



UNLOCKING THE POWER OF LIGHT

IEEE Photonics Society Italy Chapter

January 2024

ABOUT PHOTONPATH

About Us

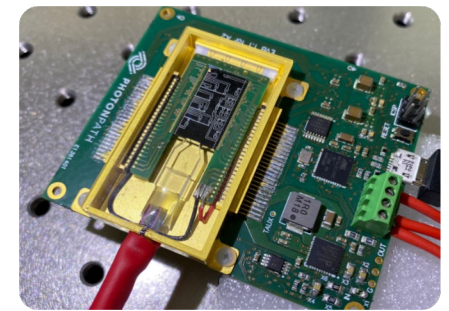
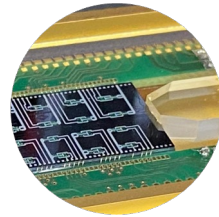
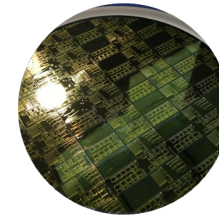
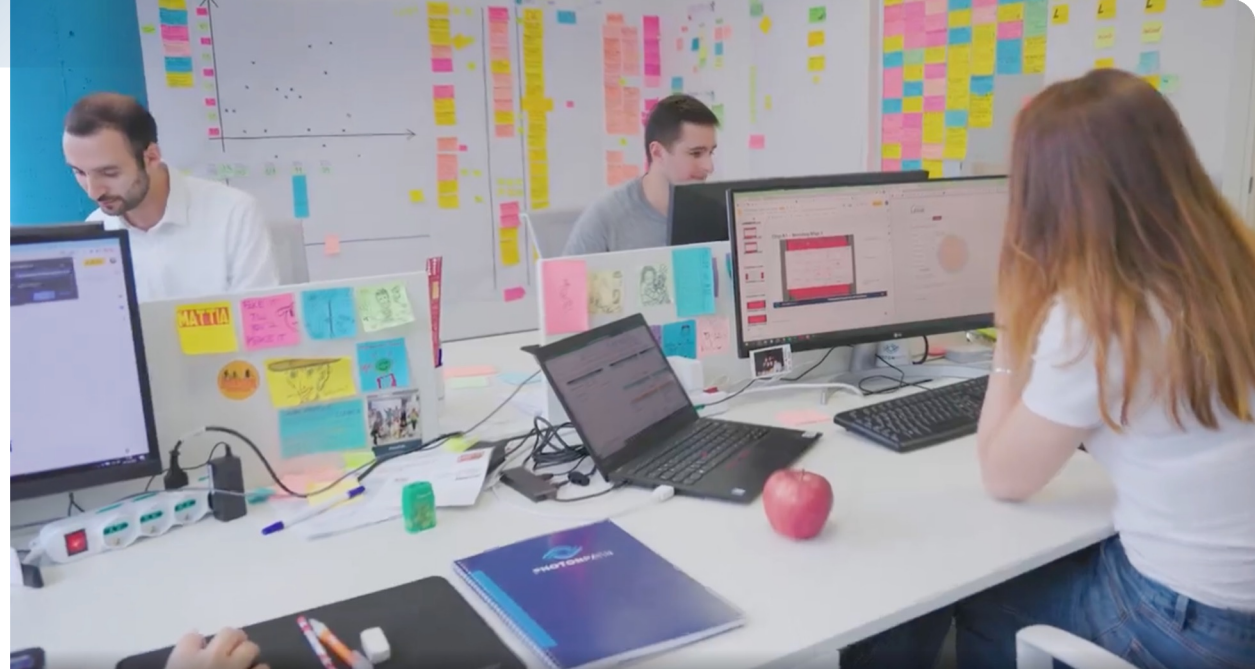
Established in 2019, we are an integrated photonics company providing **cutting edge optical components and subsystems** for enhancing the products and services of our customers

Vision

We envision a world where the vast majority of us is **connected to each other** and has access to precise and accurate information through PhotonPath devices

Mission

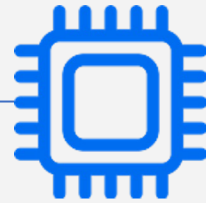
To design and deliver Integrated Photonics products that **obtain, transmit and process** the world's information by using light



