IPCEI II ME/CT

on microelectronics and communication technologies

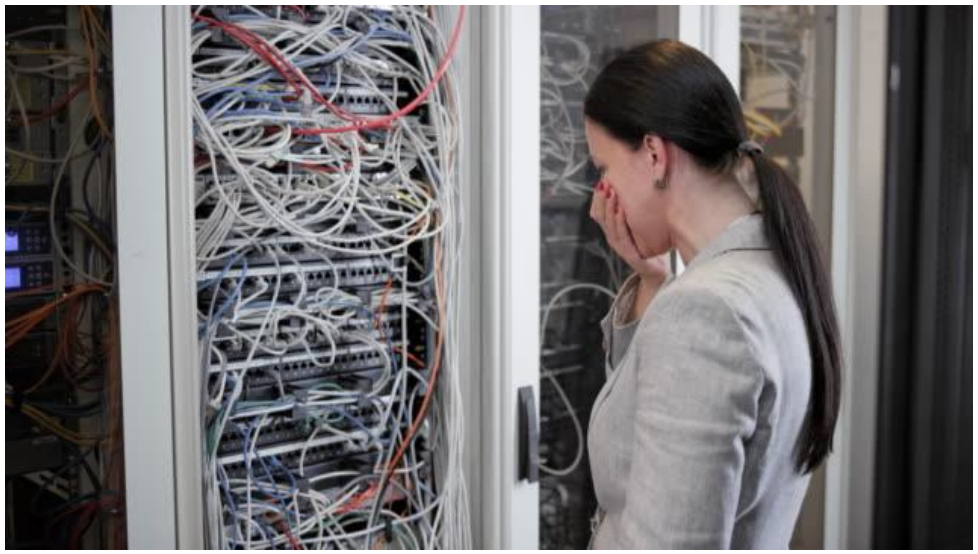
VIGO Photonics perspective

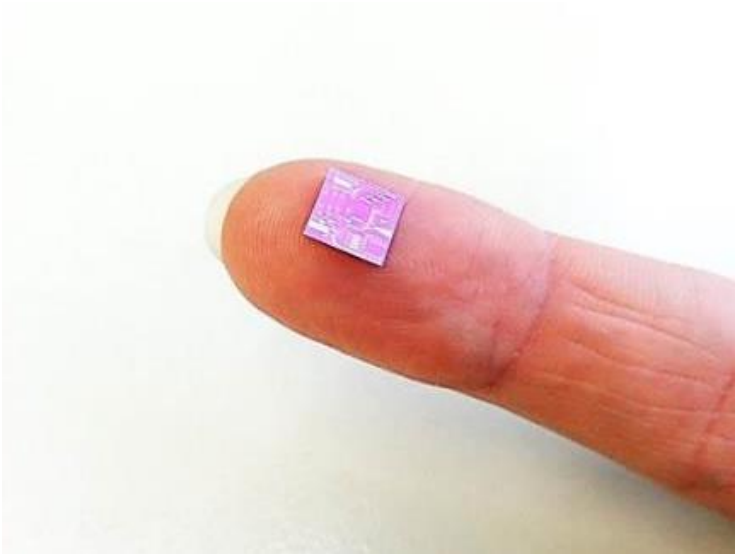
Ryszard Piramidowicz & Adam Piotrowski

Agenda

- Integrated photonics
- VIGO Photonics at glance
- The context
- IPCEI on ME/CT – what is going on?
- VIGO Photonics in IPCEI on ME/CT
- Gains and pains

