







*Integrated Photonics Packaging enabling the
Next Generation Optical connectivity*

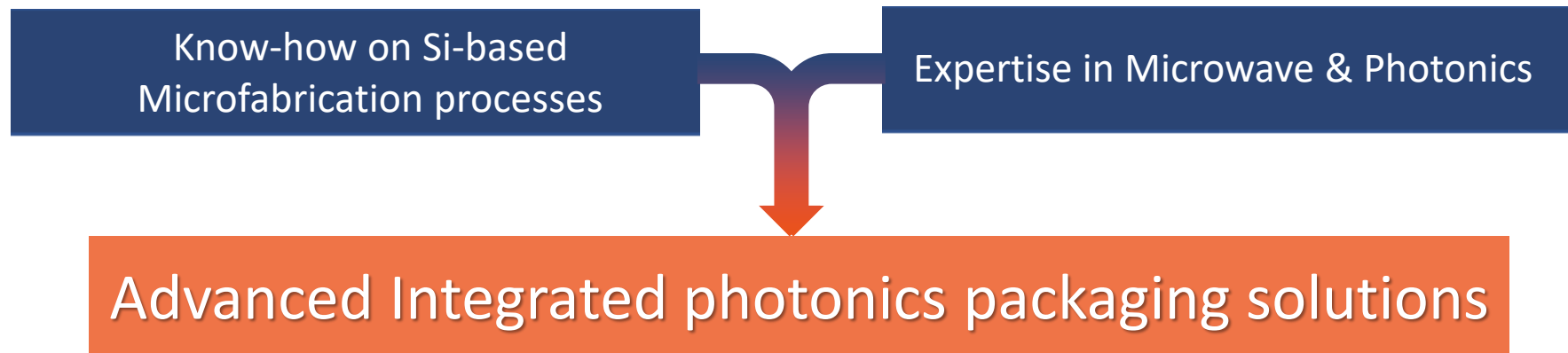
About us

Attn: EPIC

-  Technological independent SME created in 2018
-  Offices and Clean Room Facilities in France, Paris region
-  10 Headcounts - Strong R&D > 50% PhD in Photonics
-  Spinoff of CNRS research center



- **10+ years of R&D** in microfabrication and photonics packaging
- 650m² cleanrooms **production-line** (Class 10) platform



