Integrated Photonics
Design needs, services and tools

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Online DUTCH – ISRAELI mini SYMPOSIUM ON Integrated PHOTONICS
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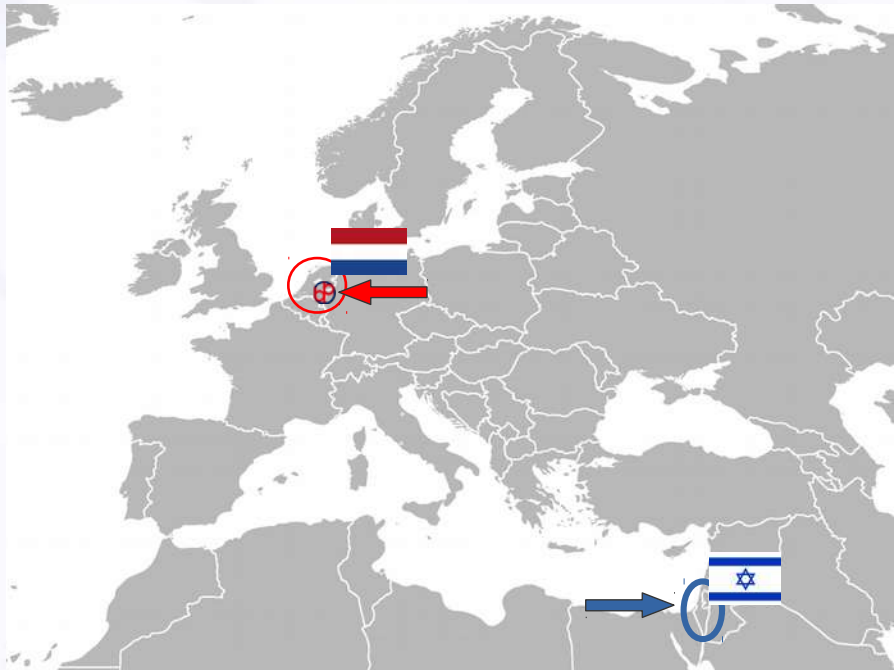
BRIGHT Integrated PHOTONICS

Your ‘in house’ design partner for photonic ICs



Founded: 2010
Location: Eindhoven, the Netherlands
e-mail: info@BrightPhotonics.eu
www: BrightPhotonics.eu

About BRIGHT Photonics

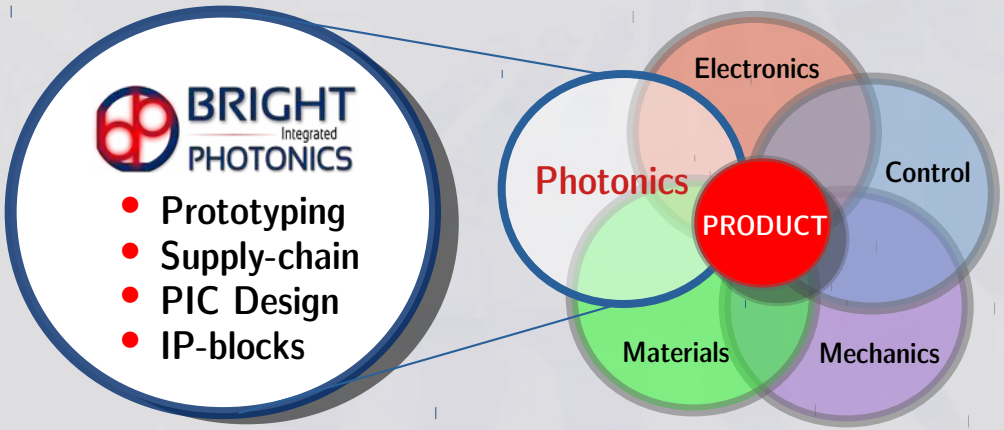
BRIGHT Photonics deploys photonic integration technology for products & research
to provide novel solutions which revolutionize the way we live and explore.

BRIGHT Photonics has deep expertise in and around photonic integration
- a worldwide network and large supply chain
- access to the latest technology nodes
- and extensive R&D activity.

