

15 - 16 NOV. 2022

# EUROPEAN PARTNERSHIPS STAKEHOLDER Forum

BLUE POINT | BRUSSELS

**JAAP LOMBAERS**

Photonics21 Vice President

# THE PHOTONICS21 PARTNERSHIP

Harnessing light to create impact & technical  
sovereignty for Europe



# Contents

- **Photonics – Deep Technology enabling many applications in multiple markets**
- How we prepared for the Photonics21 Partnership in Horizon Europe
- Key ambition: expanding our ecosystem
- Learnings and wishes

# The impact of light

Photonics - cross-sectional deep technology with multiple applications in key markets

Types of Photonic Systems	Sensors & instruments	Camera & imaging systems	Communication systems	Screens, displays, projectors	LED, OLED, smart lighting	Photovoltaic systems	Laser & production systems
Photonic functions	Measure monitor	Acquire information	Transmit information	Deliver information	Provide light	Collect energy	Manufacture
Examples							
							

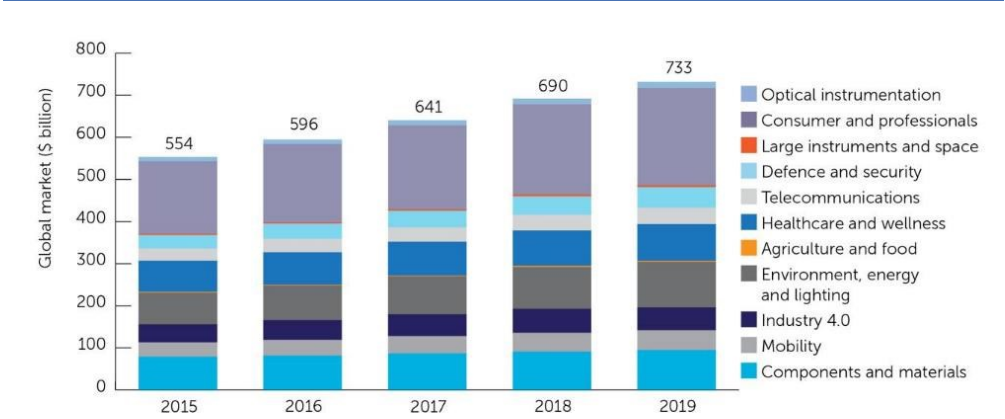
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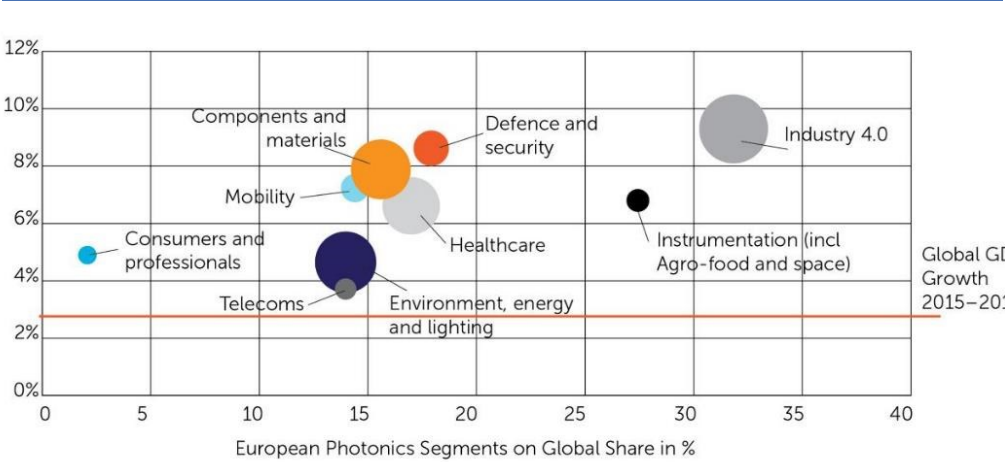
# Photonics industry in EU

