

**STRENGTHENING THE REGIONAL
SEMICONDUCTOR ECOSYSTEM TO
UNLOCK THE QUANTUM
INDUSTRY OF TOMORROW**

Our quantum players

QPU builders



Quantum-HPC integration



Enablers



Ecosystem animation



Communication & cybersécurité



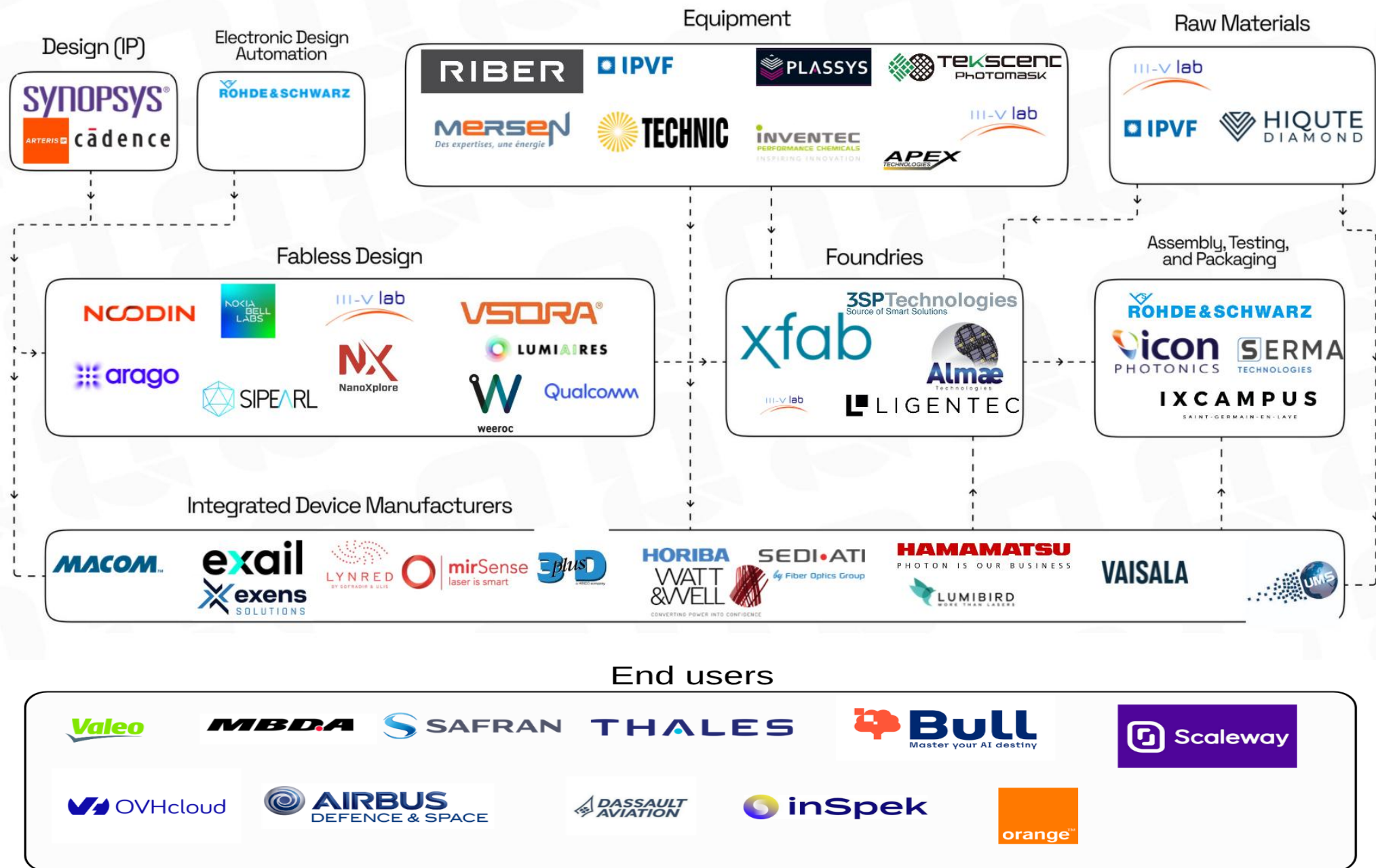
Software providers



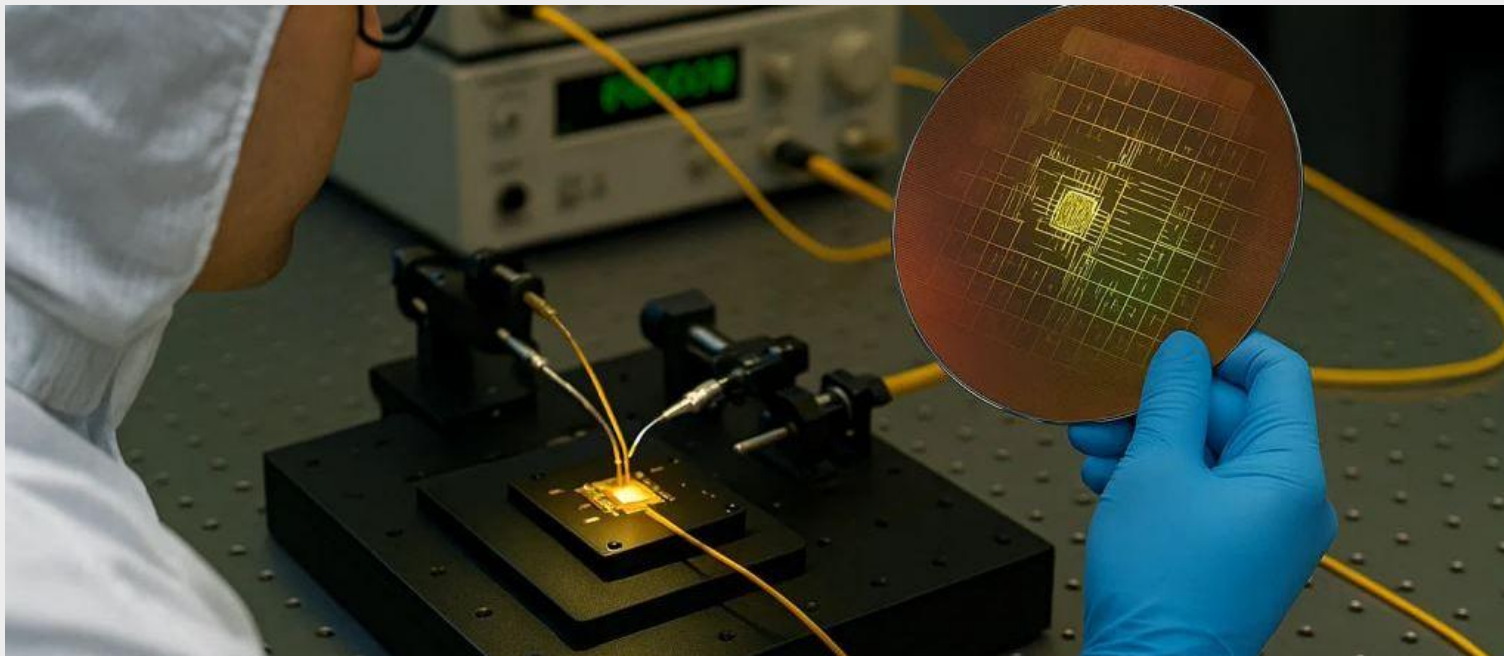
End users



Paris Region semiconductor ecosystem



A strong semiconductor ecosystem is key to accelerating the development and scale-up of quantum technologies



The Paris Region aims to:

Support the development of quantum players, building on the strength of its semiconductor ecosystem.

Support the development of innovative applications in its priority sectors: space, AI and quantum technologies.

Finance strategic, particularly collaborative, projects to accelerate the development and deployment of key enabling technologies.