Integrated Photonics – an introduction



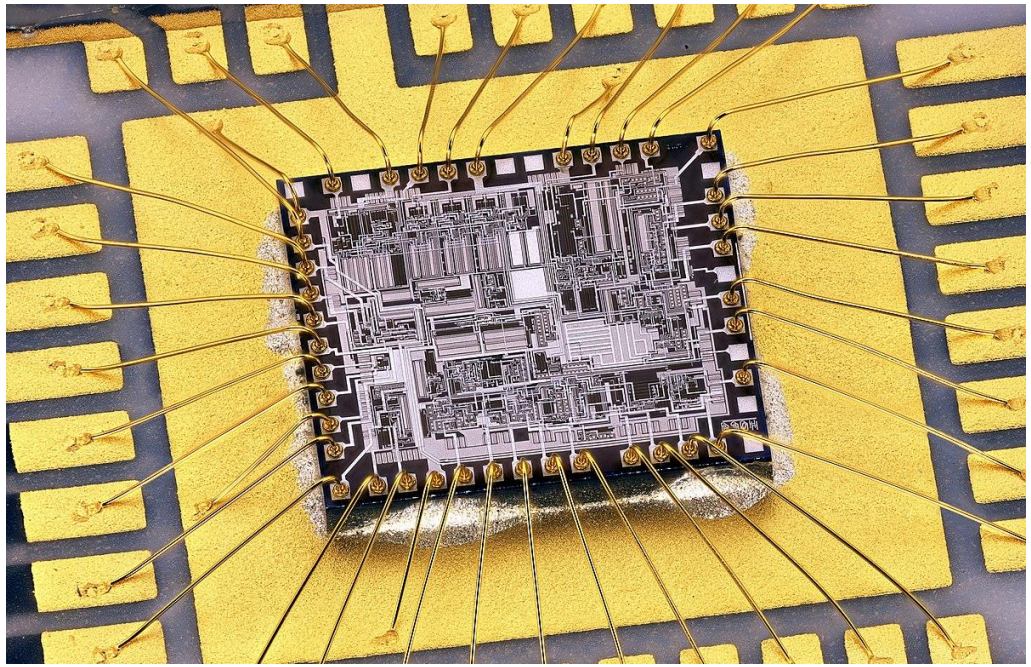


Advantages:

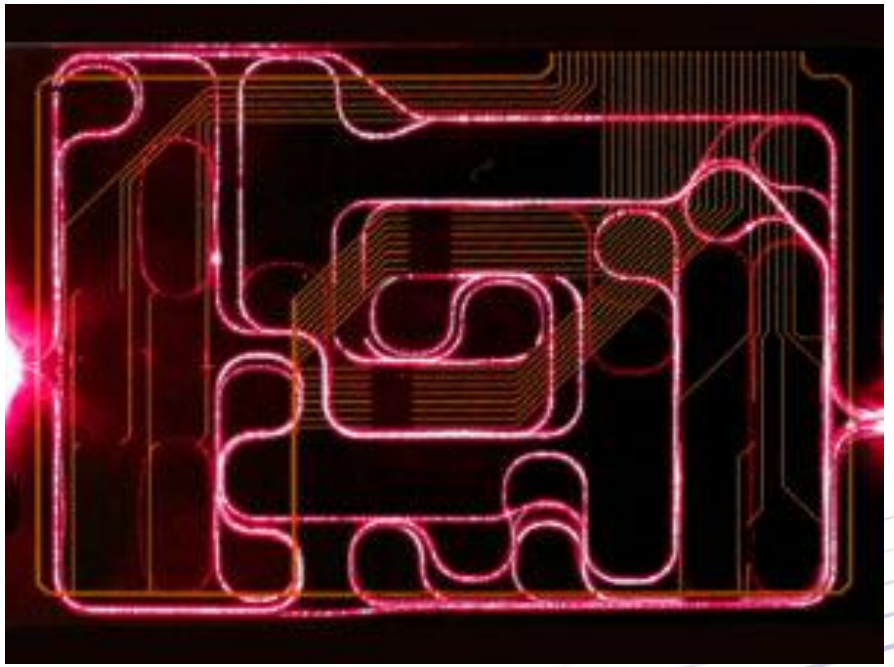
- compactness
- low power consumption
- high reliability
- reduction of packaging costs
- low manufacturing and exploitation costs

Integrated photonics vs. integrated electronics

Integrated Electronics



Integrated Photonics



VIGO PHOTONICS at glance

Epiwafers

Infrared photon detectors

Infrared modules

VIGO Photonics S.A. is a **photonic semiconductors** company.

The sole European provider of photon mid-infrared detectors, competing with Asian and US companies.

Manufacturer of **high-quality epi-wafers for photonic and microelectronic** applications based on advanced compound materials (III-V & II-VI).

On the road to **Mid-IR Photonic Integrated Circuits foundry**

35
YEARS ON THE MARKET

220
EMPLOYEES

6500 m²
PRODUCTION AREA

6
DETECTORS ON MARS

IPCEI - Important Project of Common European Interest

The context

https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-chips-act_en

Growing global demand for semiconductors

Digital sovereignty – EC proposes Chips Act to confront semiconductor shortages and strengthen Europe's technological leadership.