## A 100 billion Industry serving Key Markets

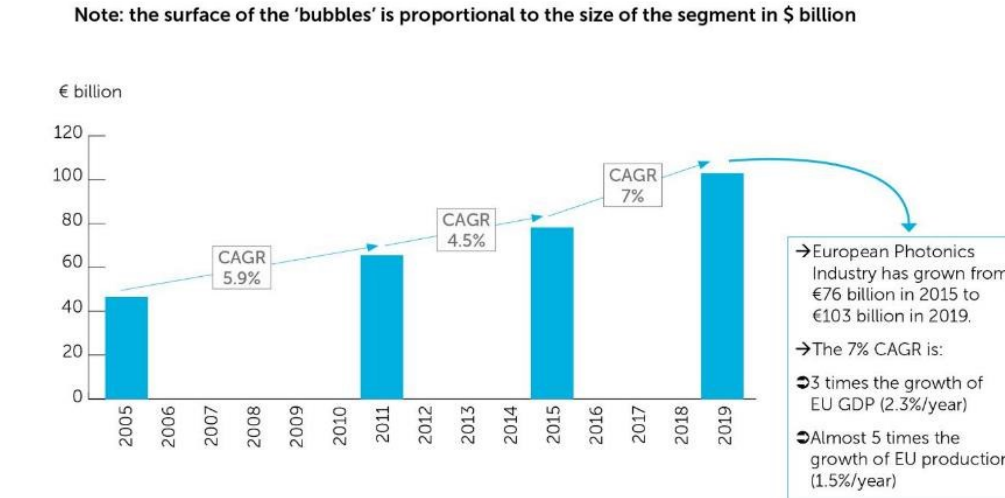
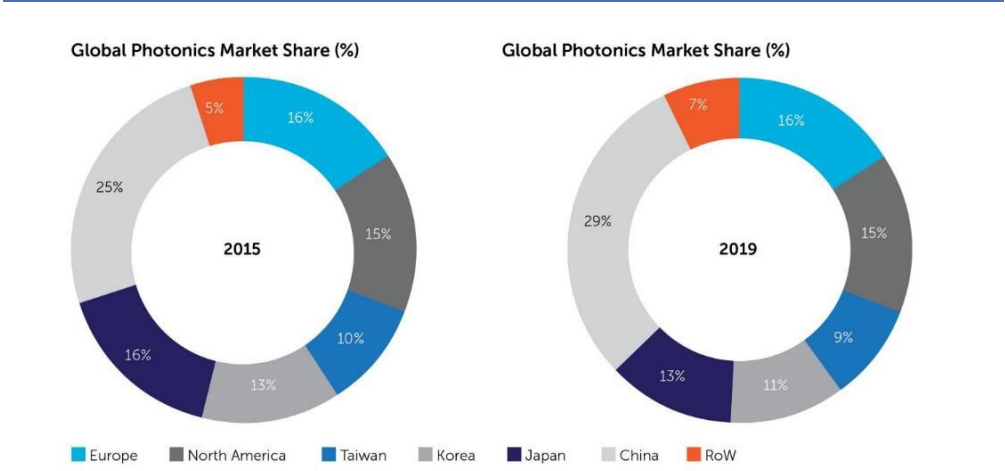
### Serving multiple markets



