Platform-ZERO

ACHIEVING ZERO DEFECT MANUFACTURING FOR THE PHOTOVOLTAIC INDUSTRY

June 2023

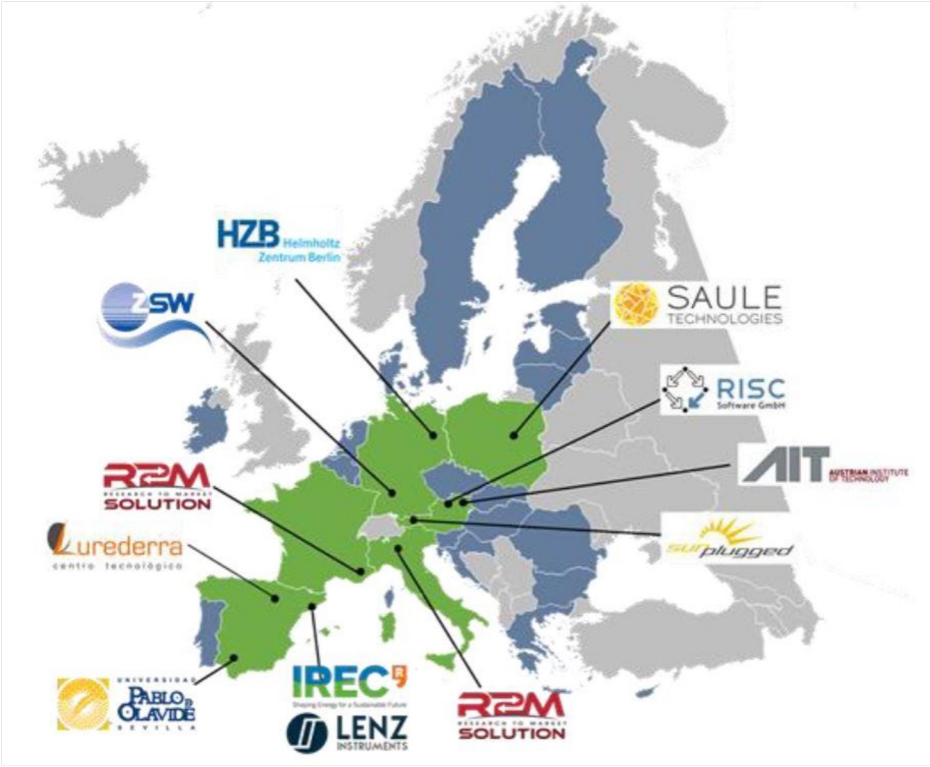
Co-funded by
the European Union

PARTNERS

12 European Partners:

THE CONSORTIUM

- **Four research centers** and **one university** with a strong knowledge in the development of spectroscopic methodologies, imaging, artificial intelligence and data management
- **Two research centers** with strong know-how in advanced PV technologies and with industrial pilot line facilities
- **A Metrology SME** with strong know-how in the implementation of industrial process monitoring applications
- **Two SMEs** in charge of dissemination, exploitation and communication actions



CONTEXT

- Solar photovoltaic provides an important contribution of **3.1%** to the EU energy mix (Eurostat)
- Solar energy has the potential to meet **20%** of the EU's electricity demand in 2040 (Bloomberg)
- The latest PV technologies combine high performance with a strong flexibility for integration in buildings, vehicles & agrivoltaics devices
- PVs high-complexity makes them prone to the appearance of critical defects, leading to significant production waste