THE CHALLENGE

A WORLD HINDERED
BY LIMITED DATA
ACQUISITION,
TRANSMISSION AND
PROCESSING

Electronics is facing
its limits



AI will revolutionize
the world



Demand for
computing always
growing



ACQUISITION

DATA IS NOT ALWAYS
AVAILABLE AND/OR
ACCURATE

In Oil & Gas **\$275 B/year**
are left on the table¹

¹ [BCG, 2023](#)



TRANSMISSION

CAPACITY NEEDS TO
SCALE AND IS NOT
EASILY REALLOCATED

OpEx make up **80%** of
network costs²

² [Cisco, 2022](#)



PROCESSING

EVERGROWING POWER
CONSUMPTION

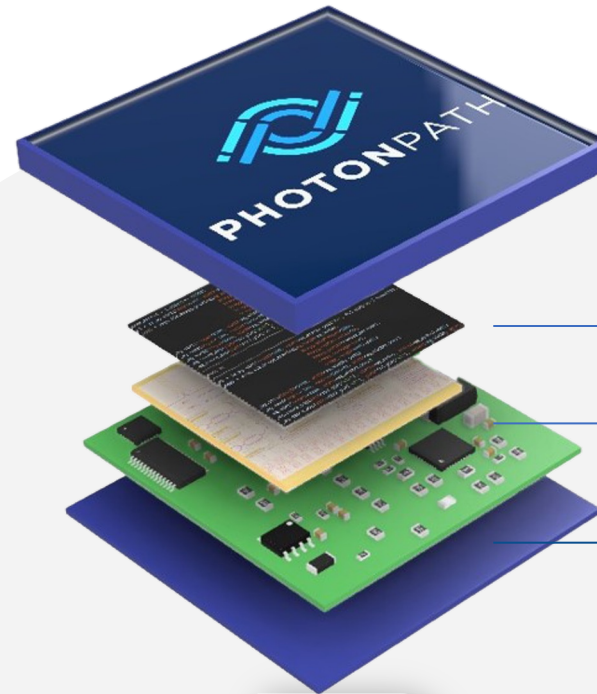
GPT-3
Training: 522 tCO₂
Usage: **9000 tCO₂/year**³

³ [Pointon, 2022](#)

OUR SOLUTION

PhotonCore™

Fully programmable
Integrated Photonics Chipset
providing all-optical data
acquisition, transmission and
processing at the speed of light!



Patented Algorithms

Integrated Photonics
Chips

Proprietary
control electronics



Ubiquitous sensing

**IN ALL ENVIRONMENTS,
FOR ALL PHYSICAL
PARAMETERS**

**BOTH LOCAL AND
REMOTE**

10's of km vs. m



Scalable transmission

**ULTRA WIDE
BANDWIDTH**
10x more capacity

**COMPLETE, FAST
PROGRAMMABILITY**
seconds vs days



Photonics computing

**100x LESS POWER
CONSUMPTION**

coming soon

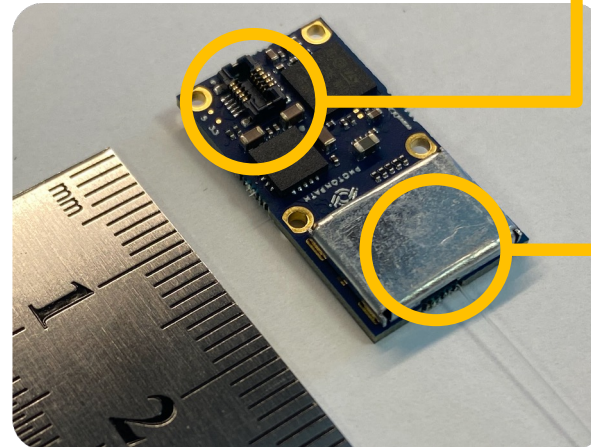
Spearheading Optical Innovation with Compactness and Scalability

Enabling Full Programmability in Optical Networks with our **nanoOCM**, the **World's Smallest High Resolution Optical Spectrum Analyzer**

"PhotonPath's nanoOCM is by far the most advanced optical spectrum analyzer we've integrated into our systems. Its compact design and high-resolution output have not only met but exceeded our expectations, delivering reliable and consistent results across the board."