### Outgrowing the GDP



### EU is #2 global player



Source: Photonics21 / TEMATYS, Market Study and Industry Report 2020

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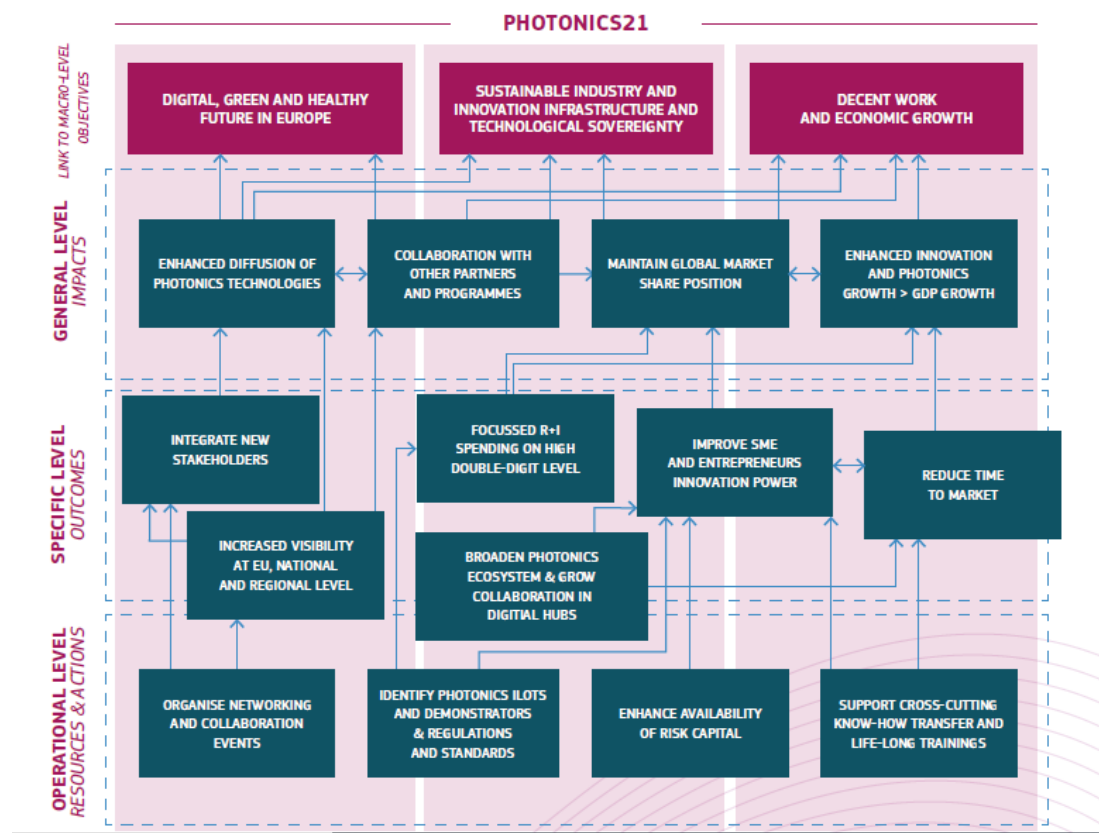
# Photonics21 Partnership restructured