ABOUT The PROJECT

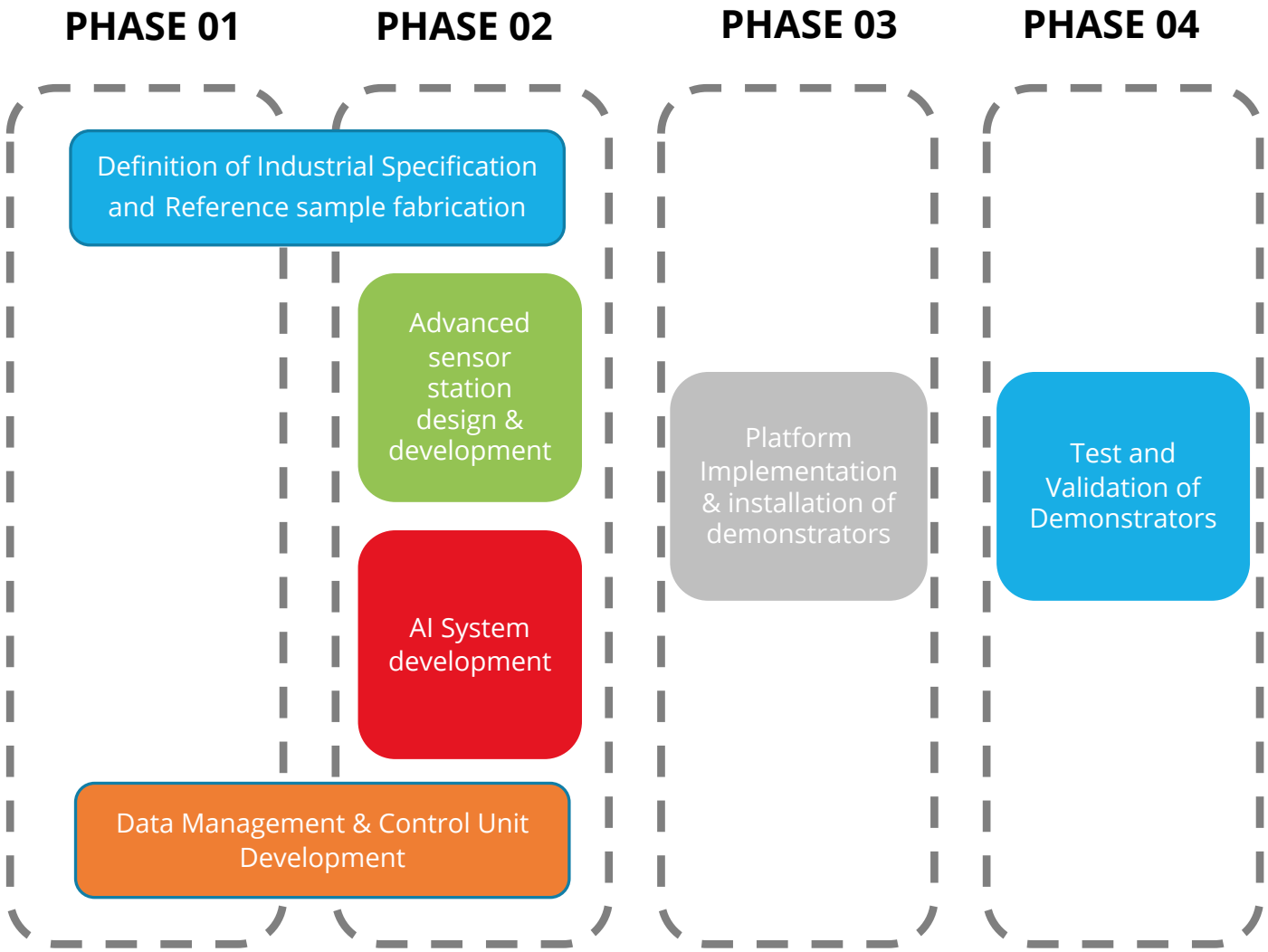
- Platform-ZERO develops a new customizable in-line process monitoring platform, supported by Artificial Intelligence, for achieving zero-defect manufacturing for the PV Industry
- Projects innovations will be tested in 4 PV industrial pilot plants across Europe
- The project aims to:

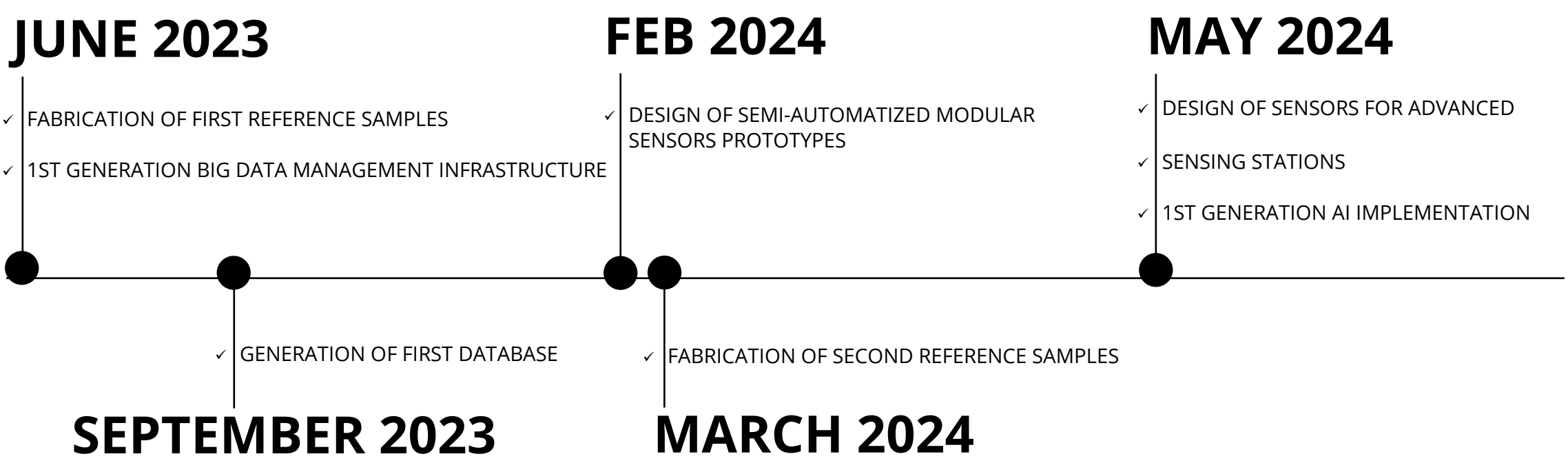
  ✓ Substantially lower PV fabrication costs
  ✓ Improve production quality of PV devices