THE EU CHIPS ACT &
TECHN
SOV

IPCEI - Important Project of Common European Interest

The context

Administration

AUGUST 09, 2022

FACT SHEET: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China

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turing,
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an historic
ce 2021.

turing

President Biden
@POTUS

Semiconductor chips are the building blocks of the modern economy – they power our smartphones and cars.

And for years, manufacturing was sent overseas. For the sake of American jobs and our economy, we must make these at home.

The CHIPS for America Act will get that done.

4:22 PM · 26 lip 2022

IPCEI - Important Project of Common European Interest

A European Initiative on Processors and semiconductor technologies declaration signed by 20 Member States on December 7th 2020.

„The signatories to this declaration agree to work together to strengthen Europe's capabilities to design and eventually fabricate the next generation of trusted, low-power processors, for applications in high-speed connectivity, automated vehicles, aerospace and defence, health and agrifood, artificial intelligence, data-centres, **integrated photonics**, supercomputing and quantum computing, amongst other initiatives to bolster the whole electronics and embedded systems value chain…"

Declaration

A European Initiative on Processors and semiconductor technologies

Royaume de Belgique / Koninkrijk België

And

Bundesrepublik Deutschland

And

Eesti Vabariik

And

Ελληνική Δημοκρατία

And

Reino de España

And

République Française

And

Republika Hrvatska

And

Repubblica italiana

And

Repubblika ta' Malta

And

Koninkrijk der Nederlanden

And

República Portuguesa

And

Republika Slovenija

And

Suomen tasavalta/Republiken Finland

And

România

And

k Österreich

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ká republika

And

ή Δημοκρατία

And

spolita Polska

And

yarország

And

s Republika

together in order to bolster Europe's electronics
nclude a particular effort to reinforce the processor
ndustrial presence across the supply chain, in order
ietal challenges. We agree to consolidate and build
tise, and aim to establish advanced European chip
progressing towards leading-edge nodes for data

cessors, are today embedded in almost everything,
nes and networks, and environmental monitoring.
e use today. As such, they are the cornerstones of
etitiveness in a digital world. They determine the
are embedded - including security, privacy, energy-
's green and digital transition will unfold.

y based on very advanced technologies at all phases
ufacturing equipment, design, production, testing,
end products. Expenditure of the semiconductor
is among the highest of any industry - typically
high R&D spending, consolidation prevails in this
sparent global trade and a level playing field.

l reality is redefining the playing field. In what has
e reinforcing their local semiconductor ecosystems
s on imports.
areas of the semiconductor industry, such as power
for embedded AI, microcontrollers, low-power