BRIGHT Photonics is a design house
- for layout & circuit design & support
- for feasibility & prototyping & supply chain development

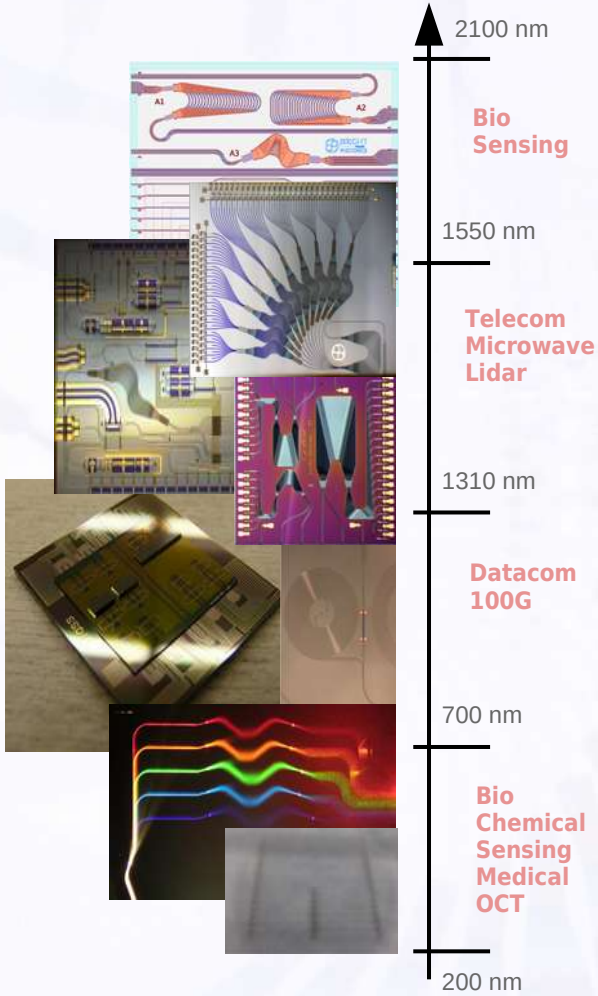
Aimed at servicing customers with applications in any market benefiting from Photonic ICs.

Empowering products
with photonic engineering since 2010



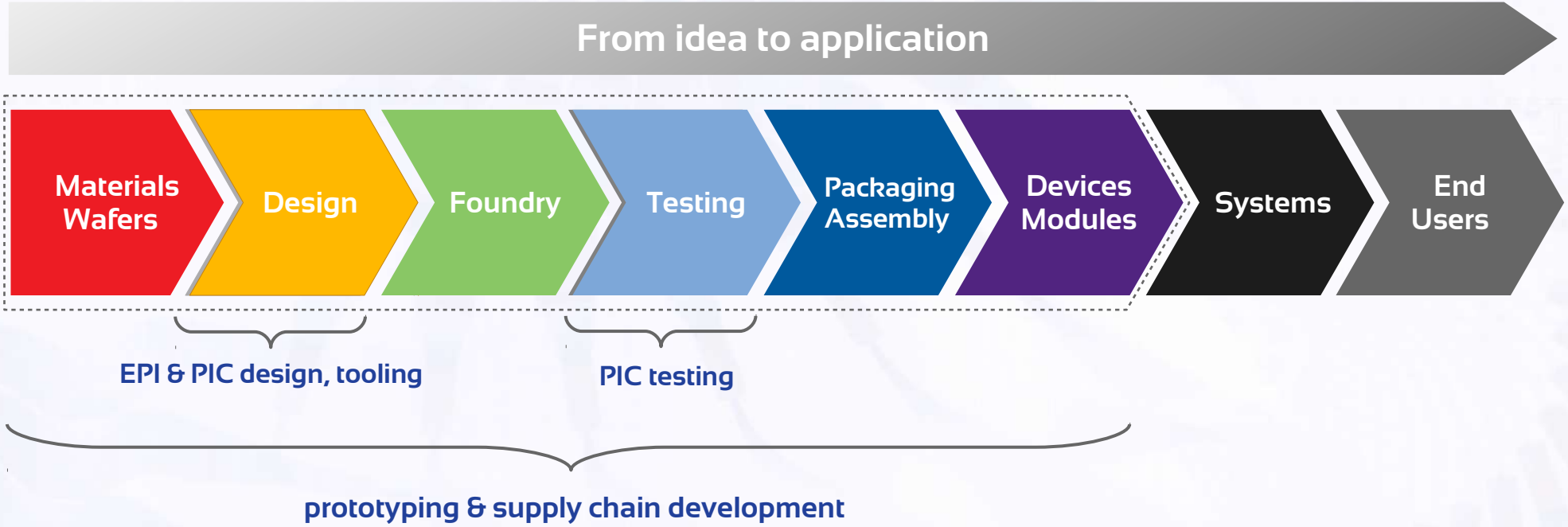
Markets:
- Telecom & Datacom
- Microwave Photonics
- Bio & Medical
- Sensing & Metrology
- Aerospace