Meeting the changed needs and objectives of Europe



# Key Performance Indicators (KPIs) along PSIPs

Rapid diffusion, expanding ecosystem and increased competitiveness

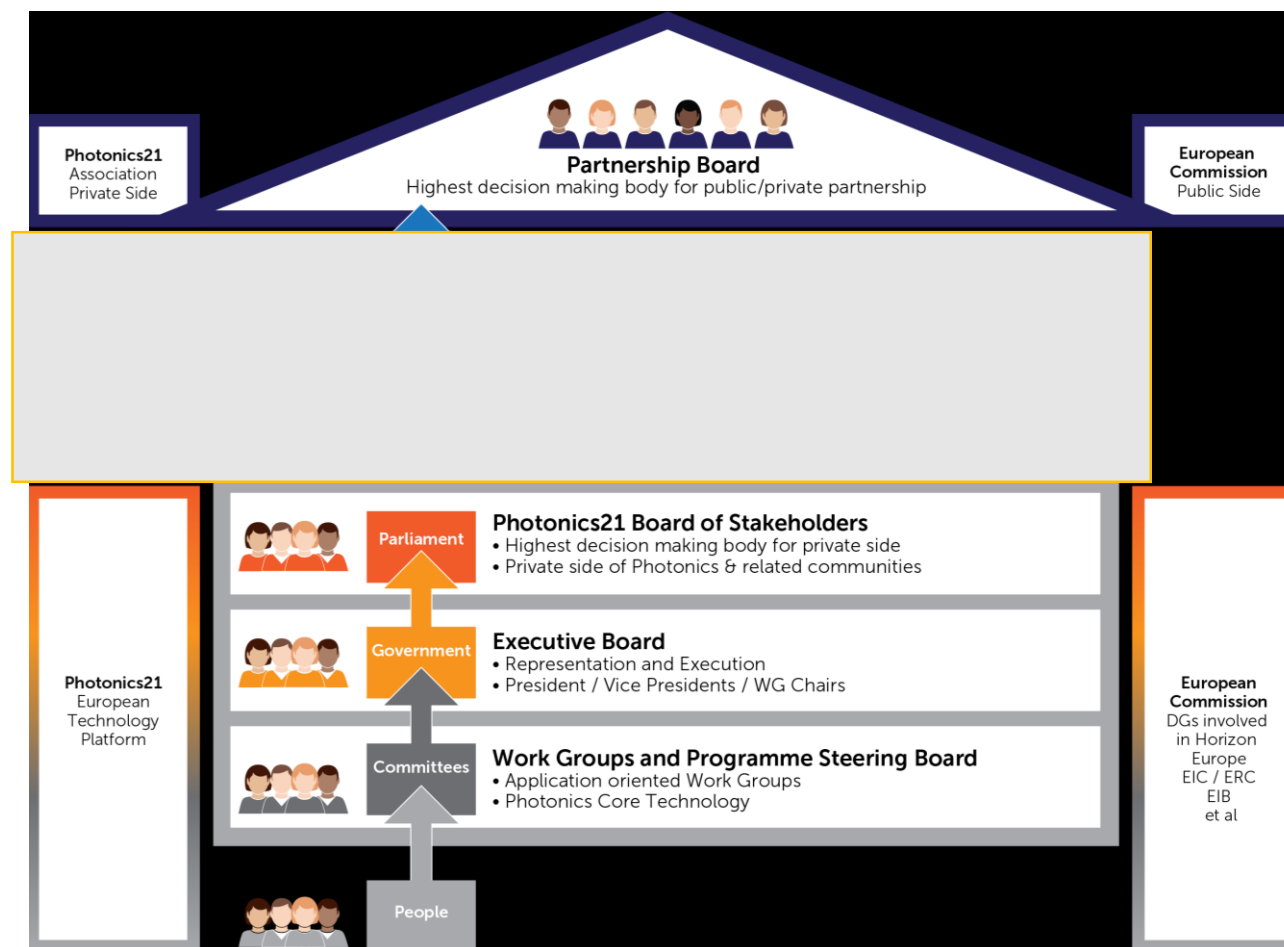


KPI NAME	UNIT OF MEASUREMENT	BASELINE
RESOURCES (INPUT), PROCESSES		
SME Innovation support	Development of digital and photon hubs	TBD
Rapid diffusion	# of end-user workshops	2/year
Industry participation	% Industry in Horizon Europe calls	50%
OUTCOME		
Stakeholder integration upstream/downstream	# new workshop attendees	New
Collaboration and synergies other programmes	# collaborations	New
Cross-cutting digital innovation hubs	# common events and actions	New
Access to risk capital	Satisfaction rate	EIB study
IMPACTS		
Photonics gross added-value growth (GDP)	GDP multiple	2x in 2019
Employment growth	CAGR% growth	2% (vs 1% Industry)
EU global market share	% market share EU	#2

More detailed information on the partnership's activities, performance and here Photonics Downloads | Photonics21

# Proven governance model sustained

Open, transparent and bottom-up decisions involving >3000 individual members





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# Expanding our Ecosystem:

## Collaboration, Leveraging Synergies and Financing

Further expand collaboration with

- Other partnerships
- Other programs – such as Quantum Flagship, KDT and Chips JU, Health Area
- Member States
- The EU Missions
- End-Users / End-User Workshops

Financing Deep Technologies and Foster Start-up's and Entrepreneurs in close cooperation with

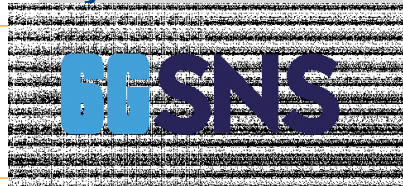
- EIC and EIB
- Private Equity
- European Photonics Venture Forum together with Photon Hub