https://www.eas.ee/wp-content/uploads/2021/03/JointDeclarationpdf.pdf

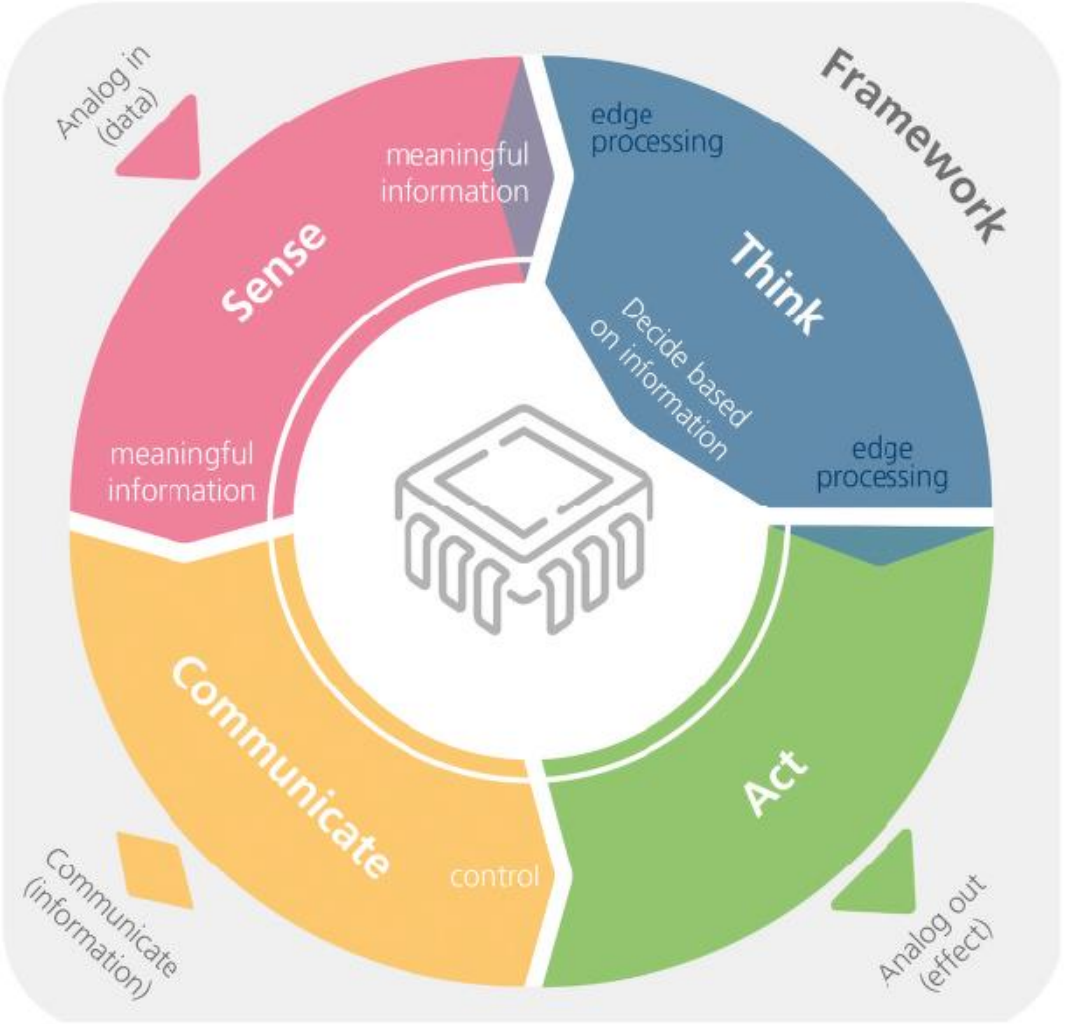
IPCEI - Important Project of Common European Interest

- IPCEI - funding instrument designed to support cross-border, large-scale research and innovation projects that contribute to the EU's strategic objectives
- Important contribution to **economic growth**, **jobs** and **competitiveness** of the European industry and economy
- European undertaking(s) by at least four Member States (MS):
- Participation as a partner of IPCEI is coordinated by Member States' authorities.
- Provides funding until First Industrial Deployment (FID) phase
- Prerequisites:

    approval by European Commission

    availability of national state aid

IPCEI - Important Project of Common European Interest



Nicolas Gouze, IPCEI ME/CT, COREnect Workshop – 1st February 2022

The aid

- **is necessary** and has an **"incentive effect"**
- **is appropriate** (there is no other possible tool that would be less distortive for competition).
- **is proportionate** and limited to the **minimum necessary**.

The facilities

- will be **"first-of a kind"** in Europe
- will not crowd out existing or committed private initiatives.
- will **strengthen the semiconductor value chain in Europe** to ensure the security of supply for European businesses using chips in their products.
- will **attract a qualified workforce** to Europe.
- will have a **positive impact on innovation** in Europe.

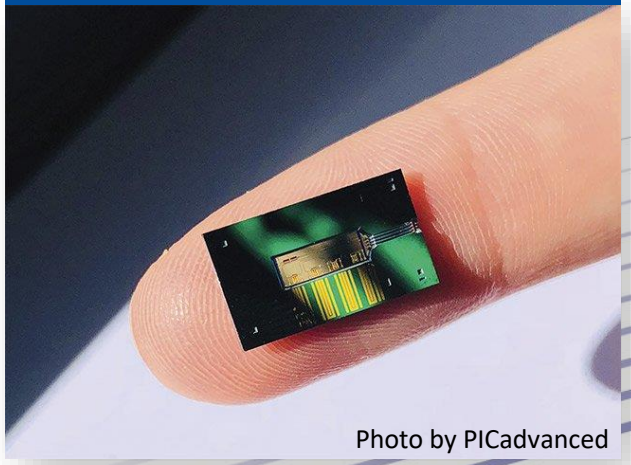
VIGO PHOTONICS IN IPCEI – HyperPIC proposal

