

# Final Meeting

ENHANCERIA

## ENHANCERIA WP 6

Building up a community of users for strengthening research infrastructure - Stimulating communities of Ris

Inspiring case studies for enhancing research infrastructure impact



**POLIFAB** -The **micro** and **nanofabrication** facility  
of  
**Politecnico di Milano**

# Polifab: update



**POLITECNICO**  
MILANO 1863

Polifab is the micro and nano technology **infrastructure** of Politecnico di Milano, created to provide the highest technological standards for a wide range of applications: photonics, micro and nanoelectronics, MEMS, biotechnologies, advanced materials and nanotechnology. Polifab is **open** and acts as an **aggregating** center for academic researchers, start-ups and companies

|                                   | 2018 | 2019 | 2020   | 2021 | 2022 | 2023        |
|-----------------------------------|------|------|--------|------|------|-------------|
| Active users                      | 71   | 104  | 87     | 91   | 136  | <b>146</b>  |
| Research groups using Polifab     | 14   | 16   | 18     | 20   | 20   | <b>22</b>   |
| Startup & Companies using Polifab | 7    | 7    | 6      | 7    | 10   | <b>14</b>   |
| Research projects using Polifab   | 24   | 33   | 30     | 36   | -    | <b>~30</b>  |
| Contracts for service             | 6    | 4    | 6      | 10   | 12   | <b>27</b>   |
| Students (education and training) | 60   | 60   | Online | 60   | 70   | <b>~100</b> |
| Footprint [m <sup>2</sup> ]       | 270  |      |        | 640  |      | <b>1200</b> |



**Italian users:** among others...  
RESTART (PNRR), IT-FAB, IIT,  
CNR, agreement with FBK, ...



# Polifab «large» Users

Large Users are required, unavoidable for the sustainability of the infrastructure

Large Users are typically "local"

Return for Companies: skilled personnel, IP, technology transfer, continuity of relationship

New tracks in Laurea degree (education)

**STmicroelectronics:** JRP STEAM on MEMS (Micro-Electro-Mechanical System). Infrastructure investment to create a 8" Pilot Line for advanced MEMS. 8 years, 50 M€, infrastructure, 30 research projects, 35 PhD

**EssilorLuxottica:** JRP Eyewear Lab on smart glasses, Augmented Reality Display, AI based glasses, integrated micro optoelectronic solutions. 5 years, 54 M€, 100 researchers involved

**Huawei:** Joint Lab mmWAVE on Telecom: microwave, photonics, wireless, networks, automotive, 5+5 years, X M€



# Collaboration concept

- Users and Infrastructures need a reason to collaborate
- Users and Infrastructures need an interest to be part of a community
- Users and Infrastructures collaborate for pleasure, gratification, scientific growth, money, ...
- Users and Infrastructures need resources (money, personnel, investments, ...)
- Scientific reasons, political reasons, economical reasons, visibility and reputation reasons....

Keys to collaborate:

- Easy access to the infrastructure (transparency, reduce paperwork at minimum)
- Easy access to machines, processes, materials, receipts... knowledge = IP ... ??
- Reasonable and clear costs
- Set up procedures for samples and wafer exchange (size, contamination, ...)

**Personnel:** support exchange of students, researchers, attract more people in STEM

# Transnational Projects

## Nano Foundries and Fine Analysis - Digital Infrastructure



Piano Nazionale di Ripresa e Resilienza

Transnational access to CRs

11 Italian operating Units (CNR+Polifab)

Reimbursement of fabrication expenses at CRs  
2022-2026



Research Infrastructure Access in  
Nanoscience & Nanotechnology

RIANA offers **industry-oriented RI access**, advancing  
nanoscience & tech with expert support for SMEs and startups  
(2024-2028)

RIANA unlocks 35 000 hours access to Europe's leading facilities  
in Nanoscience and Nanotechnology

## Photonics Innovation Factory for Europe



PhotonHub Europe has established a unique  
European full-service one-stop-shop Photonics  
Innovation Hub.