Integrated Packaging Platform

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> Light Coupling

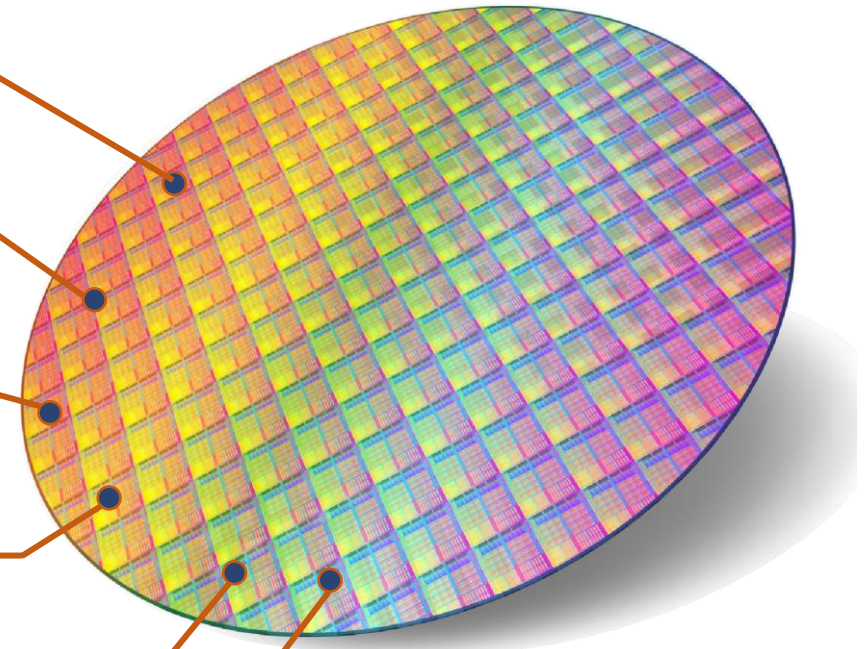
> Fiber Attachment

> On-wafer micro-optics

> Active device embedding

> RF & mmw interconnects

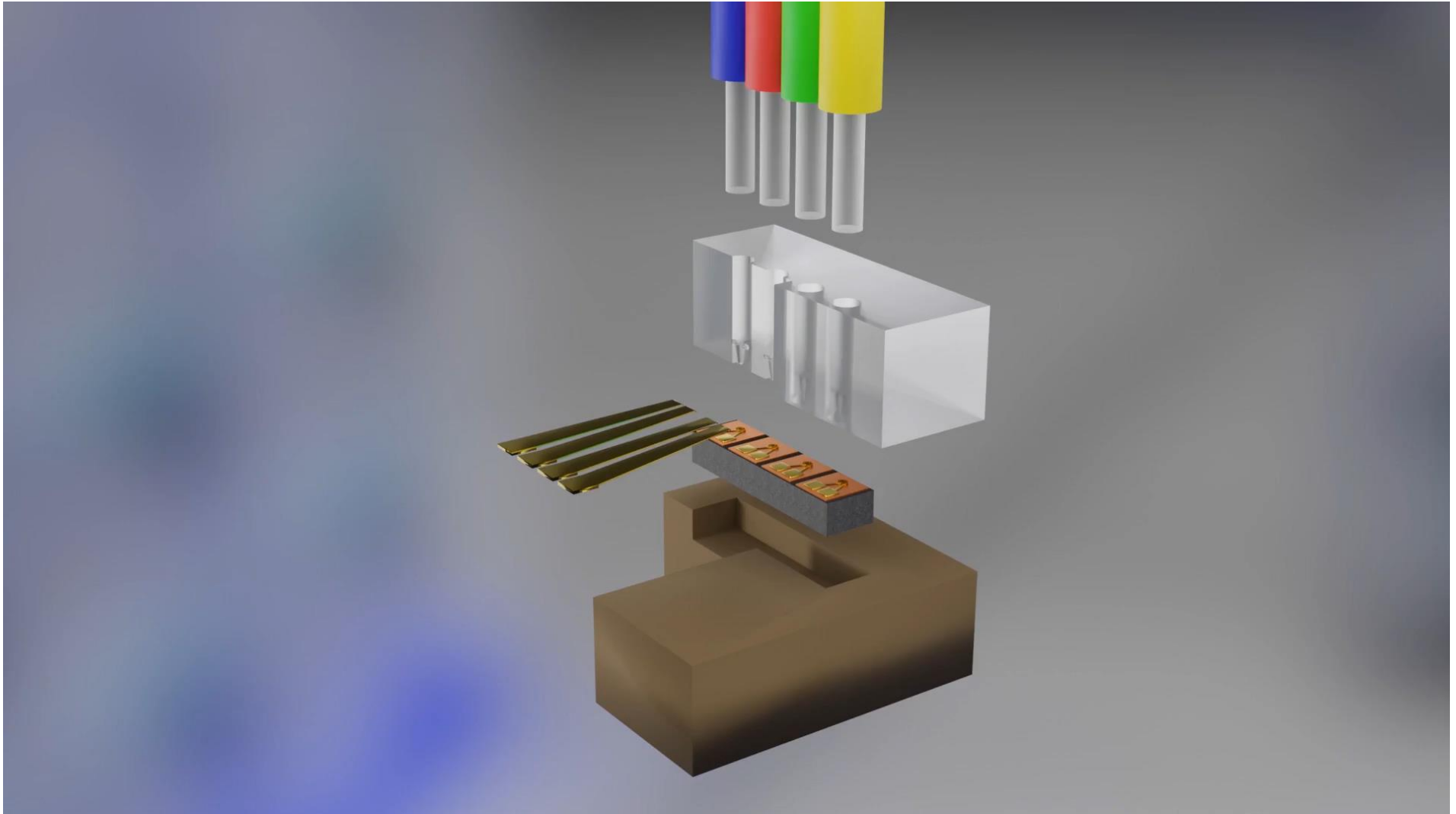
> Silicon Interposer assembly



Combination of functionalities using scalable Wafer-level Microfabrication techniques