Strengthening the Regional Semiconductor Ecosystem to Unlock the Quantum Industry of Tomorrow

Teratec

23/09/2026



Paris Region Deep Tech Ecosystem



Overview of the initiative

■ Semiconductor Working Group

- established in 2023 with the support of the Île-de-France Regional Council
- backed by a PwC study conducted in February 2024

■ Main Objectives:

- Support the industrial and technological policy of the Île-de-France region
- Collaborate with the French and European semiconductor ecosystems

■ Main Responsibilities :

- Bring together the Île-de-France ecosystem,
- Connect with the French and European ecosystems,
- Support the French semiconductor industry by focusing on 3 key areas in Île-de-France:

Materials and innovative
semiconductor processes
(III-V and Others)

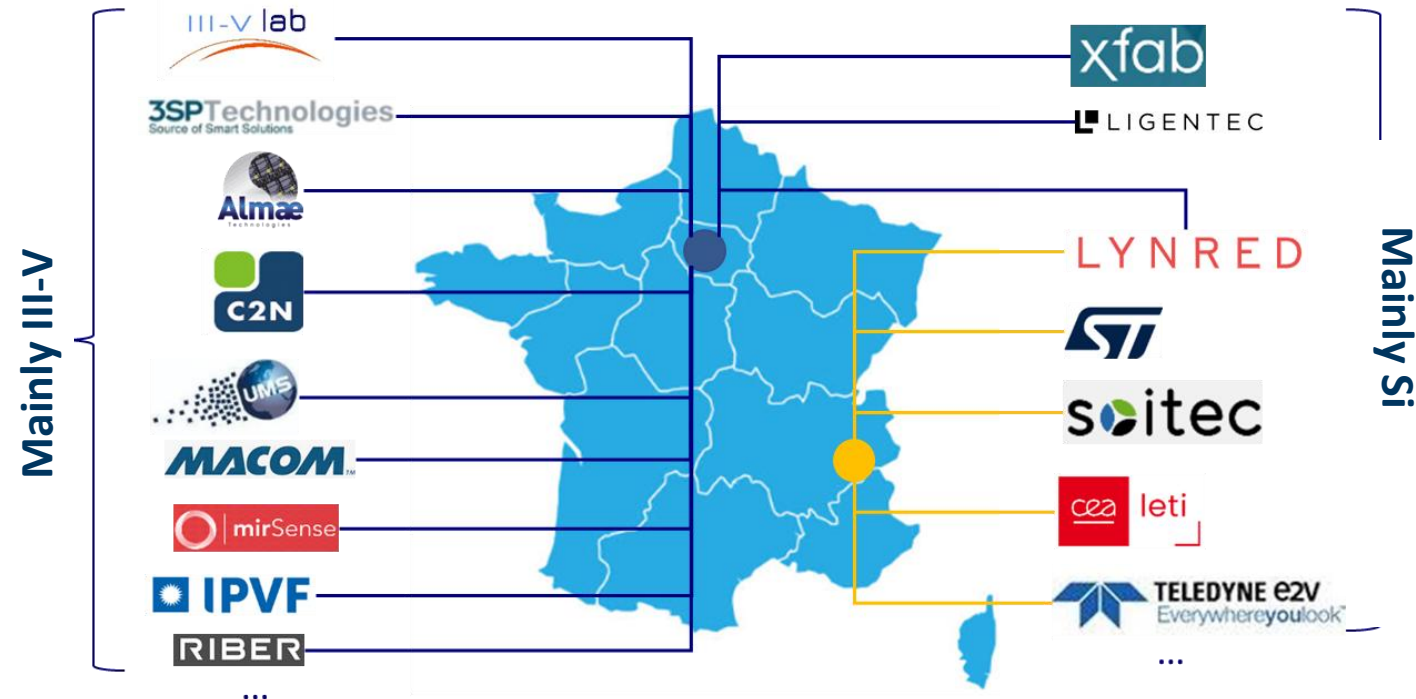
Advanced Design
(cointegration, IA,...)

