Instituto Tecnológico de Aragón-ITA

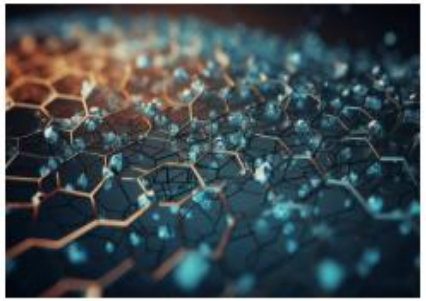
International Project Office - **Maryori Díaz Ramírez**

May2025

Our mission

Our mision is to **help companies, technology leaders, institutions and anyone** who shapes our society towards achieving a new future **through innovation and technological development**.

Our areas of expertise



Materials and components

Ecofriendly and recycled materials

Valorization processes and recycling of materials and components

Computational materials

Sustainable processes of material transformation

Smart and multifunctional materials

Clima neutral components

Digital technologies

Articial Intelligence, cognitive systems and Big Data

IoT, Blockchain y Algorithmic Business

Mechatronics and robotics

Mechatronics and cyber-physical systems

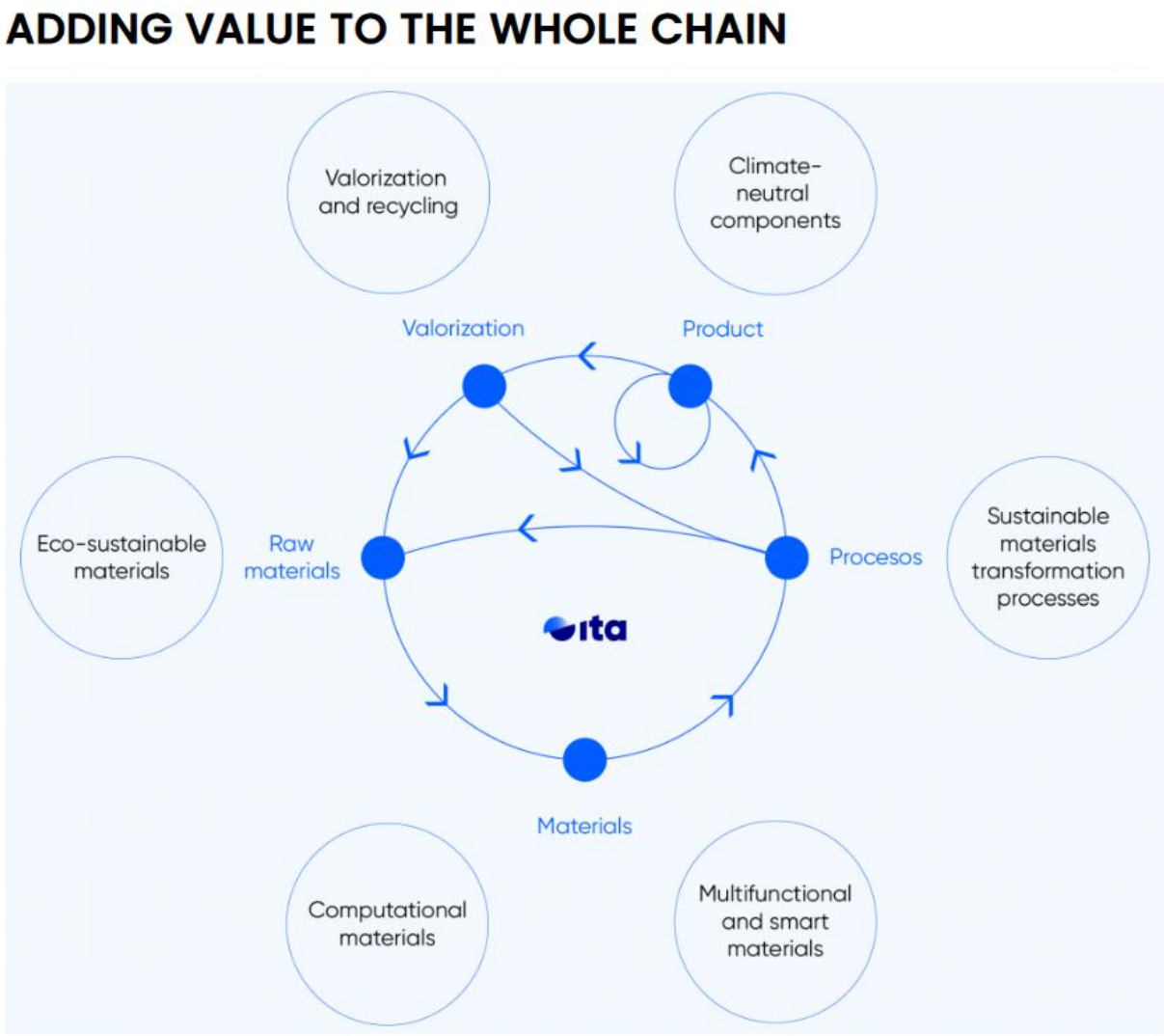
Robotics

Electrical Technologies

Energy sustainable electrical systems and EMC

Our areas of expertise:

Materials &Components



Our areas of expertise:

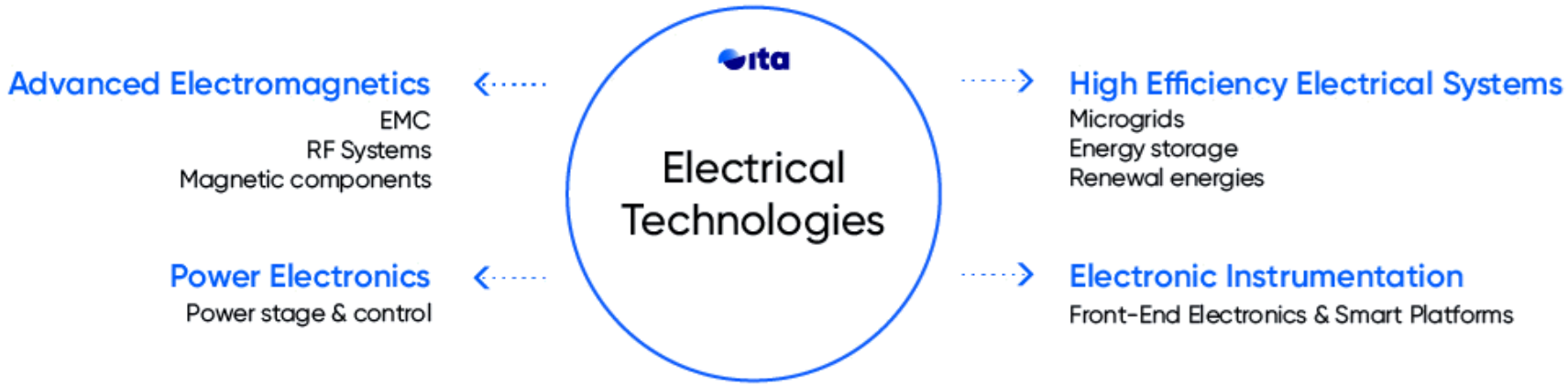
Digital Technologies

Our areas of expertise:

Mechatronics and Robotics

Our areas of expertise:

Electrical technologies



Our services

Technological Solutions

Digital Transformation Consulting Industry 4.0

Consulting in environmental impact analysis and circularity.