yesterday

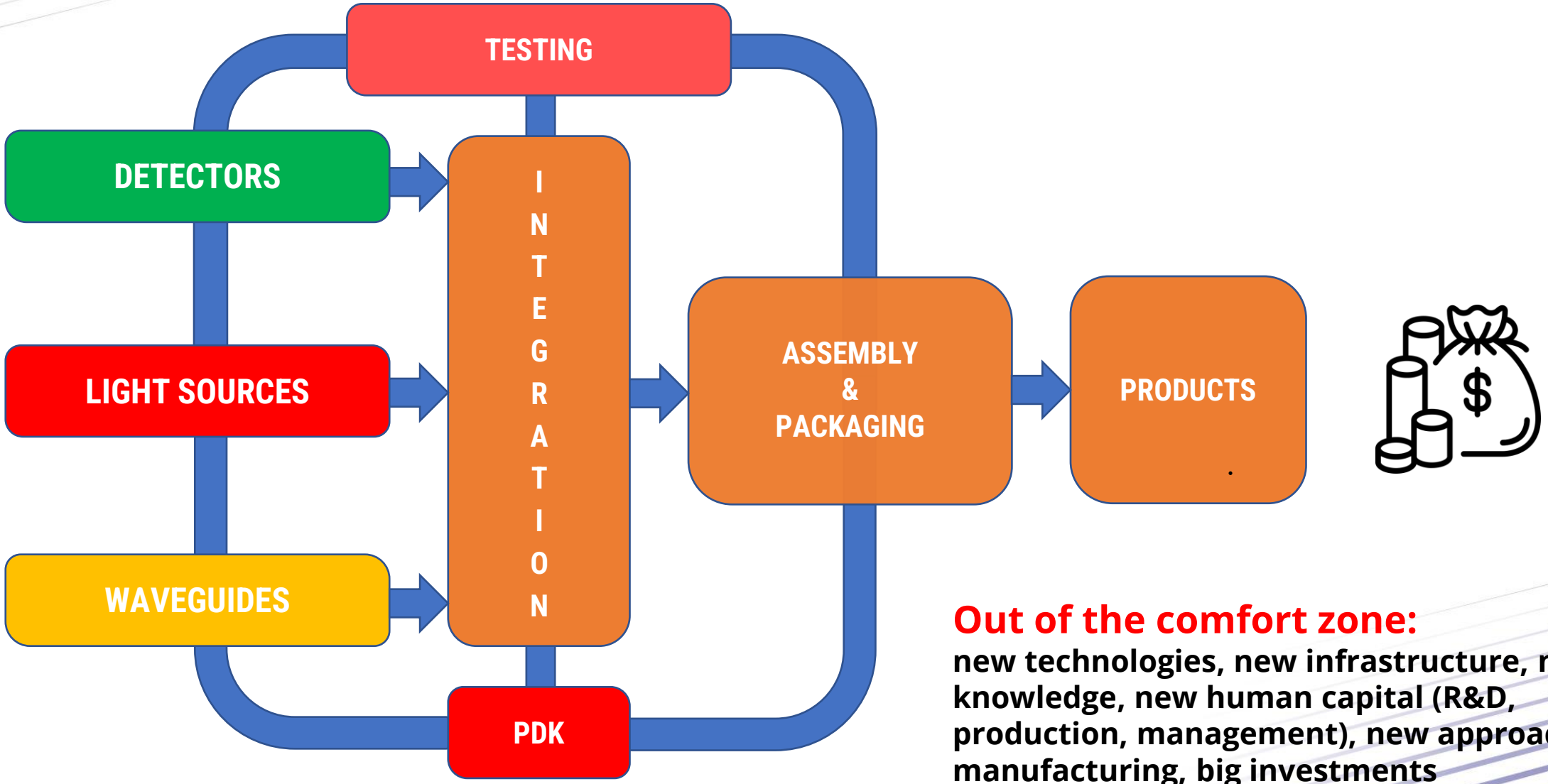
MIRPIC platform
FROM MIR DETECTORS
TO MIR PHOTONIC INTEGRATED CIRCUITS