Technologies:
- SOI
- InP
- SiN
- SiO2
- Polymer



✓ Design from UV to IR ✓ Design across technologies ✓ Design flow innovation

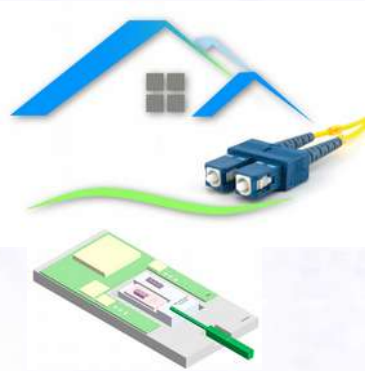
Bright's position in the PIC value chain



Product and project examples

Datacom:
- State of the Art **MUX & DeMUX** design and testing
- Product volume: 100k modules per month

Telecom:
- Feasibility for **FttH** unit
- Supply chain development and assembly scheme
- Targeted volume: 1M+ modules per year

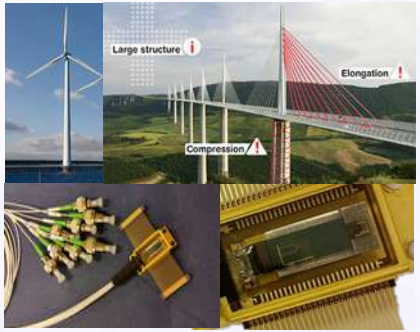


Medical:
- Haptic feedback grippers
- Design of **on-chip spectrometer** for fiber-based sensor

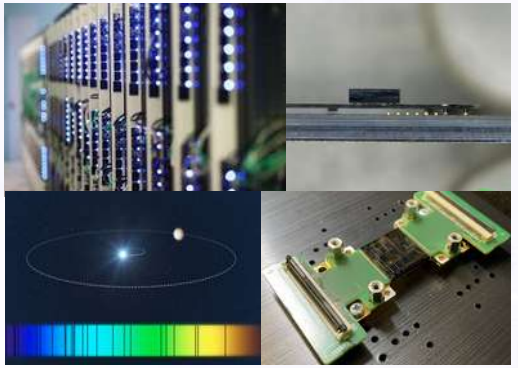
Aerospace:
- Photonic IC design for sensing of: strain, temperature, displacement, multi-parameter, multiplexing
- **World record** in sensing

Product and project examples

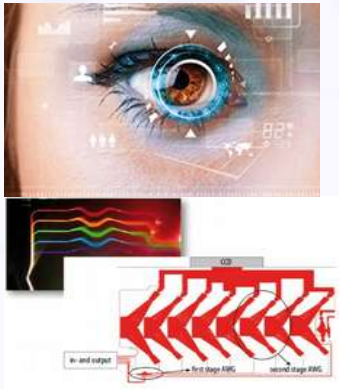
Sensing:
PIC based transmitters and Interrogators for FBG, Raman and Brillouin based sensors.