Manufacturing of Strategic
Components (Chips &
Packaging)

Why III-V Technologies Matter

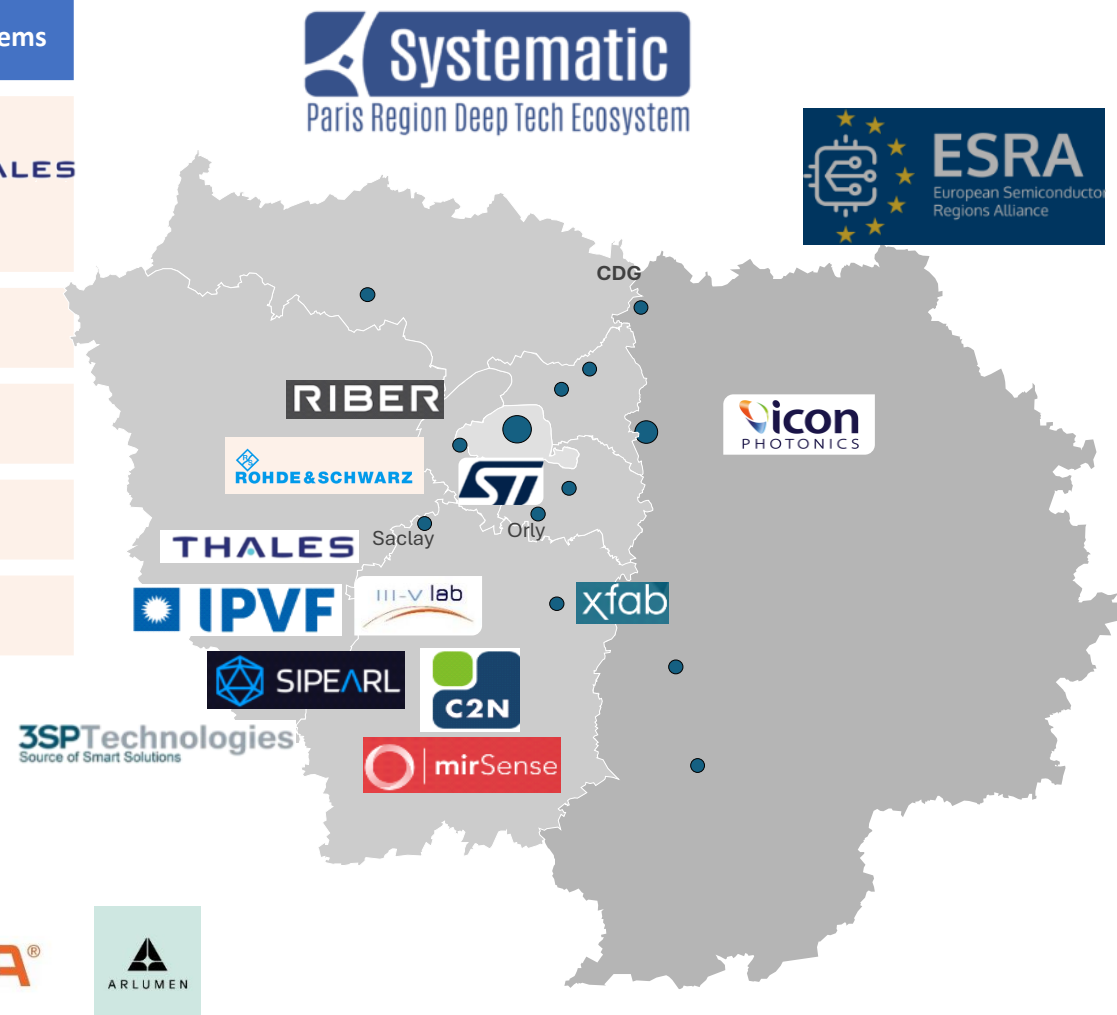
- Silicon-based semiconductor technologies, primarily concentrated in the Grenoble ecosystem, are increasingly reaching their performance limits in several key areas:
 - Data throughput and operating frequency
 - Power consumption and energy efficiency
- III-V semiconductor technologies, together with their heterogeneous integration on silicon, represent a key solution to overcome these limitations, particularly with the emergence of integrated photonics.

Mapping of Key Semiconductor Industry Players (Manufacturing Capabilities)



Structure of the Working Group

	Research	Conception Design	Materials	Foundry	Devices	Packaging	Systems
Photonics	C2N	mirSense laser is smart	IPVF	3SP Technologies Source of Smart Solutions	LYN RED	icon PHOTONICS	THALES
Electronics	cea list			xfab	UMS United Monolithic Semiconductors	SERMA MICROELECTRONICS	
Coordination	III-V lab Systematic Paris Region Deep Tech Ecosystem						
Prod Equipts	RIBER						
Test Equipts	ROHDE & SCHWARZ						
Use cases	ST						



Members:

HORIBA
Explore the future

VAISALA

keplertech.io

SAFRAN

NOKIA

Almae
Technologies

SERMA
GROUP

cnrs

LIGENTEC

VSDORA®

ARLUMEN

Sumitomo Heavy Industries, Ltd.

HAMAMATSU

Contribute to France's sovereignty and resilience through microelectronics and integrated photonics.



Pushing the limits of Moore's Law (including packaging and heterogeneous integration)



Embracing the Shift to Quantum Technologies

Playing a Key Role in AI and Data Centers

Developing Energy-Efficient Technologies



Build up skills (especially in design) by creating jobs



Securing critical supply chains (materials, substrates, packaging, etc.)