- Giorgio Cazzaniga, Director of PLM at Jabil

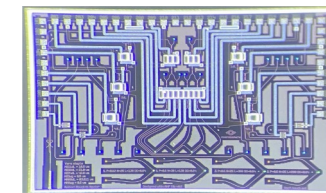
50x smaller
than closest market competitor



Plug and play interface
with seamless integration between
Photonics and Electronics

Optical assembly process with
10x less components
reducing costs, improving margins

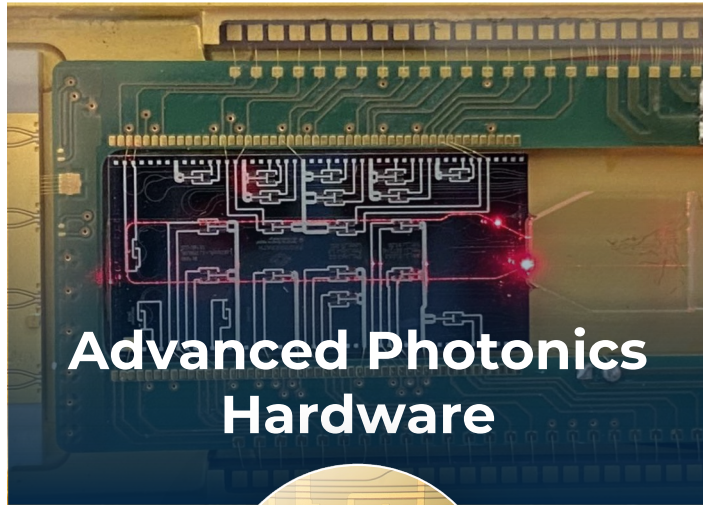
Patented circuit
in integrated photonics already
deployed in our product



4 x 2.8 mm

OUR SECRET SAUCE

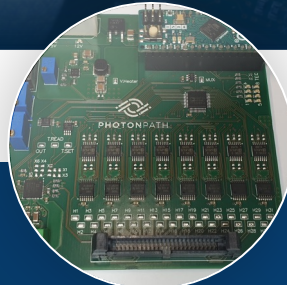
PIONEERING THE FUTURE OF INTEGRATED PHOTONICS WITH PATENTS AND KNOW HOW



Integrated Multiplatform Chipsets with SiP, InP, SiN and others

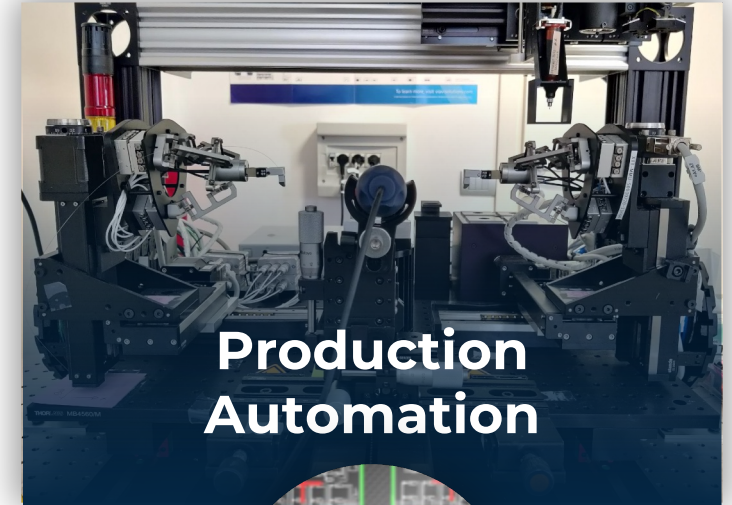
Novel circuits for multipurpose processing

Near Zero Loss Optical Platform for wide bandwidth



Control algorithms to enable reconfigurable products

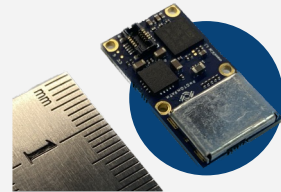
Support to real-time data processing and feedback with **PIC Digital Twins**