<https://www.photonhub.eu>, 10/2024 - 2028

## PIXEurope

Advanced Photonic Integrated Circuits **Pilot Line** for Europe

*Chips JU Pilot Line 5*



UPV  
WUT



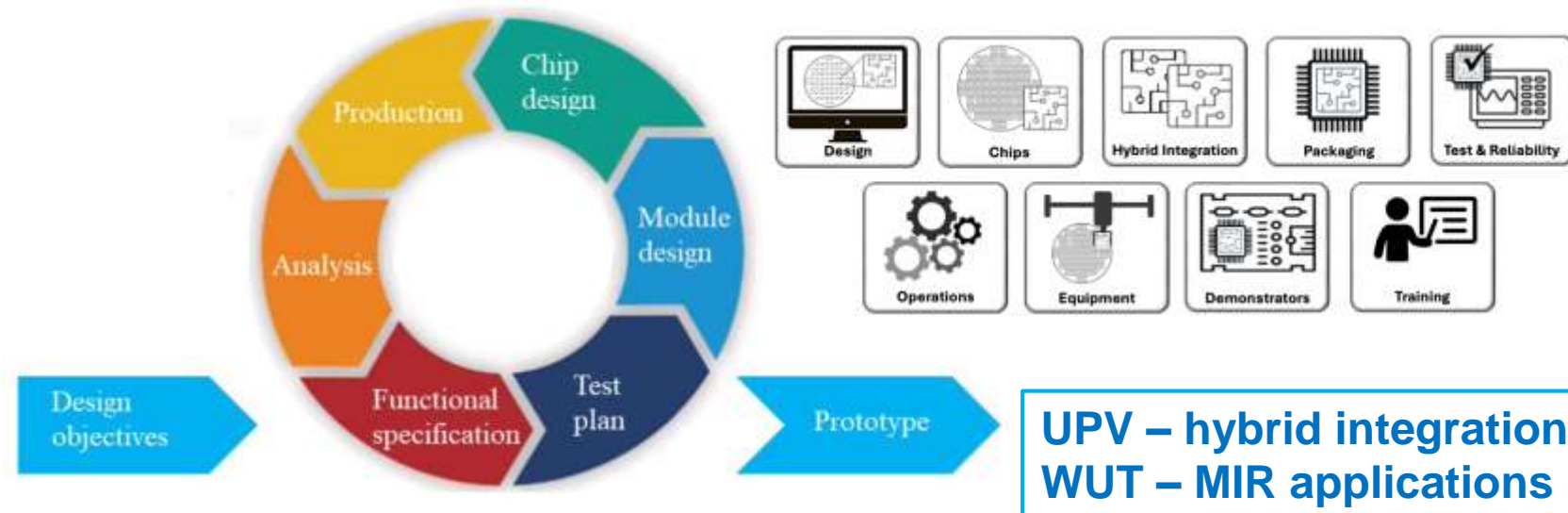
# A Case Study - Photonics



## DIGITAL-Chips-2024-SG-CPL-5: Pilot Line on Advanced Photonic Integrated Circuits

highlights the need for critical infrastructure to bridge the gap between research and industrial production, facilitating the development of reliable, scalable, and cost-effective PIC solutions.

20 partners, 5 years (2025-2029), 190 M€



# Best practices

Open infrastructure

Clear procedures (access, priorities, reservation and costs)

Transparent (website with all the information)

Multidisciplinary (technology synergy and convergence)

Training of users

Easy access (simple, reservation, technicians, ... )

Users support and consultancy (at first approach)

Support by technicians and technologist (during fabrication)

IP protection and recognition

Clear, simple and EU accepted financial reporting

Users meeting, Annual Report and keep users informed

Promotion of the infrastructure (educate people)

Multidisciplinary

Large company support (necessary to survive)

Spin off generation and support

Listen and talk with users

## Polifab, a multidisciplinary aggregation infrastructure