Technology use case

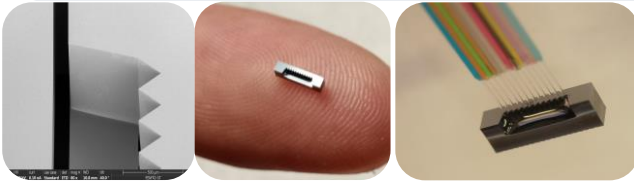
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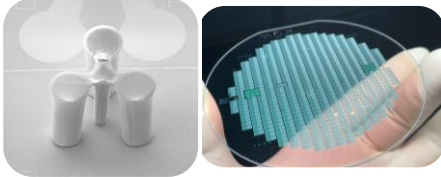
All-in-one-package: Photonics + Electronics + Mechanics integration

Technology use case

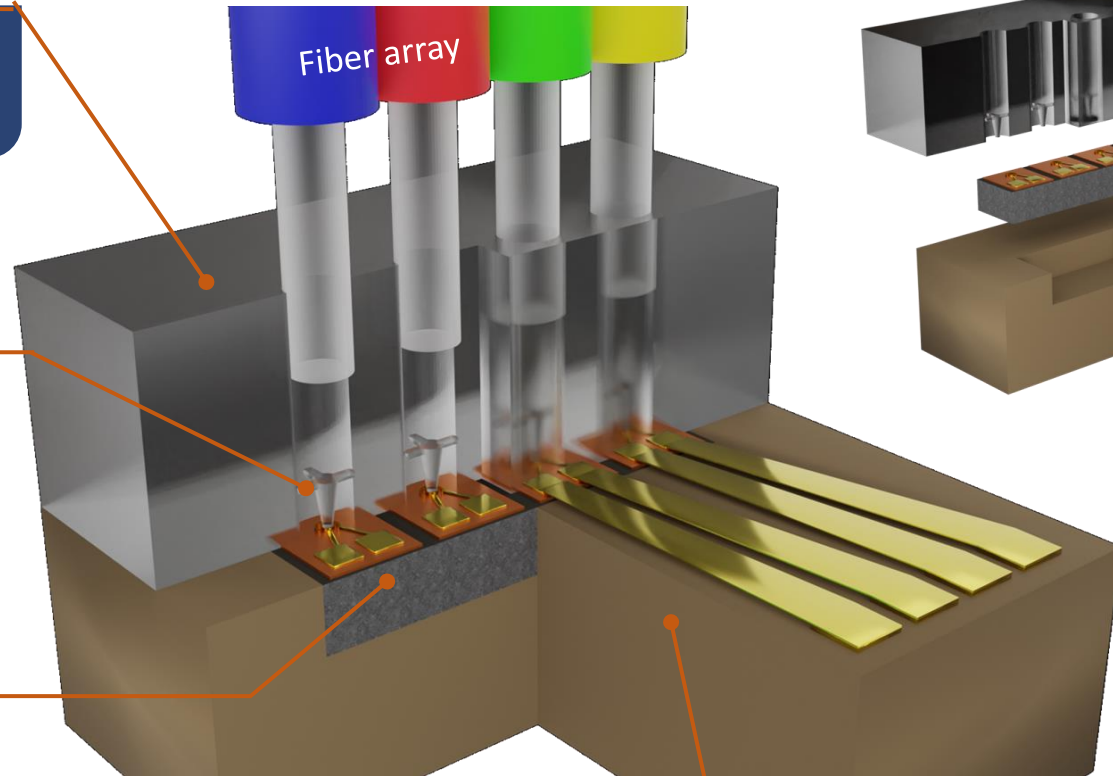
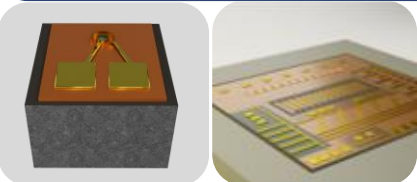
- ▶ Mechanical fixture for Fiber array self-alignment and attachment



