

# WE ECS

**Workshop on Integrated Photonics**

**Chairs: Mike Wale & Michael Scholles**

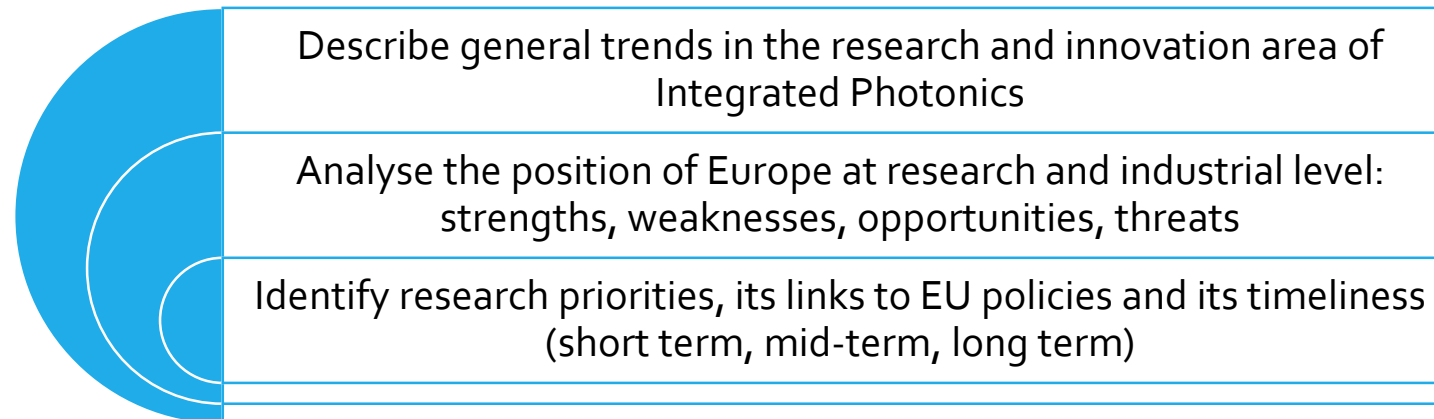
2022

European Forum  
for Electronic  
Components and  
Systems

24 & 25 November  
Amsterdam  
Beurs van Berlage

# Task Force on Integrated Photonics

- Joint Task Force of EPoSS and Photonics21 to write White Paper on Integrated Photonics
- Purpose: advise governments (EU and Member States) on future research activities in this area for the KDT JU and its successor, the Chips JU
- Planned content:



- Numerous meetings with Editor Group and full Experts Group
- Current version of draft White paper to be presented at EF ECS today

# Structure of White Paper „Integrated Photonics“

1. Need of the industry and society
2. Key future markets and their requirements and functionalities
3. Technical trends
4. SWOT analysis of Europe at research and industrial level
5. Research, innovation and industrialization priorities
6. Program and Funding recommendations

# Need of the industry and society

“We have entered a global race in which the mastery of technologies is central. It is largely thanks to disruptive technologies that Europe will be able to embark fully on its twin green and digital transition, while guaranteeing its resilience and autonomy.”

~*Thierry Breton*~ *European commissioner for Internal market*

Excerpt from “The Geopolitics of Technology” by Thierry Breton, published on July 27, 2021

Overall goals:

1. Security of supply
2. Strategic Sovereignty of Europe
3. Green Deal
4. Digital Society

# Key future markets and their requirements and functionalities

Application driven requirements for the following markets:

- Connectivity
- High Performance Computing
- Agrifood and Natural Resources
- Safety and Security
- Industrial sensing and automation
- Health and Wellbeing
- Consumer Electronics
- Mobility and space



# Technical trends

Four main trends identified:

1. Hybrid and heterogeneous photonic integration, i.e., merging different PIC technologies to compensate for inherent missing functionalities from other PIC technologies.
2. Manufacturing PICs on increasingly larger diameter wafers e.g. trend for silicon photonics on 300 mm wafers
3. Need for electronic and photonic ICs with improved intimacy (both at design level and technology level).
4. Lower power consumption of photonic chips

# SWOT analysis of Europe at research and industrial level

- Starting point: dedicated SWOT analyses for the topics:
  - Manufacturing
  - Equipment for manufacturing
  - Design / EDA
  - Packaging and Testing
- Recommendations derived from synopsis of those 4 SWOT tables

# Research, innovation and industrialization priorities

1. Cost efficient possibilities for prototyping including seamless access to services for SMEs
2. Pathways for scaling up the manufacturing into volume
3. Continue with application driven research, but also funding for technology development independent from specific applications
4. Ensure linking up of entire value chain: materials, design systems, front-end wafer fabrication, back-end test, assembly and packaging
5. Funding for investment in equipment (maybe up to IPCEI for Integrated Photonics) covering the full value chain
6. Education activities to have enough skilled persons for the photonics industry



# Program and Funding recommendations

1. Application specific call topics to strengthen Europe's position in established markets (e.g. connectivity)
2. Application specific call topics for emerging markets (e.g. health), so that Europe becomes a major player here
3. Cross-cutting topics that allow for co-development of electronics and photonics
4. Industry-driven / -led pilot lines with easy access for SMEs
5. Funding for educational activities to guarantee a workforce in Europe for Integrated Photonics

# Open discussion

1. What are your priorities ?
2. Which Program and Funding recommendations do you have ?

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# 2022

# Thank You !!

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