Building an integrated and agile value chain for the quantum industry through integrated photonics

- **Integrated electronics & photonics:** enabling technologies for quantum applications
- **A specialised supply chain:** the quantum sector has distinct requirements compared to current electronics markets (Datacom, AI, Consumer, etc.)
- **The IDF, a strategic player:** its technological and industrial base makes it a key region for developing this supply chain at both the French and European levels
- **Mission of the Île-de-France semiconductor Working Group:** develop a regional supply chain sector to meet the challenges of quantum technology:
 - **Integrated photonics**
 - **Photonics packaging**
 - **Cryogenic-compatible electronics**

Examples of Quantum Projects

LIQHT

- Development of a High-Performance Integrated Laser Source for a Photonic Qbit Driver.



DETACH

- Optical detachable connectors at wafer-level on mmW Si-interposer modules for quantum, AI, HPC and Aerospace



And other upcoming projects...

- Integrated photonic chips
- Photonic packaging

Conclusion

The Île-de-France Region has a key role to play within the French and European semiconductor ecosystem to ensure the sovereignty of France and Europe:

- III-V technologies
- Advanced Design (co-integration)
- Education and Training (Engineering Schools, University Programs)
- Direct value creation through its centers of excellence in quantum computing, AI, aerospace and defense, CleanTech, MedTech, and more...

The Semiconductor Working Group aims to:

- Bring together stakeholders in the Île-de-France region to bring these technologies to the French ecosystem
- Help ensure that regional, national, and European roadmaps are properly aligned
- Foster the development of foundational projects that support these roadmaps
- Or consider the transformative initiatives currently being developed: breakthrough photonic packaging, projects to establish an integrated, agile photonic ecosystem for quantum computing, datacom, AI, ASD, and more...

Thank you !



Bastien Pluchard
Innovation & Industry Referent
Ile-de-France Région
Bastien.PLUCHARD@iledefrance.fr



Najwa ABDELJALIL
Optics, Photonics and Semi-Conductor Coordinator
Systematic Paris-Region
Najwa.abdeljalil@systematic-paris-region.org

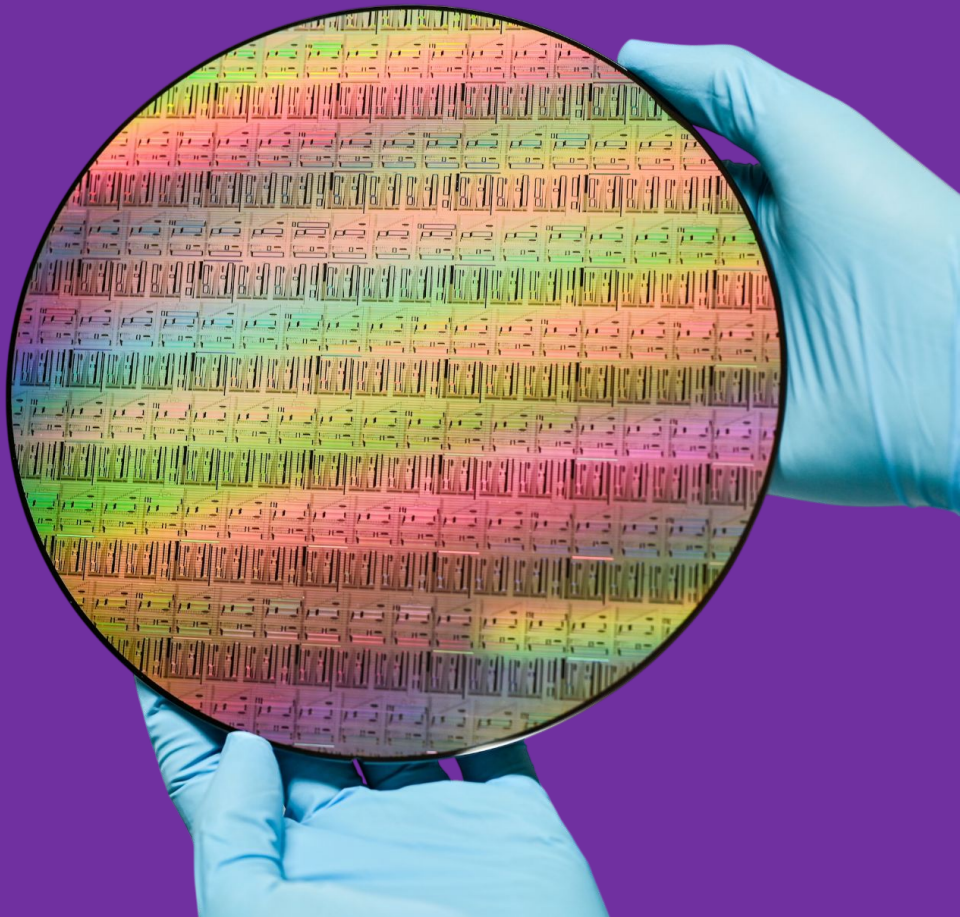


LIGENTEC

SEMICONDUCTOR INDUSTRY ADVANCING QUANTUM

SEP 23, 2026

LIGENTEC - sales-team@ligentec.com



LIGENTEC: European PIC manufacturing



Ghent, Belgium



Europe based



LIGENTEC HQ, Lausanne, Switzerland



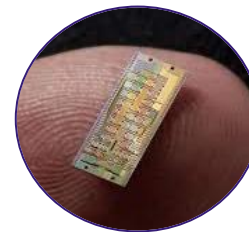
Corbeil, France

Team of 80+ photonic enthusiasts



Best-in-class integrated photonic circuits

- Low Loss SiN
(down to < 0.2 dB/m)
- 3+ technology platforms
(AN800, AN350, AN150, custom)
- Integration with actives
- Extensive PDK



Our PIC technology is an enabler for:

Sense

Biosensing
OCT / LiDAR
Metrology & Instrumentation
Atomic Clocks / GPS-less navigation
...