Technology watch and competitive intelligence

Our services

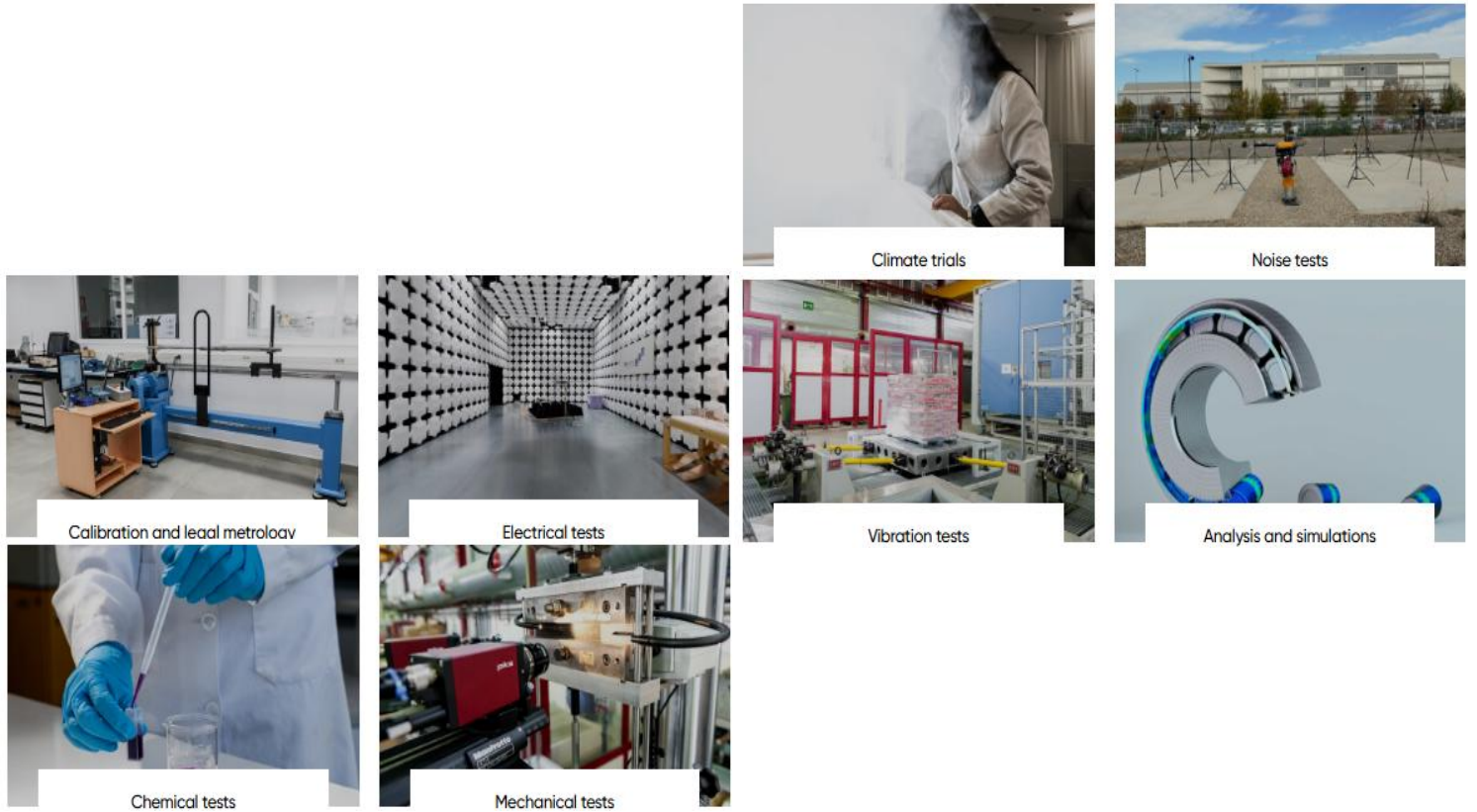
Laboratory equipment

MECHANICAL LABORATORY

CHEMICAL LABORATORY

CALIBRATION LABORATORY

ELECTRICAL LABORATORY



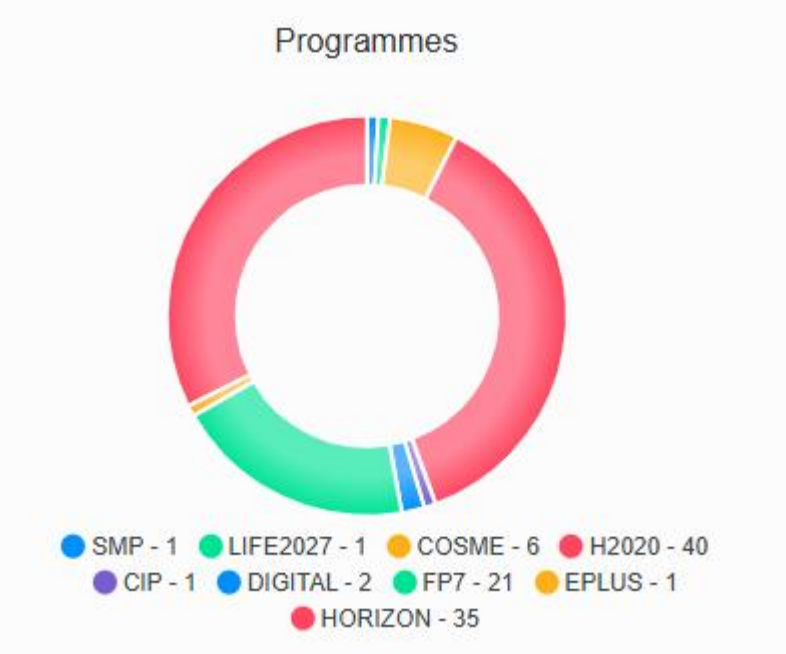
Participant portal record

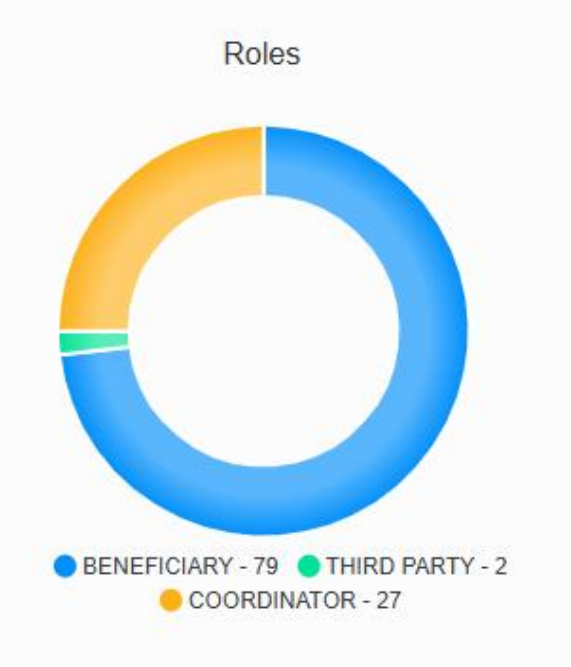
INSTITUTO TECNOLOGICO DE ARAGON

108 Projects

Location
ZARAGOZA - Spain

Organisation type
Research Organisation





Participant portal record

Main collaboration partners

Materials and Components R+D+I Area detailed expertise:

Materials development

- **Computational materials** development from molecular level to process desing and optimization.
- **Lab scale development** to tailor materials properties.

Recycled Materials

- **Valorization technologies**
- **Recycling** at lab scale:
  - Mechanical recycling
  - Chemical recycling
  - Enzymatic recycling
- **Scalability** through simulation capacities
- Improvement of **recycled materials properties**.
- Strategies of **up-cycling / downcycling**

Analyses Materials functionalizations

- **Adhesive behavior** and components
- Advanced **characterization** (chemical, physical, mechanical and environmental)
- **Failure analysis, SHM.**
- **Biodegradability** capacity

Materials and Components R+D+I Area detailed expertise:

Materials characterization

- **Better insight** of material performance
- **Callibration** of **parameters** for material modelling
- Inspection of **defects or failure causes**

Materials & Components modelling

- **Material behaviour modelling** (characterisation and property prediction procedures, model fitting)
- **Structural, fatigue, modal, thermal, impact, fluid dynamics, heat transfer analysis**

Material-Transformation process simulation

- **Process-morphology-properties** relationships
- Assistants for the **fine-tuning of plant processes** (virtual manufacturing tests)
- **Monitoring and re-optimisation of processes** (quality parameter estimators, virtual sensors)
- **Real time adaptive control** of production resources

Materials and Components R+D+I Area detailed expertise:

Engineering tools

- **Design tools** based on DOE num-exp (design parameters) + order reduction techniques (ROM's)

Components characterization & validation

- Functional, static, fatigue and durability **tests on components**
- **Technical specifications validation**
- **Analysis** of thermomechanical behaviour of **systems**
- **Tooling design, set-up and monitoring** of variables

Structural Health Monitoring

- **Instrumentation and signal acquisition** (HW sensor selection/failure modes)
- **Analysis techniques** (SW identification, localization and quantification of damage)
- **Prognosis for** lifetime prediction

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