- ▶ Polymer microoptics for low-loss light coupling

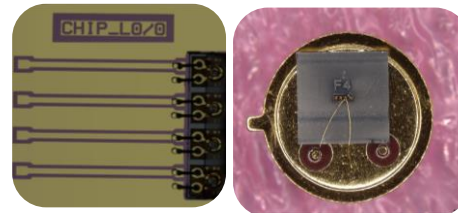


- ▶ Active device embedding: PIC, Detector, SNSPDs, VCSEL, Laser



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- ▶ Silicon Electrical interposer
- ▶ RF and mmW transmission lines



All-in-one-package: Photonics + Electronics + Mechanics integration

Polymer Benefits?

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Optical Properties

- › High transparency (from 500nm up to 5μm)
- › Low propagation loss (<0.5 dB/cm)

Reliability

- › Telcordia compliance
- › Mechanical stability
- › Chemically resistant
- › Thermal stability
 - › **Cryogenic** temperatures
 - › Reflow compatible up to 350°C

Mechanical properties

- › High aspect ratio
- › Adhesion & Bonding
- › Biocompatibility

Cost effectiveness

- › Material
- › Wafer-level process
- › UV mask lithography

Versatility

- › Spin coatable or Dry film
- › Contact mask design
- › Monolithic and hybrid options



Competitive Advantages

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Unique selling points

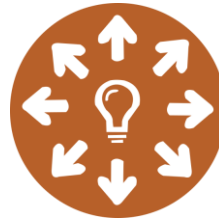
- ▶ Breaking through light coupling
- ▶ Wafer-level integration
- ▶ All-in-one package

Benefits



Miniaturisation

Excellent precision by semiconductor processing techniques



Versatility

Easy customization applicable with multiple application : datacom, quantum, sensing