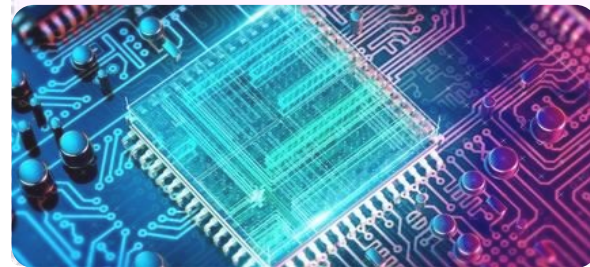
Connect

Telecom / Datacom
Satellite Communication
Optical Circuit Switching
Quantum Key Distribution (QKD)
...



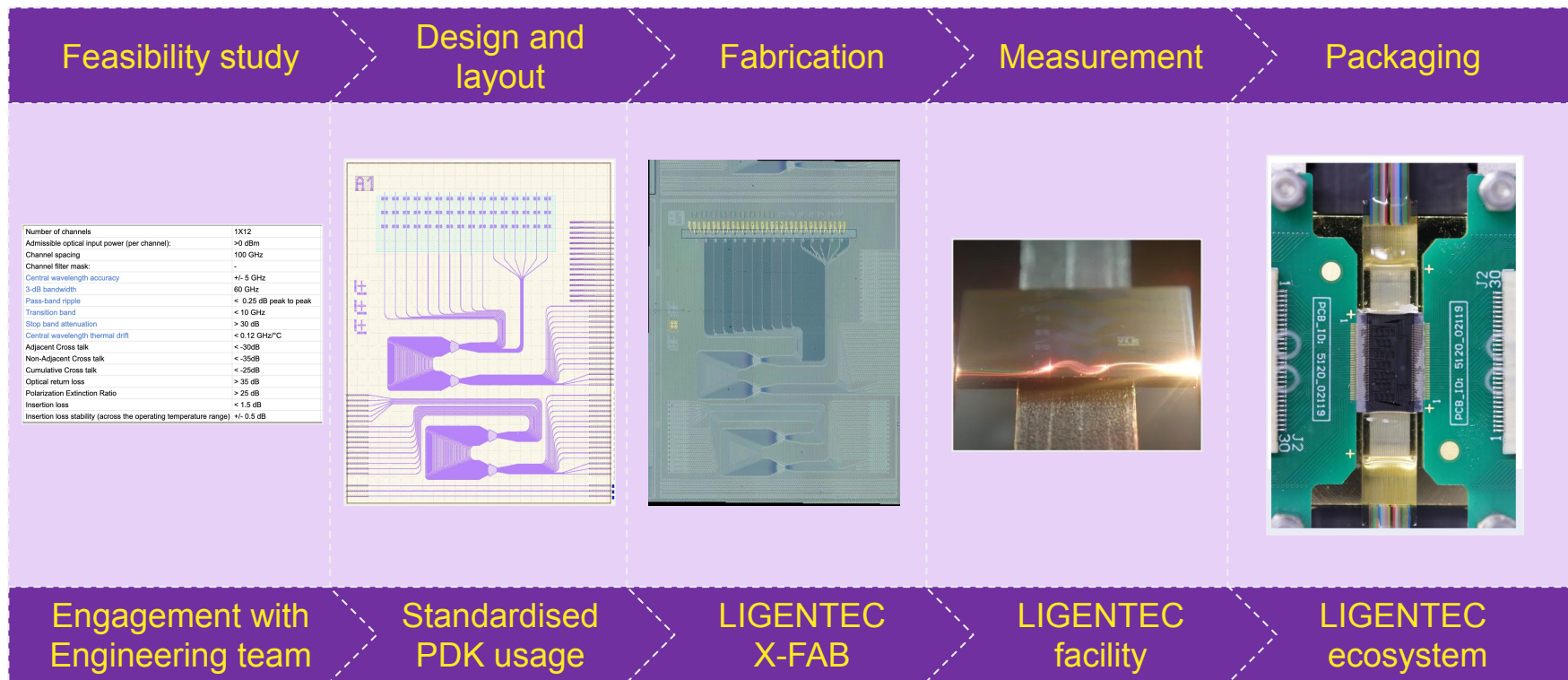
Compute

Quantum Computing
Neuromorphic Computing
Optical I/O and interposers (AI)
...



LIGENTEC's High-performance PIC Platforms

LIGENTEC - A PIC solutions partner



Strategic partnership for volume production



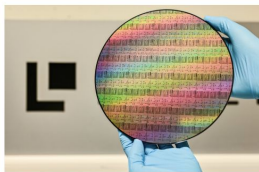
LIGENTEC

xfab

Press Release

Lausanne, Switzerland and Tessenderlo-Ham, Belgium – 19 January, 2026

LIGENTEC and X-FAB Expand Integrated Photonics Offering with SOI and Thin-Film Lithium Niobate Volume Scaling



LIGENTEC and X-FAB today announced an expanded collaboration to further strengthen their integrated photonics offering and streamline customer access to advanced photonic technologies. The announcement marks the next step in aligning their portfolios to address growing demand across communication, computing, quantum, and sensing markets.

As part of this expansion, the partners will jointly bring X-FAB's XPH90 Silicon Photonics (SOI) technology to market through its integration into LIGENTEC's broader photonics platform portfolio, creating a unified ecosystem spanning both SOI and established low loss Silicon Nitride (SiN)

technologies. LIGENTEC will serve as the primary customer interface, providing a streamlined and coherent entry point to both high-bandwidth SOI solutions and its established low-loss Silicon Nitride (SiN) platform.

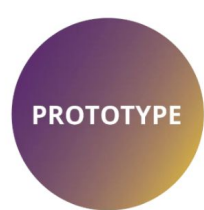
Together, these platforms address a wide range of application requirements, from high-speed, high-volume datacom and telecom to advanced computing, quantum, and sensing systems. The SiN technology continues to gain significant traction and expands capabilities across multiple markets, while SOI adds a dedicated solution for bandwidth- and integration-driven datacom and telecom applications.