Intelligent algorithms to automate **Die and Wafer Level Testing** to enable scalability

TELECOM PRODUCTS

Photonic modules and equipment ready to be integrated into customers' systems



nanoOCM

Use case

Inter datacenter quality monitor for high-speed optical channels

Key distinctive elements

- Ultra-compactness
- High-resolution



OLS

Use case

Fully disaggregated optical networking with full monitoring capabilities

Key distinctive elements

- Dynamic equalization
- Ultra low noise
- Ultra wide bandwidth: C+L

Patented circuit

Dynamic wavelength balancing
(signal equalization)

Proprietary chip platform

Boost signal strength with ultra-low propagation losses and extended amplification range

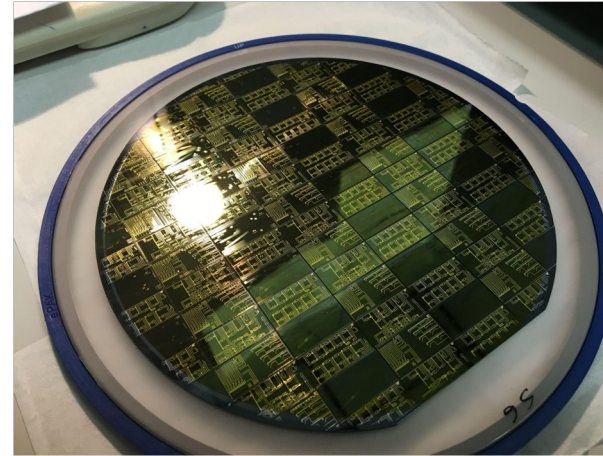


PhotonCore™

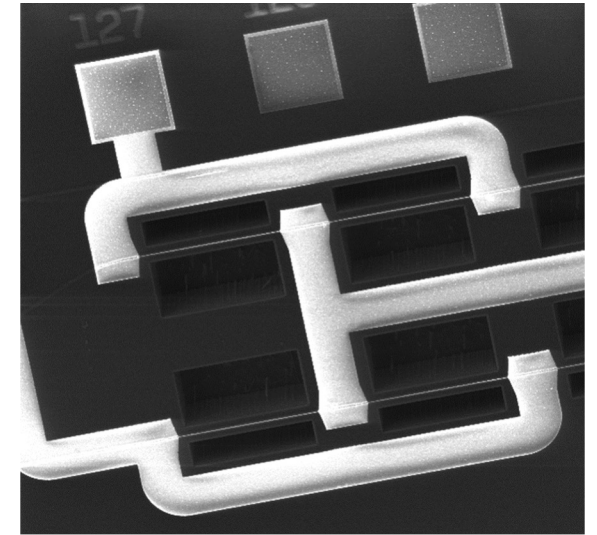
Patented photonic chipsets at the core of our products

Proprietary Oxyn Platform

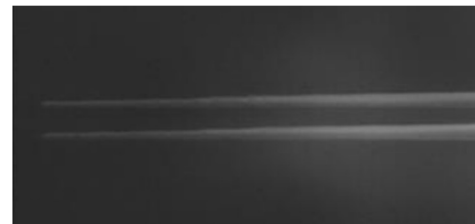
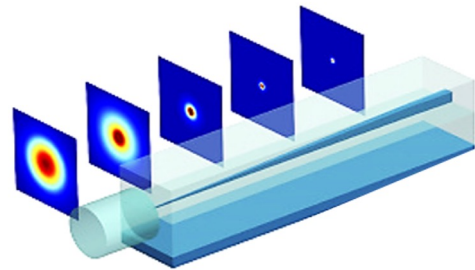
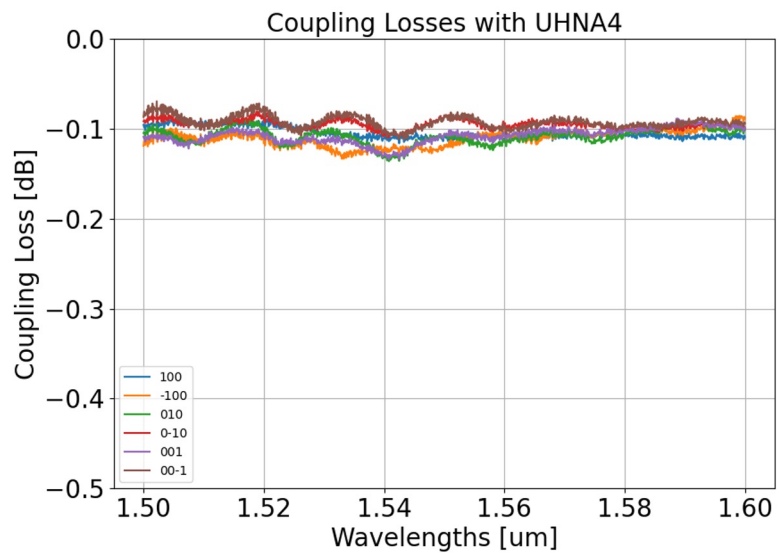
- Proprietary Oxynitride Platform
 - Coupling Loss < 0.2dB
 - Propagation Loss: 0.1dB/cm @ 1550nm
 - Minimum bending radius: 300 μm
 - Birefringence < 10^{-4}
 - Tapers for low-loss SMF coupling
 - 3D mirror integration for wafer-level testing