# Teaming up

With value chain partners and other deep-tech initiatives



Partnership **Farming Systems Transition**



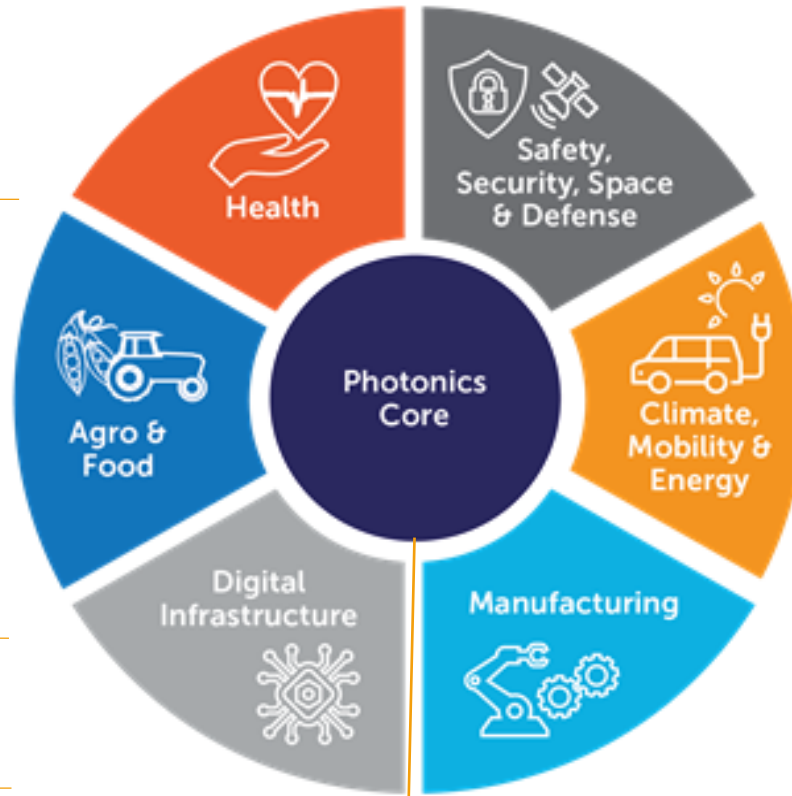
**The European Chips Act**



**KDT JU**  
KEY DIGITAL  
TECHNOLOGIES  
JOINT UNDERTAKING



**QUANTUM  
FLAGSHIP**



Partnership **Globally  
Competitive Space Systems**



# Live longer, feel better

## Photonics in life sciences and healthcare

**Our mission:**  
instant diagnosis of  
major diseases



PHOTONICS PUBLIC PRIVATE PARTNERSHIP

PHOTONICS<sup>21</sup>



*"Already, photonics  
plays a crucial role in  
the diagnosis or  
treatment of virtually  
every major disease."*

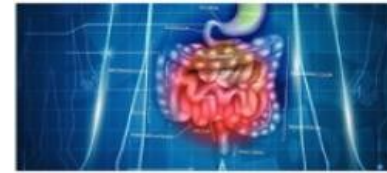


EUROPEAN UNION



# EU MISSIONS

CANCER



Photonics21  
Tuesday, 24 August 2021

**New imaging system  
to detect bowel  
cancer at the earliest  
stages using  
photonics**



Photonics21  
Tuesday, 10 March 2020

**Breast screening  
breakthrough to end  
unnecessary  
biopsies**



Photonics21  
Wednesday, 01 July 2020

**Instant bladder  
cancer scan could  
save thousands of  
lives**



**Optical imaging improves  
minimally invasive endoscopy  
for colorectal cancer**



# Feed the world

Photonics for safe, nutritious and affordable food

**Our mission:**  
quality food from  
farm to fork



PHOTONICS<sup>21</sup>  
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**Soil  
Monitoring**