A central pillar of the collaboration is the industrialization of heterogeneous integration technologies across both the SiN and SOI platforms, addressing the integration of key active and passive building blocks, including lasers, optical amplifiers, high-speed modulators, and photodetectors. A particular focus will be placed on thin-film lithium niobate (TFLN) technologies, enabling advanced electro-optic capabilities for high-performance, next-generation communication and signal-processing systems.

LIGENTEC - Services

Production Scale & Volume Tiers

We guide your projects through seamless scaling from R&D to mass production.



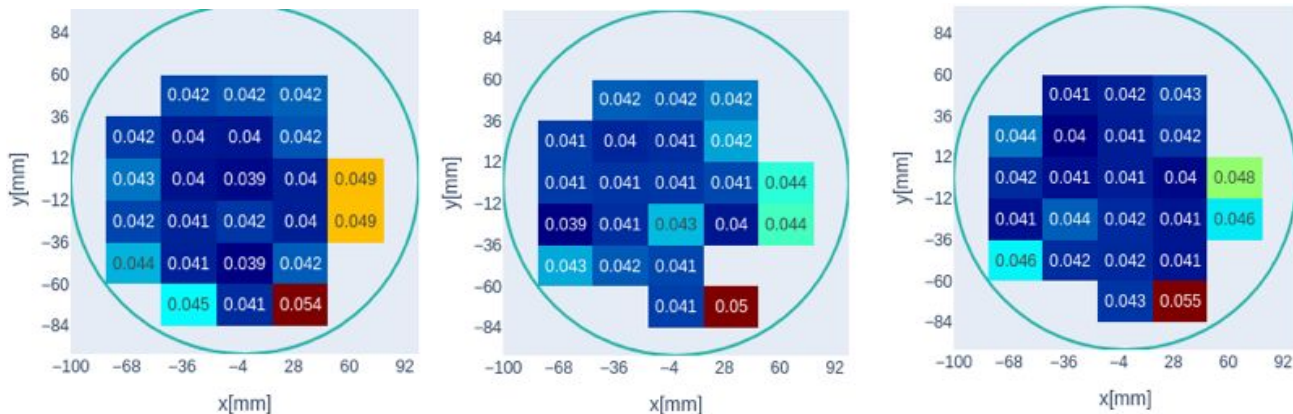
TYPE OF RUN	TYPICAL CHIP VOLUME
Multi-Project Wafers / Custom Prototyping	10s – 100s



TYPE OF RUN	TYPICAL CHIP VOLUME
Pilot Production	> 2,000
Volume Production	> 10,000

Overcome scaling challenges with LIGENTEC's trusted foundry expertise.

Wafer scale low optical loss



*Within wafer and wafer to wafer
cutback-based propagation loss*

4.3 ± 0.3 dB/m loss in a $1\mu\text{m} \times 0.35\mu\text{m}$ waveguide

< 0.2 dB/m loss in a $3.5\mu\text{m} \times 0.35\mu\text{m}$ waveguide

Enhance the SiN platform with monolithic & heterogeneous integration

Use SiN as base platform for general circuitry

- o Comprehensive PDK
- o Best for passive components
- o Standard optical I/Os
- o Scalable to volume



Heterogeneous Integration for active functionalities

Combine the best passive PIC platform with the best active materials

Laser / SLED

Amplification

Modulation

Detection

III-V

SiN

III-V

SiN

Erbium

SiN

SiO₂

TFLN, BTO, Polymer, III-V

SiN

III-V

SiN

Si - Substrate



Let's PIC it !