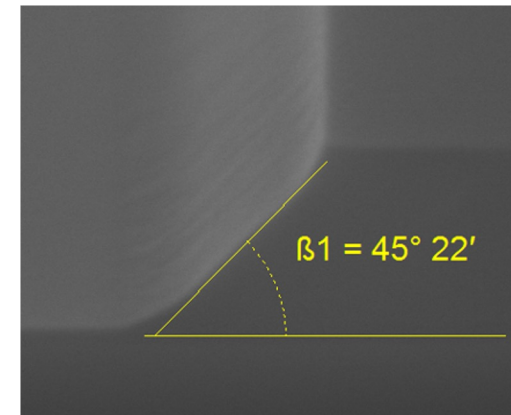
Oxyn Wafer



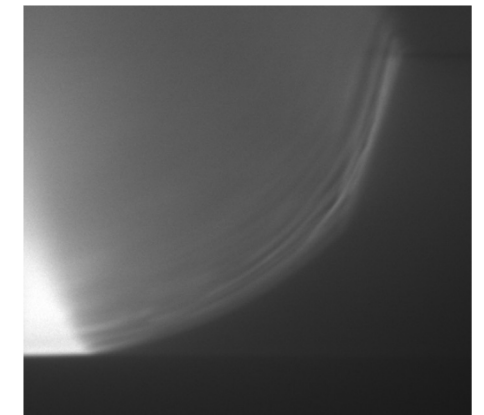
Efficiency-enhanced thermal actuators



Tapers for low-loss optical coupling



3D Tilted mirror



Experimental 3D Focusing Mirror

THE PHOTONPATHERS



Douglas, Ph.D.
Cofounder, CEO



Emanuele, Ph.D.
Cofounder, CTO



Federica, MBA
COO



Stefano
Strategic Biz Dev



Elena, M.Sc.
Photonics Engineer



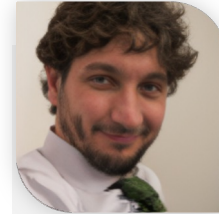
Mattia, M.Sc.
Photonics Engineer



Daniela
Adm. Assistant



Giulia, M.Sc.
Photonics Intern



Maurizio
Project Manager



Sedighe, Ph.D.
Nanofabrication
Analyst



Luca, Ph.D.
Photonics Engineer



Fabio, Ph.D.
Electronics Engineer



Piero, Ph.D.
Photonics Engineer



Alexey, M.Sc.
Electronic Engineer

ADVISORS

Benjamin Szewczyk
Innovation Manager
Brembo

Giorgio Grasso
Former CEO
Pirelli Labs

Marco Sampietro
Full Professor, Electronics
Politecnico di Milano

Andrea Melloni
Full Professor, Integrated Photonics
Politecnico di Milano

Padtec



JABIL



BerkeleyHaas



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🏠 photonpath.eu

🌐 [/photonpath](https://www.linkedin.com/company/photonpath)