TECHNICHAL MAPPING & METHODOLGY

4M approach

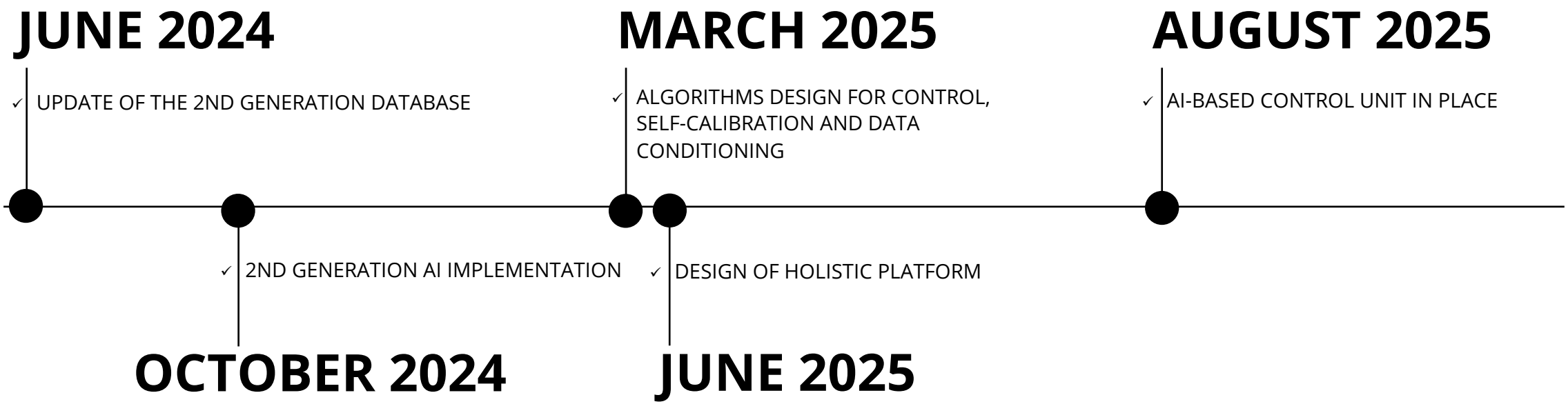
- Mapping (year 1)
- Manufacturing (year 2)
- Making (year 3)
- Monitoring (year 4)





TIMELINE (2023-24)

TIMELINE (2024-25)



DEMONSTRATORS

Platform-ZERO innovations will be tested in 4 PV manufacturing lines throughout Europe

