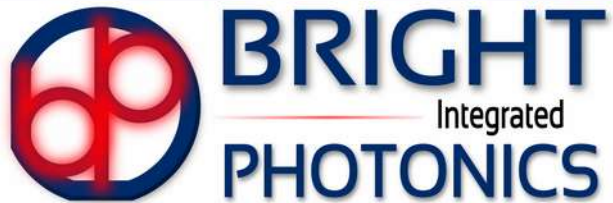




## **Integrated Photonics Design needs, services and tools**

Katarzyna Ławniczuk  
k.lawniczuk@brightphotonics.eu

Connecting with the Dutch and Spanish integrated photonics ecosystems  
29 – June – 2021



Your 'in house'  
design partner  
for photonic ICs

Founded: 2010

Location: Eindhoven, the Netherlands

e-mail: [info@BrightPhotonics.eu](mailto:info@BrightPhotonics.eu)

www: [BrightPhotonics.eu](http://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**

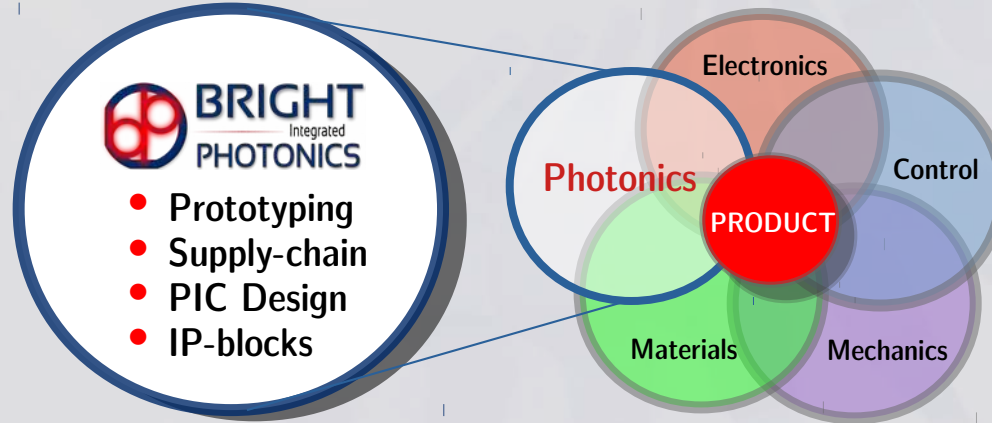
- a worldwide network and large supply chain
- access to the latest technology nodes
- and extensive R&D activity.