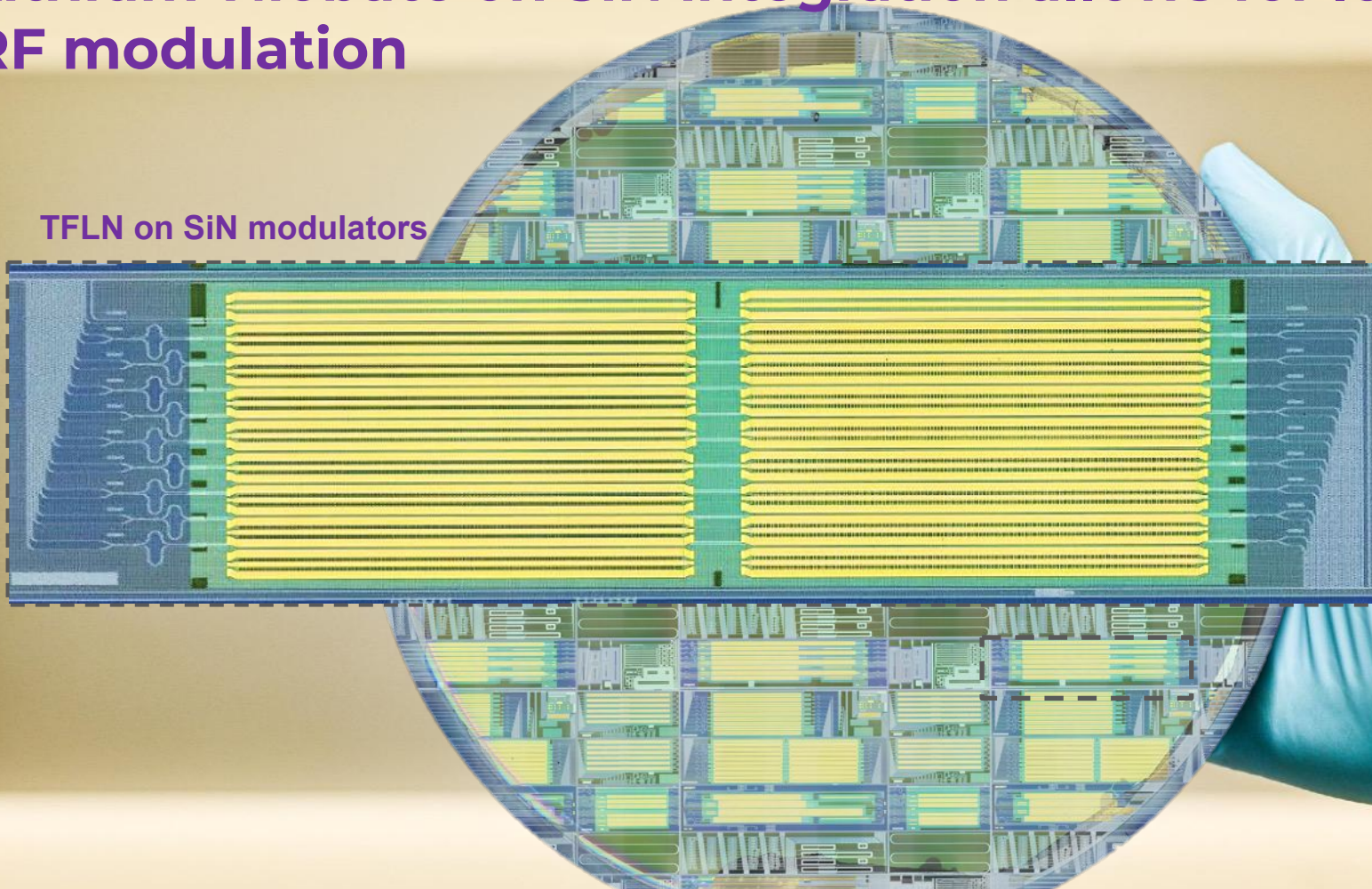


EXTRA

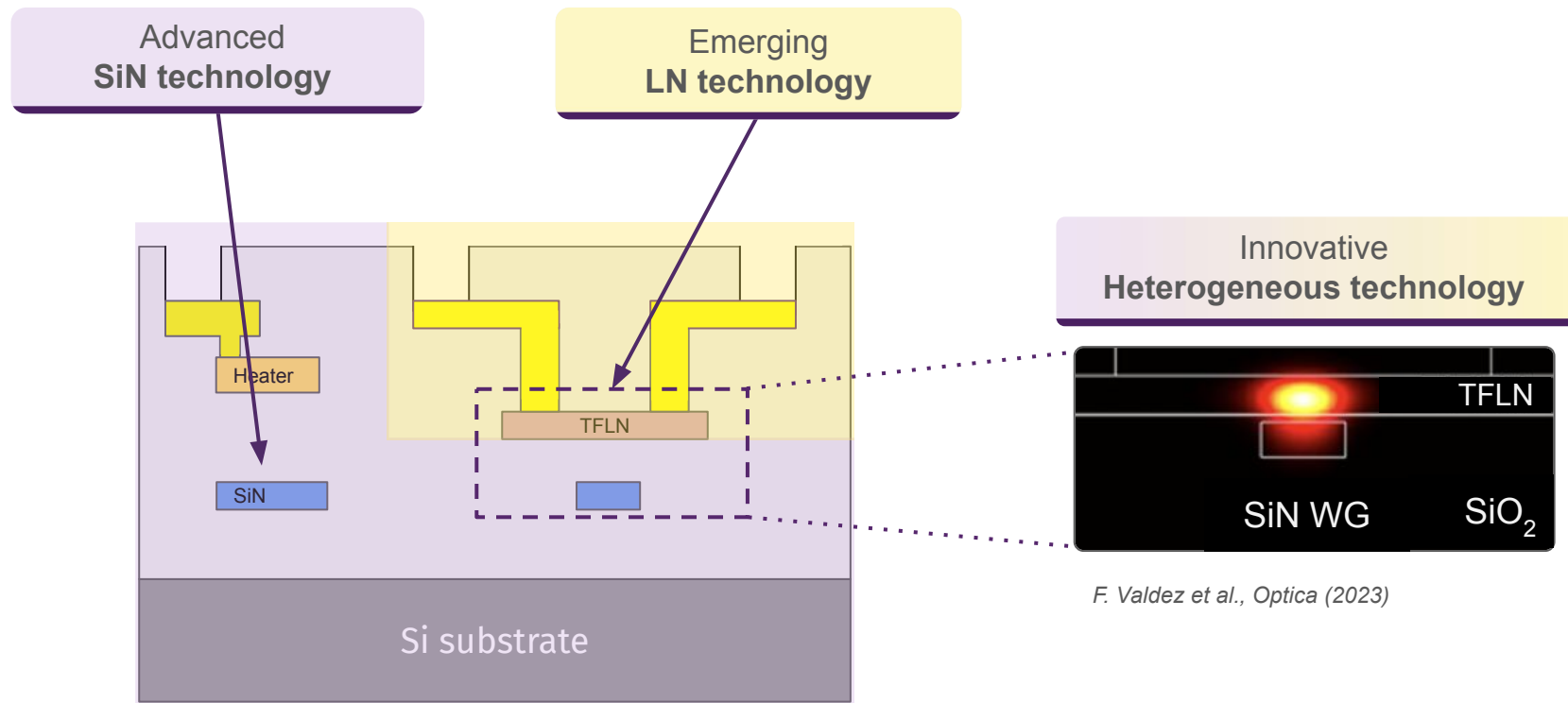
LIGENTEC's hybrid mode approach

Lithium-Niobate on SiN integration allows for low-loss RF modulation

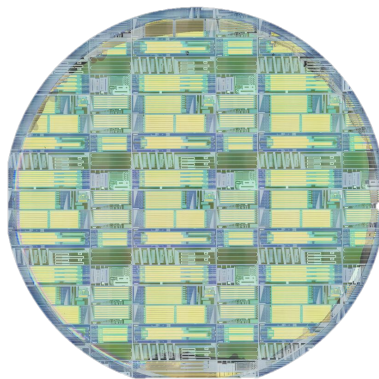
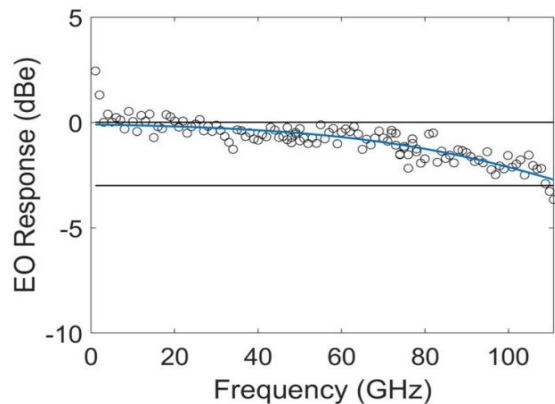
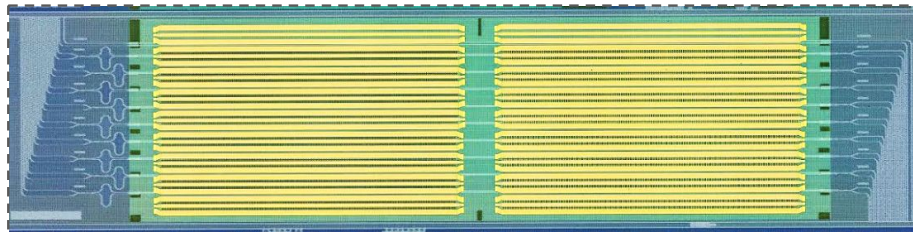
TFLN on SiN modulators



Heterogeneous integration of EO material on mature SiN platform



Low loss & high speed modulator



TFLN on SiN

- Only essential components in TFLN, all others remain in SiN
- All standard building blocks available

Modulator specifications

- Bandwidth: 110 GHz
- V_{π} : 2V

Hybrid mode approach

- Low propagation loss: 4 dB/m
- Simplified fabrication
- Escalator loss: < 20 mdB
- Fibre to fibre loss: < 2.5 dB



Let's PIC it !



IXCAMPUS

THE SHARED FACTORY : A SOVEREIGN PATH TO QUANTUM AT SCALE

SEMICONDUCTOR INDUSTRY ADVANCING QUANTUM
23 SEPTEMBER 2026

The dilemma of scaling up the photonics and quantum industry.

Hold its assets

- €30 to €150 million in capex before generating revenue
- 20 to 30 months of implementation

High risk and loss of agility

or

Be 100% fabless

- Strong dependence on subcontractors
- Geopolitical risks
- No industrial apprenticeship

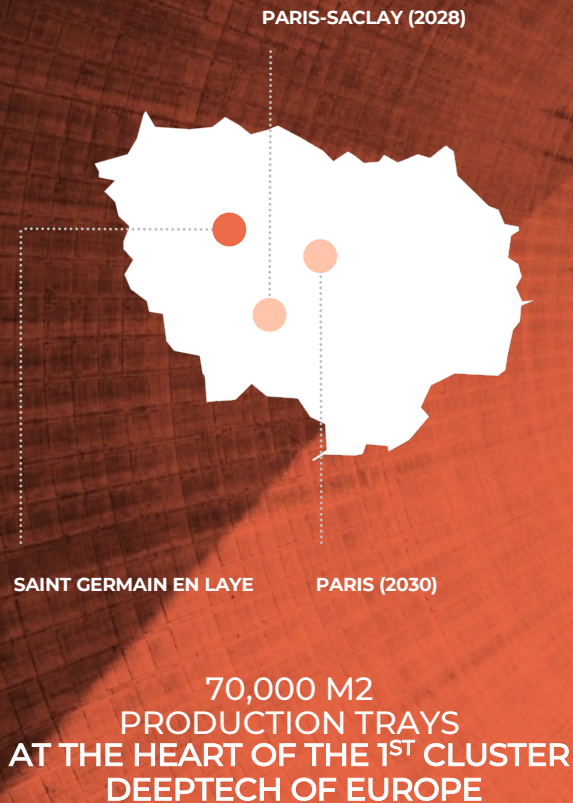