today

tomorrow



Towards IPCEI HYPERPIC initiative

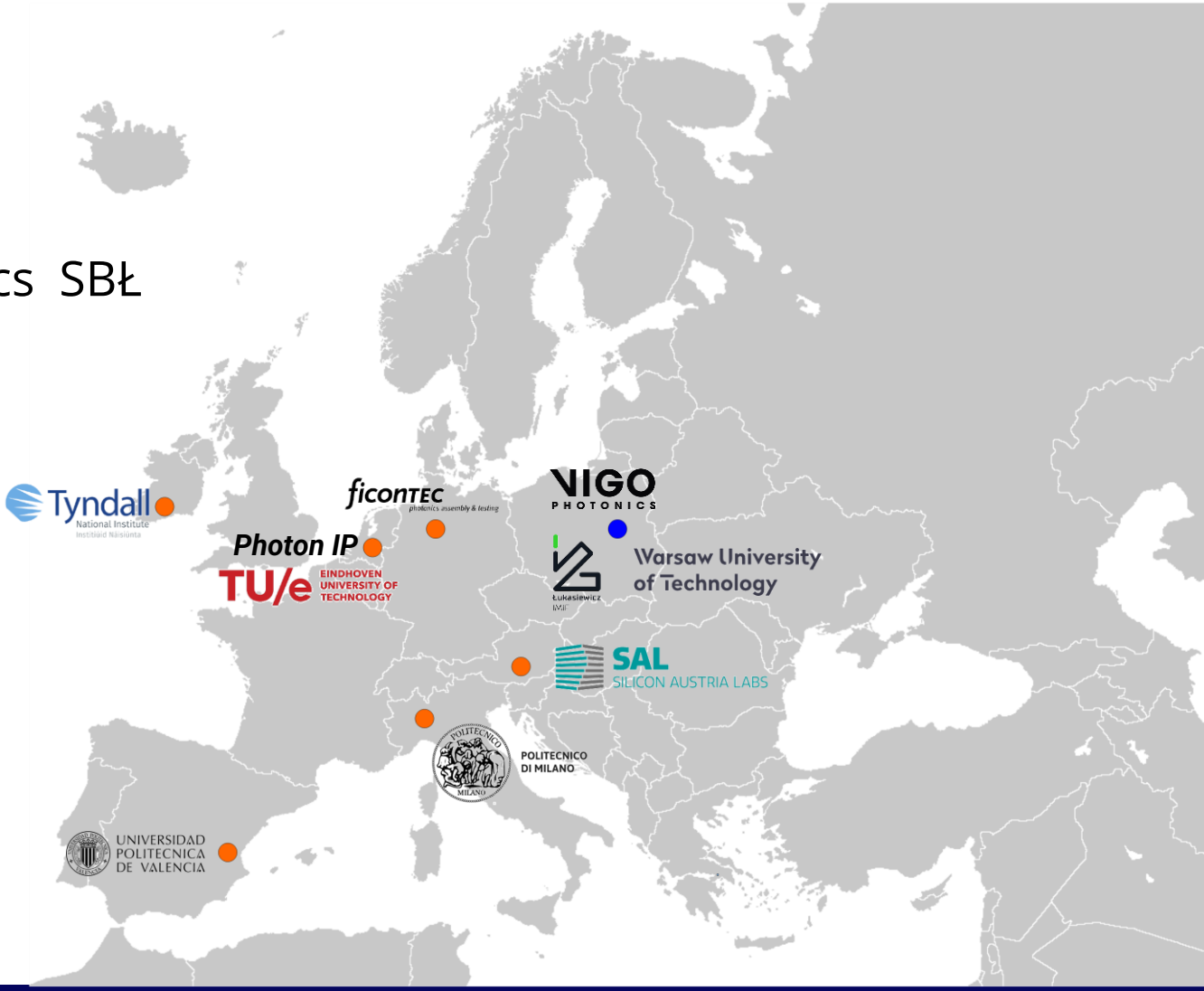


Out of the comfort zone:

new technologies, new infrastructure, new knowledge, new human capital (R&D, production, management), new approach to manufacturing, big investments

HyperPIC R&D partners

1. VIGO Photonics
2. Warsaw University of Technology
3. Institute of Microelectronics and Photonics SBŁ
4. Universitat Politecnica de Valencia
5. Eindhoven University of Technology
6. Politecnico di Milano
7. Tyndall National Institute
8. Silicon Austria Labs
9. Photon IP
10. Ficontec



IPCEI - Important Project of Common European Interest

European Commission

English EN

Search

Home > Press corner > Important Project of Common European Interest

Available languages: English

Press release | 8 June 2023 | Brussels

State aid: Commission approves up to €8.1 billion of public support by fourteen Member States for an Important Project of Common European Interest in microelectronics and communication technologies

The first workstream "Sense" will focus on **developing novel sensors** able to collect relevant analogue signals from our environment and translate them into digital data. Vigo, a Polish SME, will develop sensors in highly compact integrated circuits, replacing the current complex and large systems.