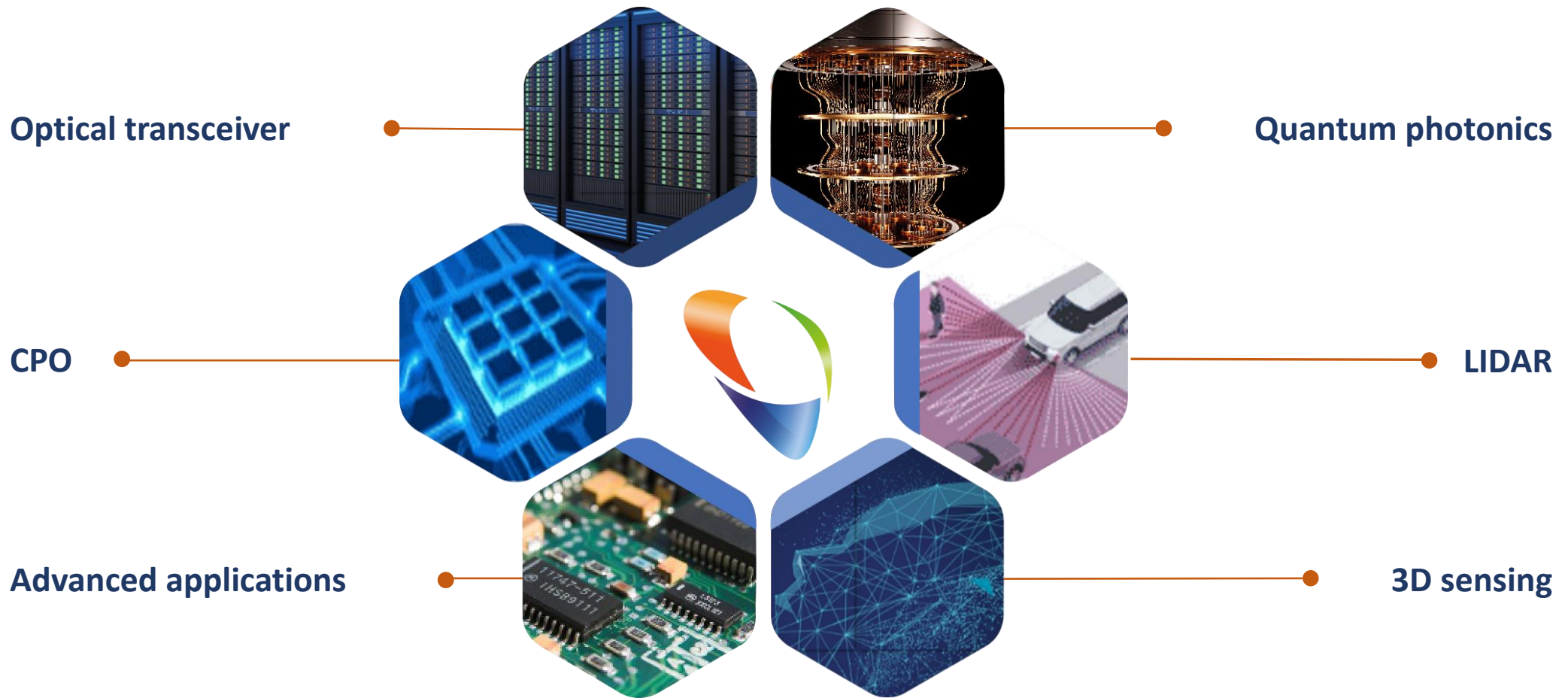


Scalability

Wafer-Level microfabrication : cost-effective mass production solution

Our market and applications

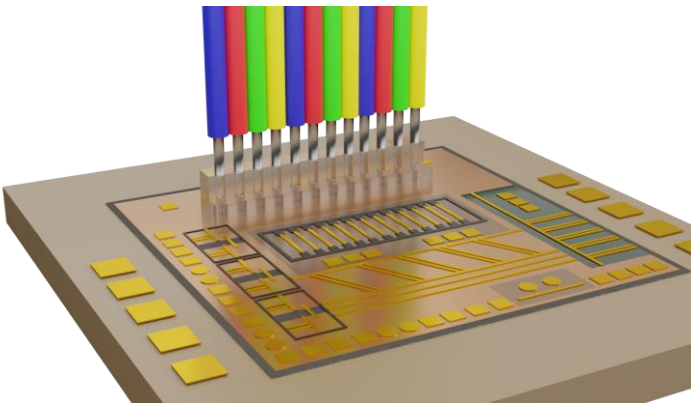
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Advanced Photonics Integrated Packaging

Our Solutions

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Surface I/O array

Top / back-side PD, VCSEL, GC, PIC
, SNSPD, MMF, SMF, MCF
Both silicon interposer and
full-wafer possibilities

Broad Wavelength Range 500nm-5μm

SMF and MMF coupling losses <0,5dB

Zero-reflection losses option available

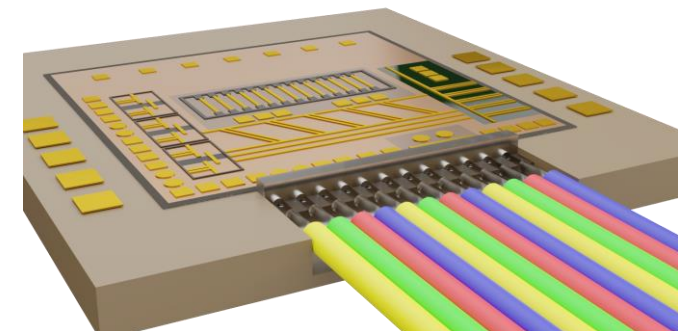
MFD from 30-10μm (MMF) to 10-1μm (SMF)