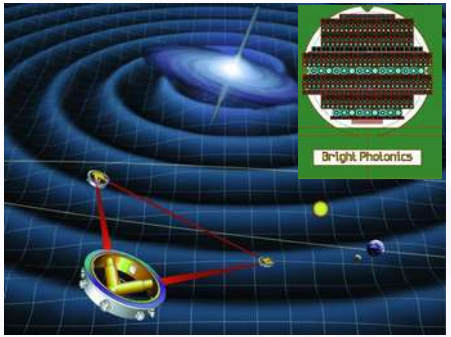
Research:
- **Optical interconnects**: PIC design for hybrid integration and assembly
- **Astrophotonics**: Spectrometers for exoplanet detection



Bio and Medical:
- **OCT** for retina scan and cancer diagnostics
- PIC design in a broad wavelength range from VIS to NIR



Aerospace:
- State of the Art **Detector** development for LISA
- Targeted launch into space 2034



R&D Project examples

BRIGHT R&D projects:

- EU FP7 EuroPIC
- EU FP7 PARADIGM
- EU FP7 PhoxTroT
- EU H2020 ACTPHAST
- EU H2020 L3Matrix
- EU H2020 MASSTART
- EU H2020 InPulse
- NL OpenPICs
- NL Flagship PhotonDelta
- NL Optolock

Demonstrate proof of concept for InP MPWs

Develop all optical cables for data centers

Support companies in PIC prototyping

Demonstrate high-performance optical data-bus for ASICs

Develop transceivers for mass production

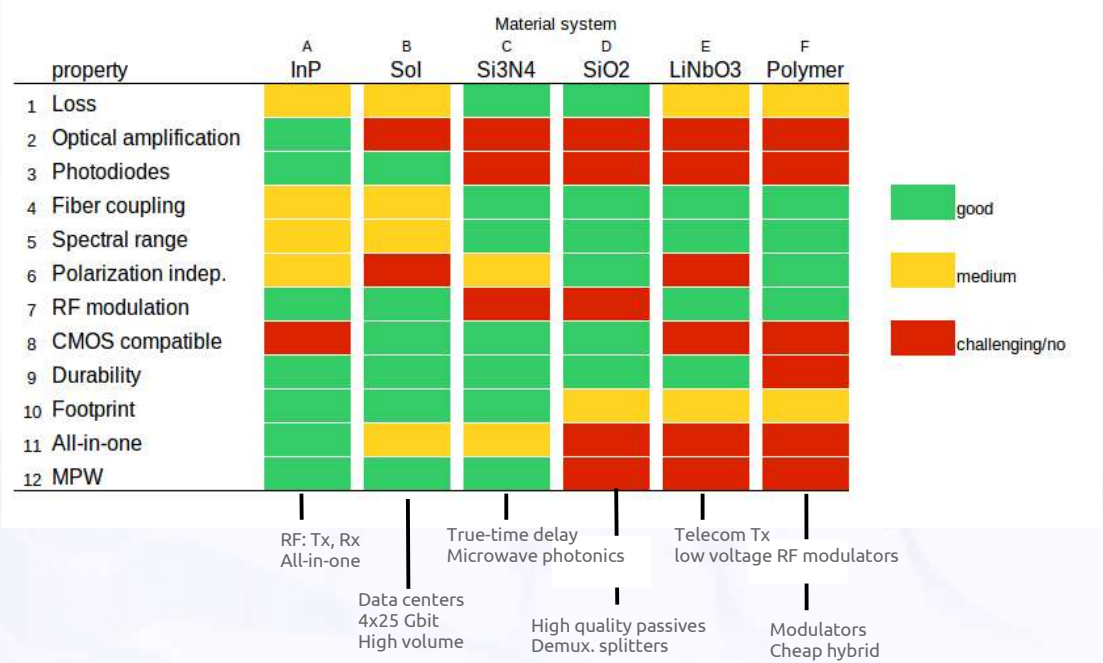
Set up a pilot line for InP PIC production