Loss of competitive advantage

IXCAMPUS: The Third Way

- Shared industrial infrastructure
- Deeptech-as-a-Service
- Sovereign solution

Protected IP, increased agility, transformation of CAPEX to OPEX

Enable the scaling up of a sovereign industry in quantum and photonics.



A SHARED TECHNOLOGY
PLATFORM
IN INTEGRATED PHOTONICS
AND QUANTITY

30 years

OF EXPERTISE IN PHOTONICS
THROUGH OUR IXCORE GROUP
FAMILY OFFICE



**18,000 m² dedicated to nanotechnologies
at the heart of the Paris-Saclay plateau.**

Industrial infrastructures

- 10,500 m² of ISO 8>5 cleanrooms
- Power, specialty gases, chilled water
- 3.8 to 4.5 m clear height and 1000 kg / m² floor load
- Private technical floors from 30 m² to 2,000 m²
- On-site maintenance technicians (24/7 on-call)
- Loading dock and logistics service

Pilot line and shared equipment

- Heterogeneous integration pilot line
- Characterization
- Optical packaging and fiber-to-chip alignment
- Metrology, inspection, profiling and dimensional control
- Resident engineers and technicians

A unique range of equipment and services dedicated to photonics and quantum.



PHOTONIC AND QUANTUM
CHIP MANUFACTURING



ADVANCED PACKAGING



CRYOGENIC TESTING



2029
PARIS-SACLAY

2027
SAINT-GERMAIN-EN-LAYE

2026
SAINT-GERMAIN-EN-LAYE

