

FOR A BETTER FUTURE



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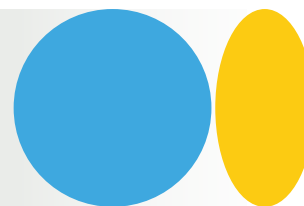
micro-electronics@micro-electronics.eu



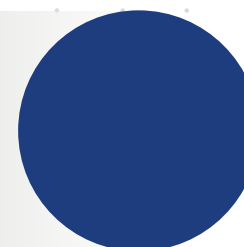
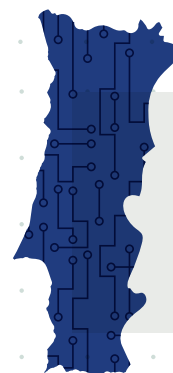
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Micro.electronics[®]
for a better future



Portugal
a **Global Player**
in the semiconductors market

Research | Production | Innovation | Training | Design | Recycling | Certification | Development



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Follow our work

ABOUT

The **Microelectronics Agenda** is a structural project supported by a **consortium with relevant players like companies, research and technology organizations and knowledge transfer entities**.

Spanning the complete value chain from **chip design to electronics manufacturing service (EMS), engineering, repair and recycling**, the consortium **will drive technological innovation and productivity while embracing an ecological transition**.

The **Consortium**, through its different valences, **promotes a more effective, efficient, sustainable, intelligent and capable sector to meet the needs of the various industries globally**.

The **Microelectronics Agenda** involves a group of 17 partners and **seeks to identify and promote synergies** along the value chain in order to **create opportunities** to add more **innovation, productivity and benefits** for the economy and society.

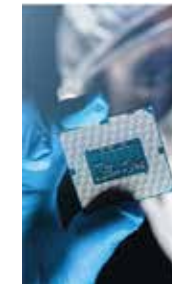
MAIN AREAS

More productivity, quality, capacity and innovation.

Hybrid
microelectronics
and photonic
integrated
circuits, design
and packaging



Training, capacity
building and
qualification of
human resources



Advanced
Wafer level
packaging
and test



Electronics
manufacturing
services and
electronics
engineering

Next
Generation
High-speed
optical
communications



Hybrid
multidimensional
microelectronics,
photonics, chiplets,
antennas, memories
and XPUs



The semiconductors
factories of the future
with new
technologies



Test,
Reconditioning,
Repair and
Recycling



**MICRO.ELECTRONICS
OBSERVATORY**

Discover the potential of the Portuguese sector

The creation of the Microelectronics Observatory will offer a comprehensive overview of the sector. It will identify entities, companies, and Research and Technology Organizations (RTOs), along with their positioning within the microelectronics and semiconductor value chain. Additionally, the observatory will detail the available skills. This updated and detailed information will assist in making informed investment decisions and identifying potential partnerships.

Businesses



Research and Technology Organisations



Knowledge Transfer Entities



Automotive

○ Wafer Level Packaging and Test

- Advanced Packaging High Frequency Radar Sensors for Advance Driver Assistance System (ADAS).

○ Assembly and Test of SiP (System in Package)

- Advanced Packaging new generation Pressure Sensor MEMS device, Microcontroller (ASIC) and passive components (inductors and resistances).
- Advanced Packaging new generation single die Differential Pressure Sensor IC device, Microcontroller (ASIC) and passive components (inductors and resistances).
- Advanced Packaging new generation MEMS Inertial Sensor device, Microcontroller (ASIC) and passive components (inductors and resistances).

5G devices

○ Wafer Level Packaging and Test

- Advanced Packaging IC for 5G wireless communications (smartphones, infrastructure, networking) including RF antenna to minimize switching devices in the smartphone.
- Advanced Packaging Power module IC controller allowing the smallest footprint particularly on 5G smartphones.