Fiber holder with passive alignment

From Sensing to >112Gbps module

eWLP from DC to mmW

Si-Interposer Heterogeneous Integration

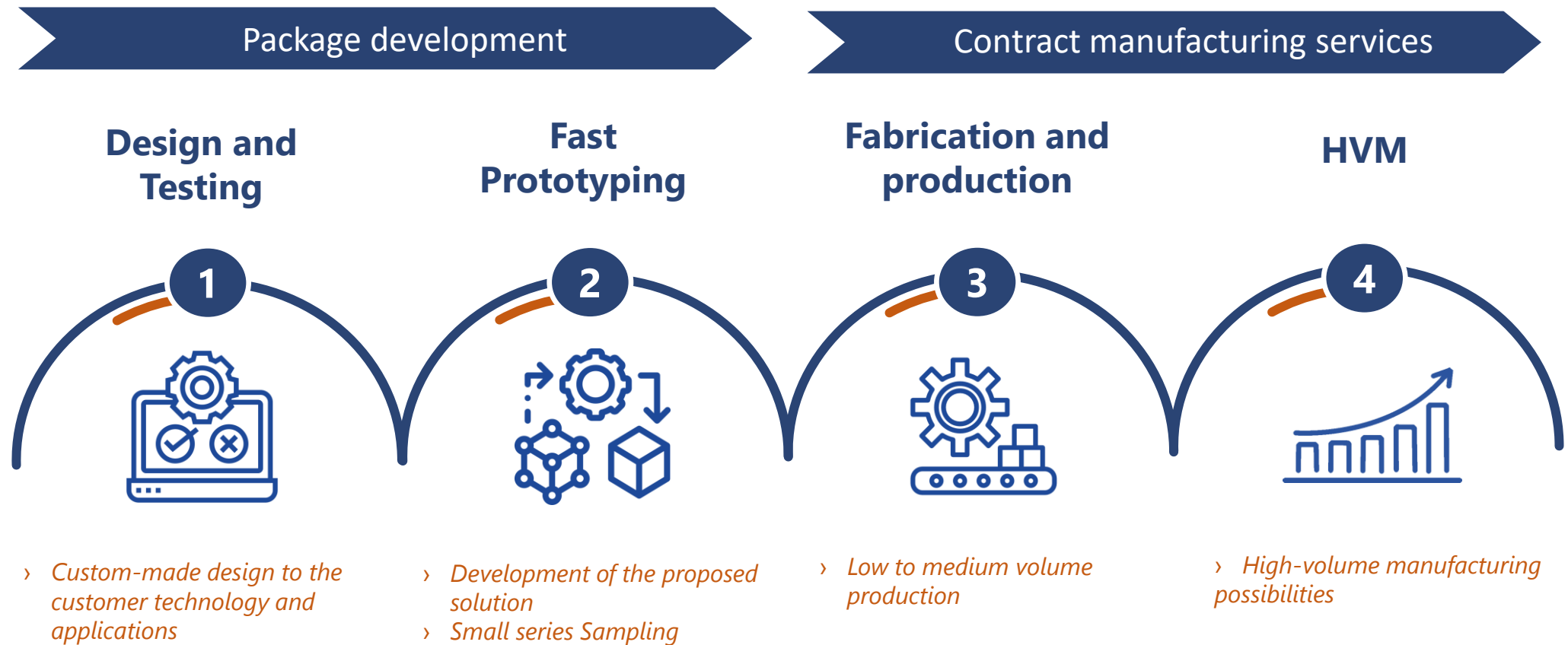


Edge I/O array

DFB, DBR, PIC, SSC
MMF, SMF
Both Silicon interposer and
standalone possibilities

Collaboration Model

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On-stop-shop from design to industrialization

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