surging demand for AI and High-Performance Computing (HPC) has driven GPUs and ASICs to unprecedented levels of performance. Yet, the data transfer speed between chips has emerged as a critical bottleneck, hindering overall system performance gains. Traditional electrical interconnects are approaching their limits in terms of signal degradation and power consumption, making optical interconnects the anticipated next-generation standard for resolution. TSMC's focus on CPO is a strategic move by a leading semiconductor manufacturer to spearhead the evolution of computing performance in the AI era, poised to have a profound impact on the entire industry.

## Strategic Significance & Outlook

TSMC's aggressive investment and integration of CPO technology hint at the potential for a 'CPO Moore's Law,' where advancements in optical interconnect technology could create a new growth curve for computing performance. If challenges in packaging, optical coupling, and testing are successfully addressed, CPO is set to become a standard interconnect solution in data centers, AI supercomputers, and other high-performance computing applications. This will contribute to the further evolution of AI and the realization of previously impossible computational capabilities, forming a foundational pillar for next-generation digital infrastructure.

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Source: <https://www.kucoin.com/news/flash/tsmc-accelerates-cpo-layout-industry-eyes-new-cpo-moore-s-law>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #34 Tyndall Researchers Unveil Advanced Photonic Packaging Innovations at ESTC 2026, Including Co-Packaged Bioimaging and Cryogenic Edge Coupling

Published September 16, 2026 Tyndall National Institute アイルランド



## OVERVIEW

Researchers from the Tyndall National Institute presented three papers at the European Semiconductor Technology Conference (ESTC) 2026, showcasing significant advancements in photonic packaging, co-packaged optics (CPO), and chiplet integration. Key outcomes included a co-packaged bioimaging system on a glass interposer and a cryogenic edge coupling packaging method for photonic chips designed for extreme low-temperature environments. These achievements demonstrate the manufacturability of integrated photonic systems for future healthcare, sensing, and quantum computing applications.

### Key Findings

Researchers from the Tyndall National Institute presented three pivotal papers at the European Semiconductor Technology Conference (ESTC) 2026, revealing groundbreaking advancements in photonic packaging, co-packaged optics (CPO), and chiplet integration technologies. Notable specific outcomes included a co-packaged bioimaging system utilizing a glass interposer and a novel cryogenic edge coupling packaging method for photonic chips, specifically designed for extreme low-temperature environments, collectively paving the way for diverse future applications.

### Technical / Clinical Details

One of the presented studies detailed a co-packaged bioimaging system employing a glass interposer. Glass interposers offer advantages such as low dielectric constant, high transparency, and precise via formation, making them ideal for the dense integration of multiple optical and electronic chips. This enables the creation of miniaturized, high-performance bioimaging devices. Another research paper proposed a cryogenic edge coupling packaging method for photonic chips operating in extreme low-temperature environments, which are essential for applications like quantum computing. This technique focuses on efficiently and stably connecting optical fibers to chip-based optical circuits, specifically mitigating connection failures caused by differential thermal expansion at cryogenic temperatures. These innovations significantly enhance the integration density, performance, and reliability of photonic systems.

### Background & Context

In modern electronic and optoelectronic devices, advanced packaging and integration technologies are indispensable for achieving both high performance and miniaturization. Particularly in emerging technological fields such as AI, IoT, autonomous driving, and quantum computing, chiplet technology for efficiently integrating multiple chips with different functions, and co-packaged optics for integrating optical and electrical components, are gaining significant attention. The Tyndall National Institute stands at the forefront of research in these areas, and its contributions bolster the competitiveness of the microelectronics and photonics industries in Ireland and Europe.

## Strategic Significance & Outlook

These innovative packaging technologies unveiled by Tyndall researchers are expected to accelerate the realization of a wide range of applications, including next-generation diagnostic and therapeutic devices in healthcare, high-performance environmental sensing systems, and quantum computing platforms vital for enhancing qubit stability. Specifically, cryogenic-compatible packaging technology is anticipated to contribute significantly to the commercialization of quantum computers operating in low-temperature environments, such as those utilizing superconducting qubits. These achievements demonstrate the manufacturability of integrated photonic systems, laying a robust foundation for future technological breakthroughs.

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Source: <https://www.tyndall.ie/news/tyndall-researchers-showcase-advanced-packaging-innovation-through-three-published-papers-at-estc-2026/>

Collected: September 18, 2026 | Automated Research System (Gemini API)

# #35 AIM Photonics Showcases Integrated Photonics for Diverse Military Applications at Pentagon Event, Featuring Albany NanoTech Silicon Photonic Sensors

Published September 14, 2026    Quantum Zeitgeist    USA



## OVERVIEW

AIM Photonics demonstrated integrated photonics technologies for various military applications at the U.S. Department of Defense's Manufacturing Technology (ManTech) program's 70th-anniversary event. Key among the exhibits was real-time bioprocess monitoring using silicon photonic sensor arrays fabricated at the Albany NanoTech Complex. This initiative highlights AIM Photonics' role as a Manufacturing Innovation Institute, bridging R&D to deployment by offering silicon photonics process design kits, wafer runs, and testing services to both quantum photonics groups and commercial clients, thereby accelerating military technological advancement.

### Key Findings

AIM Photonics demonstrated its integrated photonics technologies for a range of military applications at the U.S. Department of Defense's Manufacturing Technology (ManTech) program's 70th-anniversary event. The highlight included real-time bioprocess monitoring using advanced silicon photonic sensor arrays, underscoring the critical role of silicon photonics in national defense.

### Technical / Clinical Details

The core of the demonstration featured silicon photonic sensor arrays, vital for real-time bioprocess monitoring, which were manufactured at the renowned Albany NanoTech Complex. This technology enables high-precision, instantaneous surveillance of biological processes, promising advancements in environmental monitoring and biosensing for military operations. As a Manufacturing Innovation Institute, AIM Photonics provides comprehensive silicon photonics Process Design Kits (PDKs), wafer run services, and extensive testing capabilities to both quantum photonics research groups and a broad spectrum of commercial customers. These services are crucial for accelerating the transition from fundamental research to deployable, high-performance photonic solutions.

### Background & Context

The ManTech program, a long-standing initiative by the Department of Defense, aims to integrate innovative manufacturing technologies into military applications. AIM Photonics stands as a cornerstone of this program, tasked with cultivating a robust domestic integrated photonics ecosystem and securing technological leadership. This particular demonstration reaffirms the indispensable nature of advanced photonics in shaping next-generation defense systems and security applications.

## Strategic Significance & Outlook

AIM Photonics' efforts are set to further accelerate the maturity and expand the application scope of silicon photonics technology. Amidst the rising demand for photonics in emerging fields such as quantum computing and artificial intelligence, the institute's provision of critical manufacturing infrastructure and expert knowledge is anticipated to drive new innovations and market opportunities, not only in the military sector but also commercially. This strategic emphasis is expected to contribute significantly to maintaining and enhancing U.S. technological leadership globally.

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Source: <https://quantumzeitgeist.com/aim-photonics-pentagon-dow-mantech-investment/>

Collected: September 18, 2026 | Automated Research System (Gemini API)