**Field  
Monitoring**



**Machine  
Operation**



**Water  
Management**

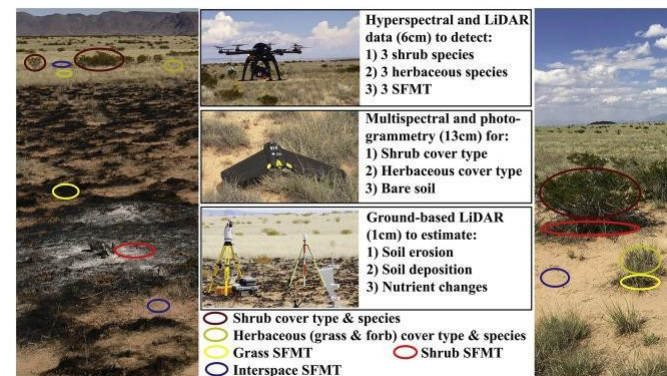


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# EU MISSIONS

**SOIL DEAL FOR EUROPE**



**Monitoring and quantifying plant-soil-nutrient health with LIDAR**



**Photonics detection and elimination of defects  
and toxins in food streams**



# Zero emission, less waste

Photonics for sustainability and a clean environment

**Our mission:**  
a truly circular  
economy



PHOTONICS<sup>21</sup>

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*"The use of intelligently  
networked pollution  
detectors will give us  
unprecedented control  
over air and water quality."*



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# EU MISSIONS

**RESTORE OUR OCEAN AND WATERS**



29 September 2021



Photonics21

Wednesday, 29 July 2020

**Scientists use  
photonics to make  
wastewater eco-  
friendly**

**Sustainability & clean environment**

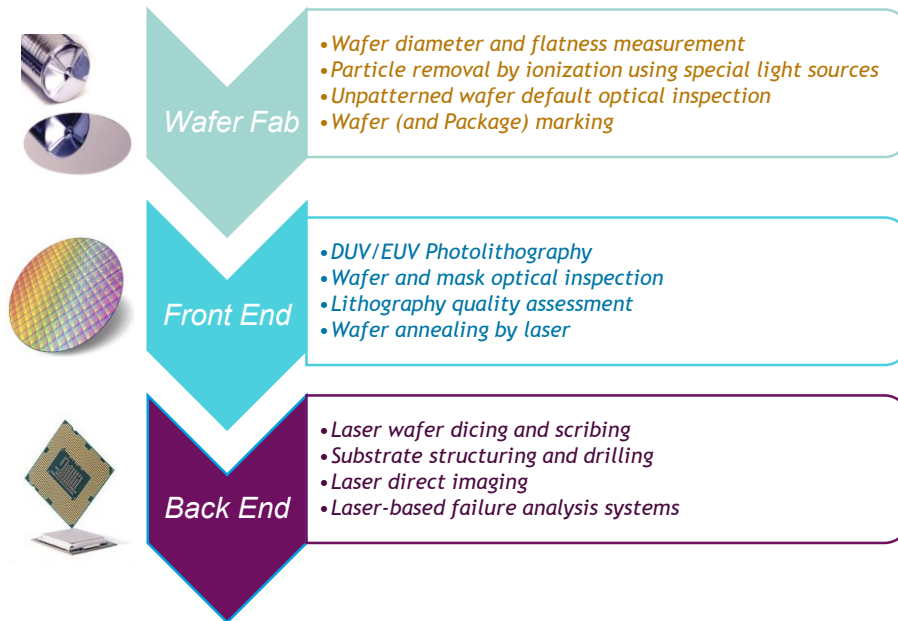


Raman spectroscopy for  
identifying plastic particles

# Photonics vital to microelectronics

A key enabler both in production and in products

## Production: e.g. chip manufacturing



## Products: e.g. smartphones

### Major Photonics Components

Display Module (LCD or OLED)

IC Logic / Memory

Main PCB

Camera module with CMOS image sensor

Proximity Sensor

LED Lighting

### Main Photonics Processes

LTPS Laser Annealing  
Laser Lift-Off  
Glass / OLED Cutting  
Polarizer film Cutting  
Patterning of Light guide panel  
LEDs Dicing

DUV/EUV Photolithography  
Wafer Inspection  
Wafer Dicing and scribing  
SiP Cutting/Trenching  
Wafer & Package Marking