Page c

Top

Quote(s)

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innovation and the first industrial deployment of microelectronics and communication technologies across the value chain.

The project, called **"IPCEI ME/CT"**, was jointly prepared and notified by fourteen Member States: Austria, Czechia, Finland, France, Germany, Greece, Ireland, Italy, Malta, the Netherlands, Poland, Romania, Slovakia and Spain.

Budget: ca. 1 mld 128 mln PLN
Public aid: ca. 458 mln PLN

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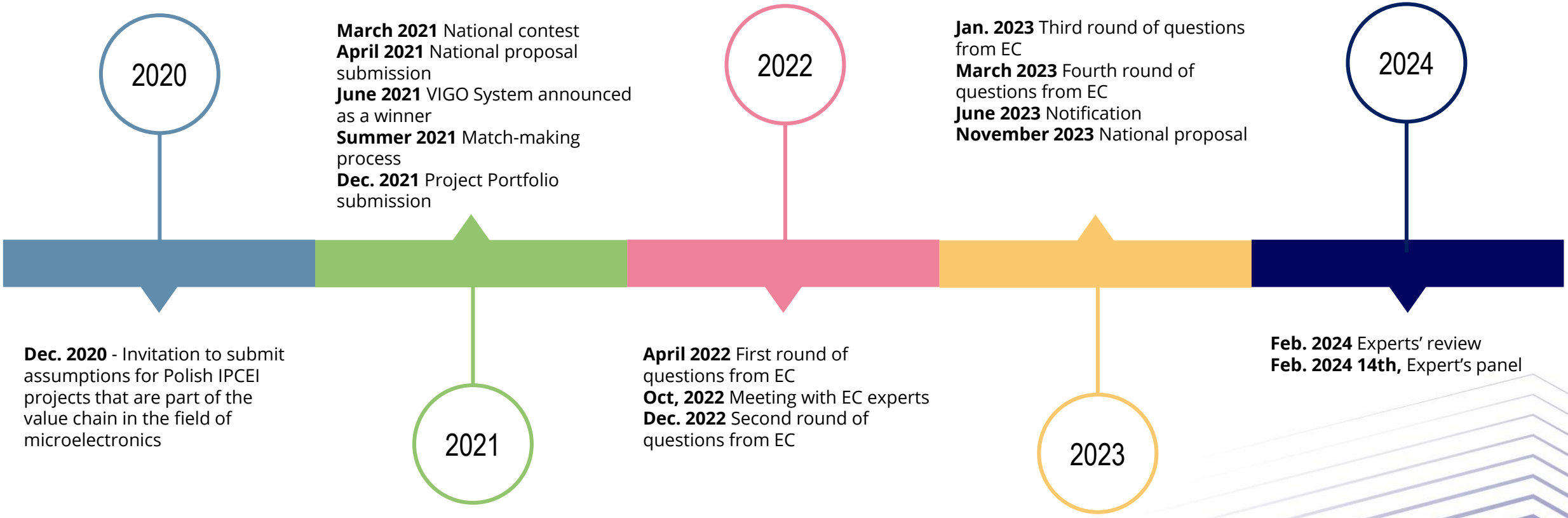
Timeline and steps (VIGO's case)



IPCEI - Important Project of Common European Interest

Gains

- Significant state-aid supporting ambitious projects in the field
- Challenging and inspiring, preparing the foundation for the ChipsAct actions
- Stimulating cross-border collaboration (direct partners, associate partners)
- Spill-over effects (dissemination of knowledge, networking, cooperation reaching new industrial sectors and new partners)

and pains

- Unclear, complicated, and time-consuming procedure (EU level + national)
- Public information hardly available (most documents are confidential)
- Inadequate procedure at the national level (copied from standard Smart-Path projects)

VIGO PHOTONICS

IPCEI HyperPIC is a big challenge
...and a big adventure

join us ☺

IPCEI @ VIGO Photonics