Telecommunications and Connectivity

● Wafer-Level Packaging for Next-Generation Devices: Enabling Enhanced Computational and Connectivity Power

- As we move towards 6G networks, data centers for quantum computing and the upcoming Passive Optical Networks (PON) with speeds of 25 Gbps and 50 Gbps, wafer-level packaging (WLP) needs to evolve in order to enable next-generation devices that will require more computational power and seamless connectivity whether it's edge computing, AI inference or high-speed data transfer. The solution is an enhanced WLP integrating various components directly onto the wafer allowing the connection of hybrid multidimensional microelectronics, photonics, chiplets, antennas, memories, XPU's, etc, in a more efficient set of solutions.

Smart Factory

● MES – Manufacturing Execution System

- Flexible and configurable system allowing faster planing setup.

● Equipement Lifecycle Manager

- Software solution for tracking the entire life cycle of a particular piece of equipment and related activity, from its installation, through configuration, maintenance, operation and discontinuation, enabling preventive maintenance.

● Virtualized Edge Framework

- Framework for orchestrating IIoT (Industrial IoT) aiming to guarantee the configuration, updating and chaining of services in real time. It can be integrated with other systems through the use of standard communications protocols, guaranteeing the solution's interoperability, modularity and scalability.



○ **IoT-based image sensing module**

• Modular IIoT platform that allows the detection of different physical realities (e.g. movement, magnetic field, temperature, humidity, sound, light, air quality) and their communication via different communication protocols (e.g. Bluetooth, Wi-Fi, NB-IoT, 5G). The development of an image capture module for this platform will make it possible to measure additional realities, both in the visible and invisible light spectrum, with the potential for application in various industrial scenarios.

○ **AI-based Computer Vision framework**

• Highly configurable industrial visual inspection framework facilitating image quality parameterization and acquisition for automatic anomalies detection and reporting.

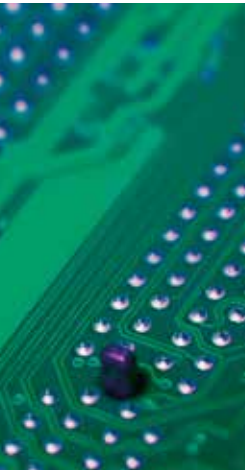
○ **Automation of systems for the shopfloor of semiconductor manufacturing companies**

• Framework, using advanced modelling, digital twins and AI, that includes various components for generating highly advanced solutions, namely: for transporting, storing and loading/unloading materials and products; handling electronic components autonomously and automatically; packaging material with different types of containers, geometric configurations, sizes and weights; continuous location of assets and tracking their movement within the factory floor; guidance solution based on image acquisition, analysis and decision.



Sustainability

○ **Advanced e-waste management processes**



- Hybrid leaching of copper, gold and critical metals from electronic waste with analytical techniques such as ICP-MS and XRF, capable of accurate quantification of the metals at the different steps of the process.
- Selective hybrid cascade method for recovering metals from mixed solutions using biological molecules immobilized on supports with different molecules immobilizing a different metal which is removed with a strong chelating solution. The solutions obtained will be pH balanced, and the metals will be obtained by stripping.

● **Establishment of environmentally conscious processes for eco-design and manufacture of electronic test, reconditioning and repair products**

- Processes to support companies in complying with legal norms and regulations in adhering to the principles of eco-design, namely by reducing the presence of hazardous chemical processes, using resources more efficiently, improving the durability of their products, allowing for the possibility of reuse and repair, being energy efficient and reintroducing process waste into the production chain.



Environmental Monitoring



Ocean Data Sensors

- Ultra-low power IoT devices with embedded sensors to collect data related to various parameters such as temperature, electrical conductivity, from which salinity is inferred and pressure, which allows depth estimation, identifying descent and ascent phases or seabed stationary situation to adapt the data sampling frequency and characterize the water at different depths up to 100 meters.

A timed mechanism returns the device to the surface transmitting its position and the data collected.