Smart coatings for PV

Lurederra — Spain

High efficiency CIGS solar modules

ZSW — Germany

Customizable CIGS flexible solar foil

Sunplugged — Austria

Perovskite solar modules

SAULE — Poland

OBJECTIVES

1) Development of advanced sensor stations

2) AI system for autonomous monitoring and control

3) Implementation of a big data management infrastructure and control system

4) Implementation and installation of functional process monitoring platforms

5) PV manufacturing optimization

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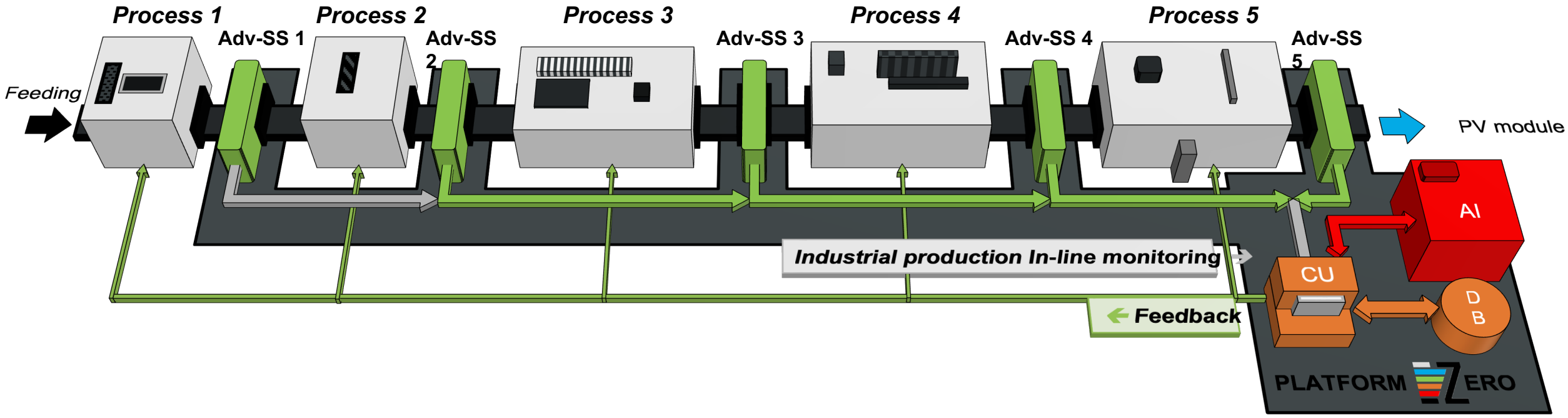

Process 1
Process 2
Process 3
Process 4
Process 5
Adv-SS 1
Adv-SS 2
Adv-SS 3
Adv-SS 4
Adv-SS 5
Feeding
PV module
AI
CU
DB
Industrial production In-line monitoring
Feedback
PLATFORM ZERO

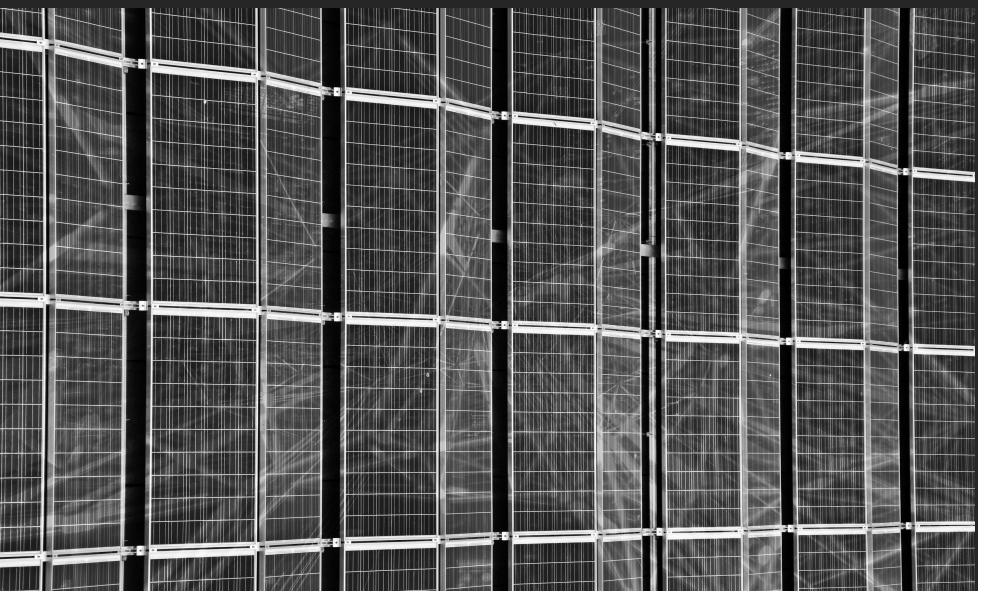
- **Increase of sustainable PV production through improved control systems**
- **Tools to prevent the generation of defects at different production stages**
- **Diagnostic methodologies for in-line monitoring of industrial PV production**
- **Increase of efficient use of materials and reduced related product production costs**

Expected impacts:

- **10% increase in productivity of the EU's PV industry**
- **10% decrease in consumption of high-value critical raw materials**

OUTCOMES

PROJECT KPIs



1) Sensor's sensitivity to deviations >5%

2) Monitoring flow capability

3) Implementation of AI-based algorithms library

4) Implementation of data management and control algorithms library

5) Implementation of GUI software for monitoring, data visualization and decision-making advising

6) Implementation of fully operational platform demonstrators compatible with a real-time industrial process monitoring

7) Detection of process deviations

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THANK YOU, GET IN TOUCH!

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