Micro via drilling  
Laser direct imaging  
Marking / Coding

Lens Cutting  
Image sensor Annealing

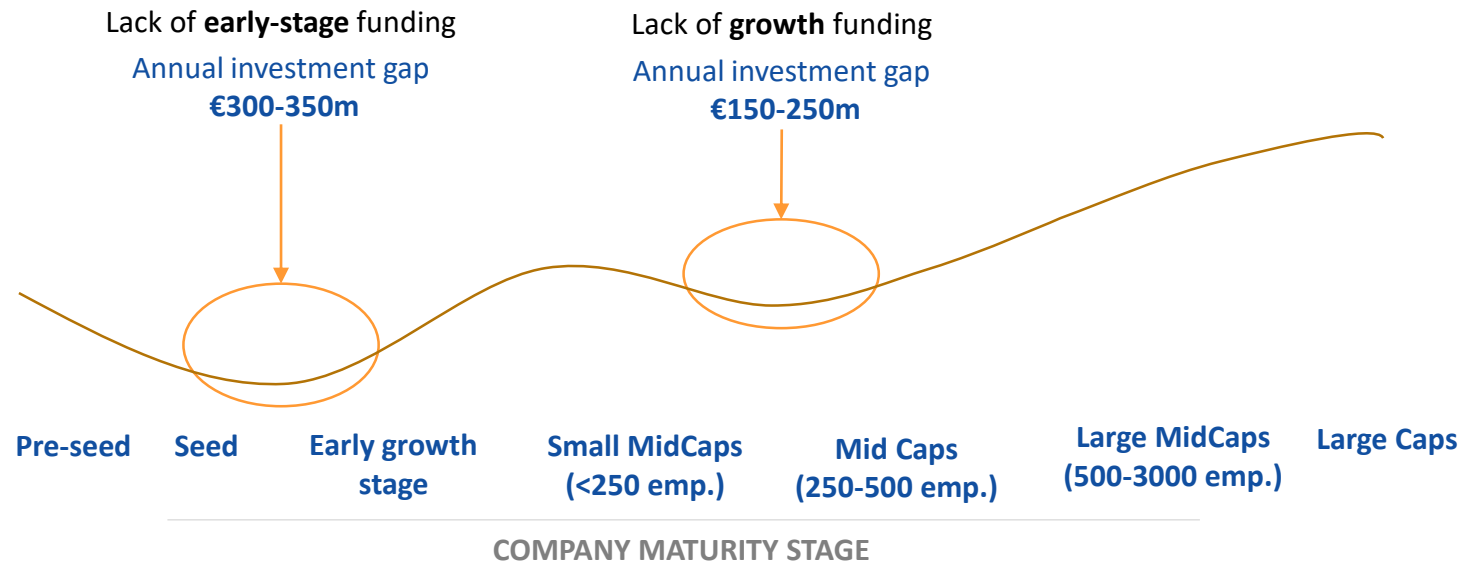


EUROPEAN PARTNERSHIPS  
STAKEHOLDERS FORUM

# Investor involvement addressing funding gaps

EIB Photonics Study points to key funding needs

## Availability of funding for photonics companies



- **Lack of early-stage capital** to commercialize the prototypes and fund the first stages of business development
- **Growth is the second confirmed funding gap** driven by the lack of investors with both the expertise needed to invest in scaling the photonics businesses and significant resources associated with such investments
- The funding gap is more apparent in **equity funding** (as opposed to debt)

Source: Presentation by Brendan McDonagh, EIB Advisory Services at the Photonics21 Annual Meeting 2022

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# Learnings and Wishes

- Close cooperation with EU Commission to get to cross-DG joint calls, pursuing synergies
- More opportunities to combine and link various instruments/programs
  - Different instruments: Regional and structural funds, Missions, EIC / EIB efforts, Digital Europe
  - Addressing different readiness levels (TRL's)
  - Dealing with different procedures and programmatic timelines
- Shorter lead time towards new calls: in pace with a faster changing world
- Secure sufficient financing for Deep Technologies
  - In Photonics domain: above all for SME's and start-ups



# THANK YOU

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