**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

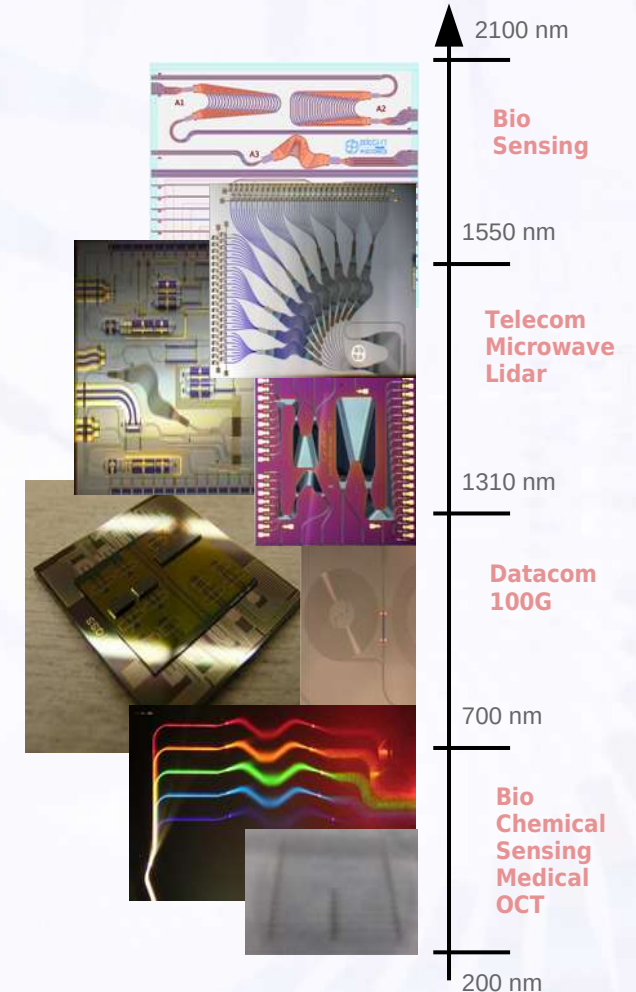


## Markets:

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

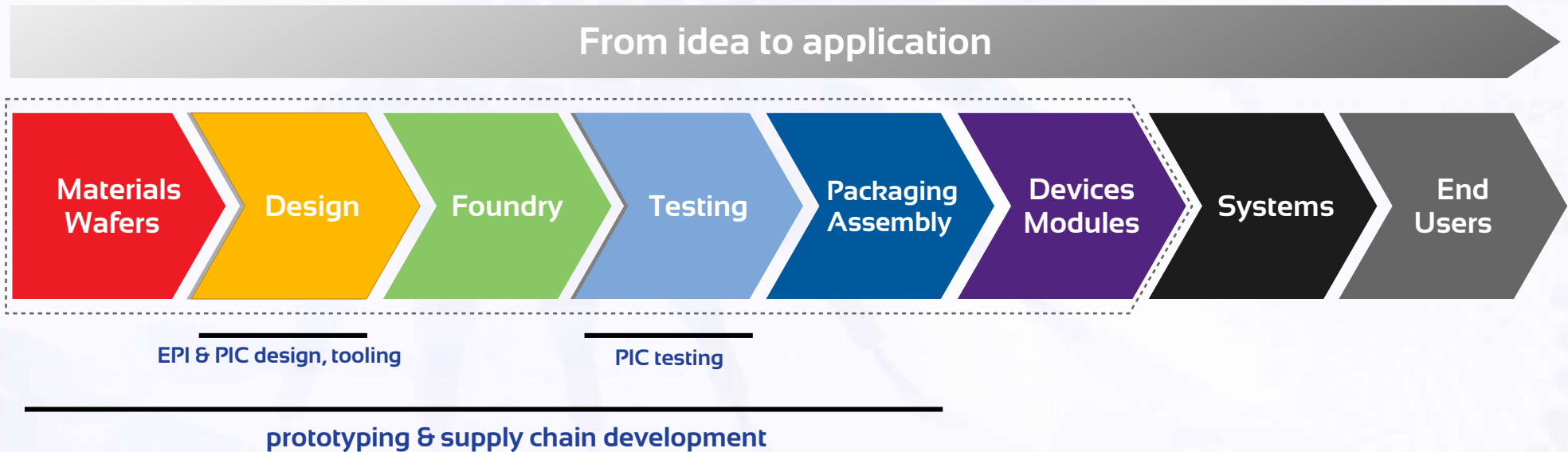
## Technologies:

- SOI
- InP
- SiN
- SiO<sub>2</sub>
- 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

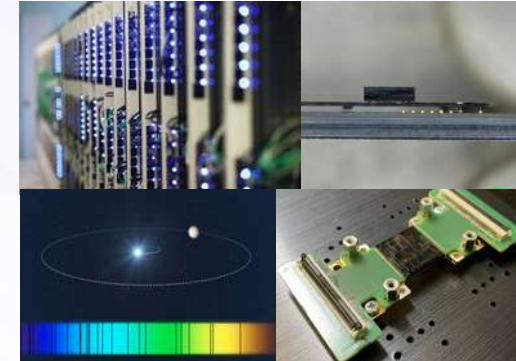
## Sensing:

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



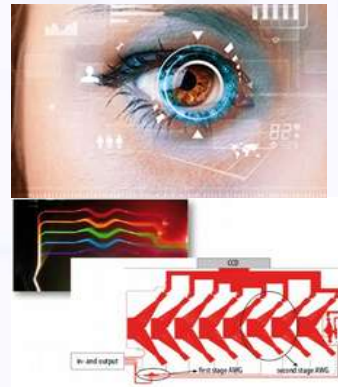
## Research:

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



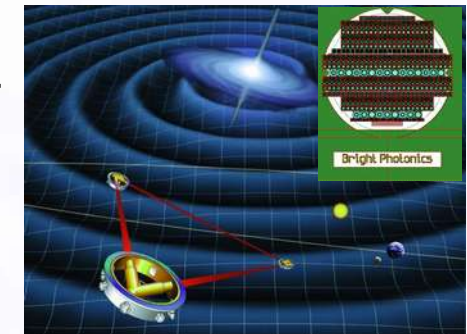
## Bio and Medical:

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



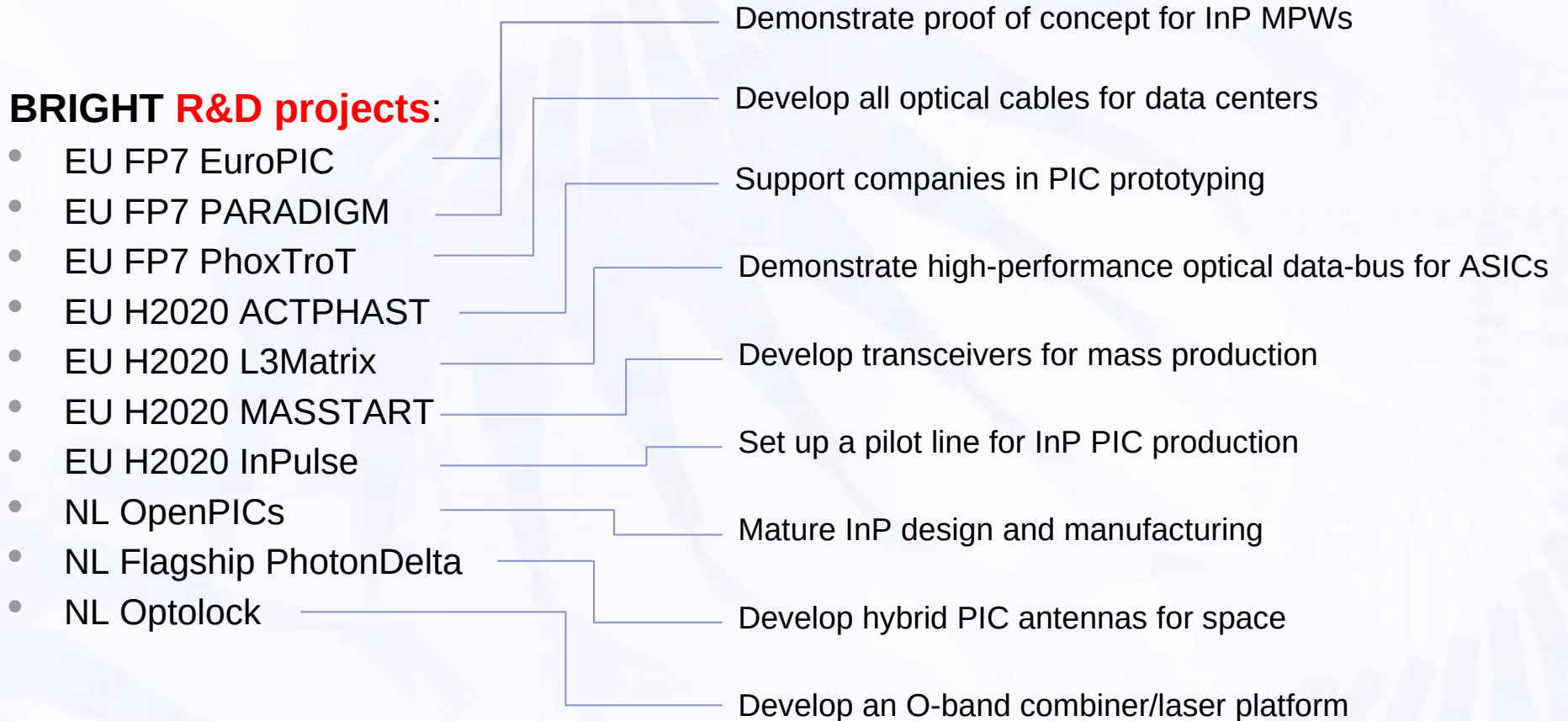
## Aerospace:

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



# R&D Project examples

## **BRIGHT R&D projects:**





# 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

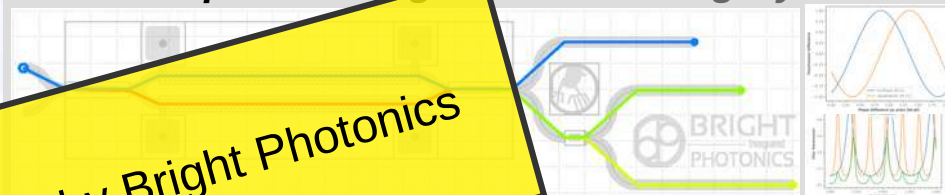
- Create and share libraries in GDS
- Protect your intellectual property
- Enable IP-Block replacement at the foundry

### ✓ Routing: solve & verify

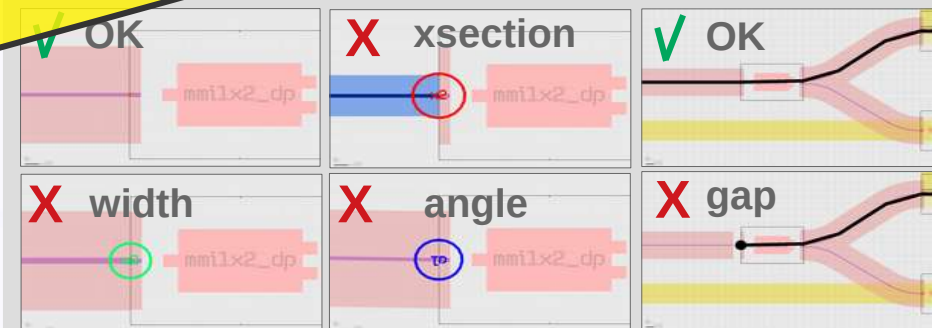
- Employ interconnects and ribbon routing
- Use path tracing for circuit integrity
- Verify your connections for error-free implementation
- Simulate your circuit at GDS level

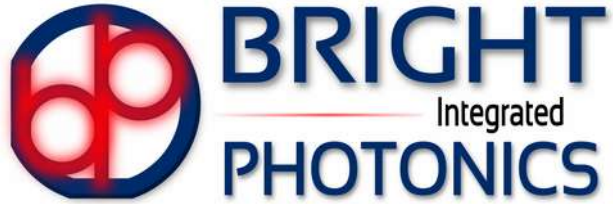
Commercially supported by Bright Photonics

### path tracing for circuit integrity



### connection verification to avoid errors





**Contact Bright Photonics**  
and find out what PICs can do for your competitive advantage

**info @ brightphotonics . eu**  
**www . brightphotonics . eu**