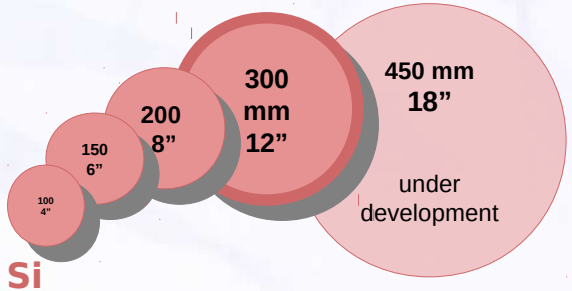
Mature InP design and manufacturing

Develop hybrid PIC antennas for space

Develop an O-band combiner/laser platform

Technology selection for PIC development and volume scale-up



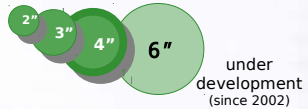


Si

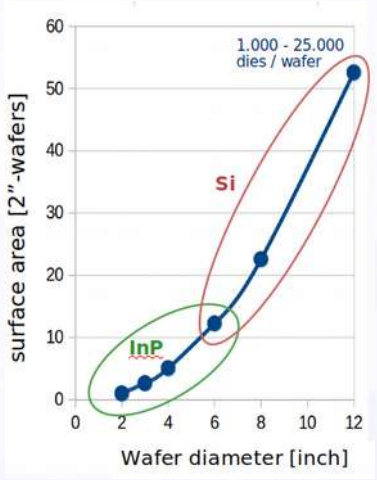
Standard 12", for photonics 8"

InP

standard 3"



- Prototyping
  < 100 dies
- Low volume
  < 100.000
- High volume
  > 1.000.000



Design tooling and validation with Nazca Design

Bright Photonics developed:

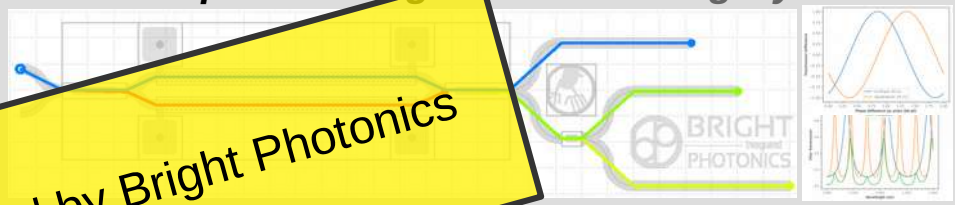
Free Open Source Python-based Photonic IC Design Framework

Nazca lowers barriers to PIC development

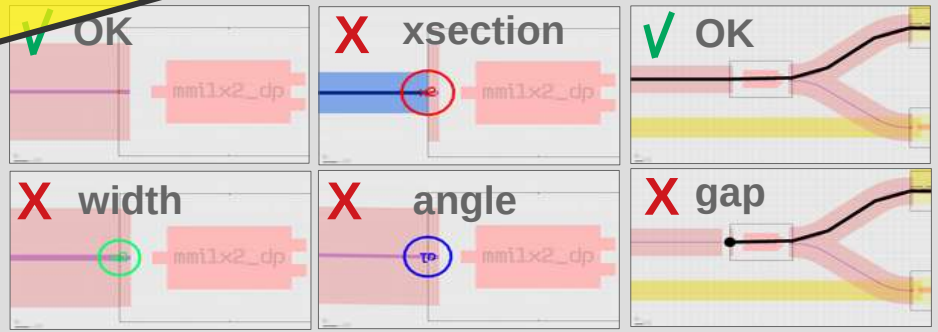
- ✓ Hybrid design: **combine** technologies
  - ➔ Si-Photonics, III-V, PLC, ...
  - ➔ Combine **PDKs** in a single design flow
  - ➔ Packaging templates
- ✓ IP-Blocks: **reuse & share**
  - ➔ Create and share libraries in GDS
  - ➔ Protect your intellectual property
  - ➔ Enable IP-Block replacement at the foundry
- ✓ Routing: **solve & verify**
  - ➔ Employ interconnects and ribbon routing
  - ➔ Use path tracing for circuit integrity
  - ➔ Verify your connections for error-free implementation
  - ➔ Simulate your circuit at GDS level

Commercially supported by Bright Photonics

path tracing for circuit integrity



connection verification to avoid errors



BRIGHT Integrated PHOTONICS

Contact Bright Photonics

and find out what PICs can do for your competitive advantage

info @ **b**right**p**hotonics . **eu**
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