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CDTI INNOVACIÓN

INNOVATION PROCUREMENT AT CDTI, TRANSFORMING OUR FUTURE

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MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES
CDTI INNOVACIÓN

INNOVATION PROCUREMENT IN THE SPANISH CENTER FOR TECHNOLOGICAL DEVELOPMENT AND INNOVATION (CDTI)

TRANSFORMING OUR FUTURE

Government of Spain
Spanish Ministry of Science, Innovation and Universities

The Innovation Procurement Is a tool to **promote innovation from the public sector** through the acquisition of **innovative solutions** or **first prototypes** that can be validated by entities of the Spanish public sector

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What is Innovation Procurement?

Innovation procurement refers to any procurement of **buying the process of innovation** – research and development services – with (partial) outcomes, or buying the outcomes of innovation. Innovation procurement can be addressed in two complementary ways: Public Procurement of Innovative solutions (PPI) and Pre-Commercial Procurement (PCP).

Since 2018, Spanish Center for Technological Development and Innovation (CDTI) has been promoting Innovation procurement under the **Pre-Commercial Procurement (PCP)** modality mainly. CDTI acquires R&D services to develop prototypes of initial products or services that address public needs.

A **Spanish Public Entity or Spanish Public Administration** acts as the contracting authority, being interested in the project and able to provide the real environment required to validate the developed technology.

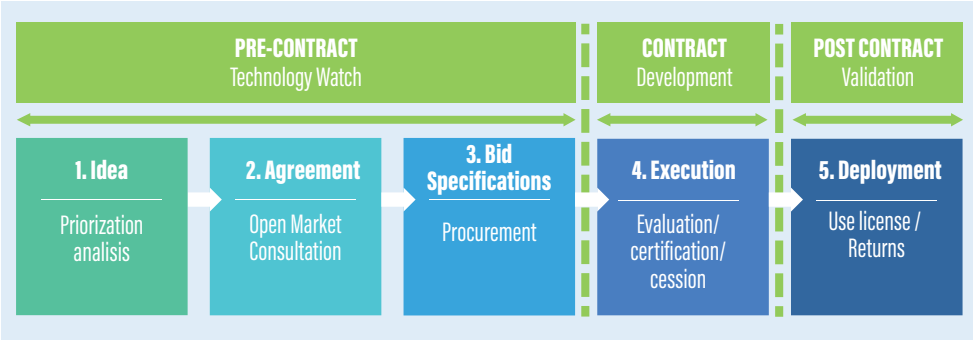
Co-financing is mainly provided through **European funds**.

Early Demand Map

CDTI continuously monitors the technological needs of Spanish Public Sector Entities to create an early demand map based on actual demand, fostering catalytic Innovation procurement.

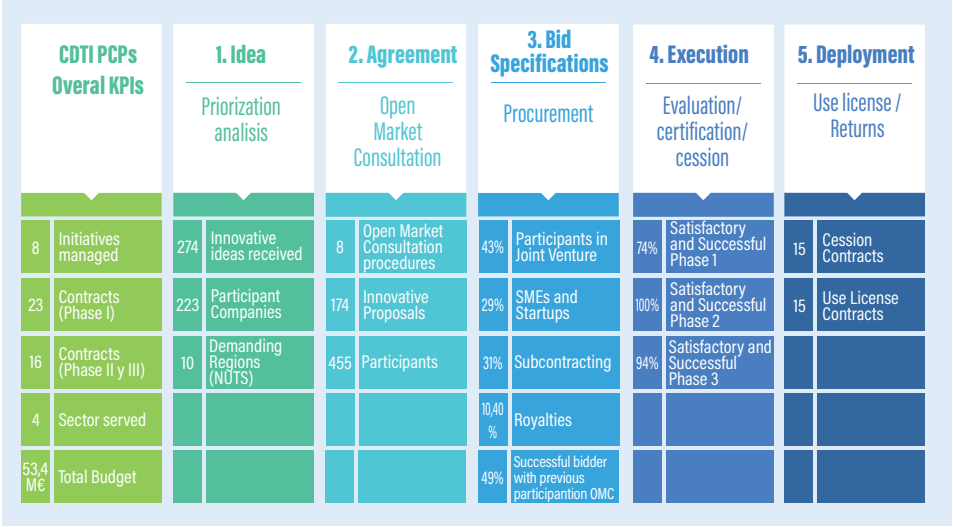
CPI process at CDTI Innovation

- 1. Idea
- 2. Agreement
- 3. Bid Specifications
- 4. Execution
- 5. Deployment

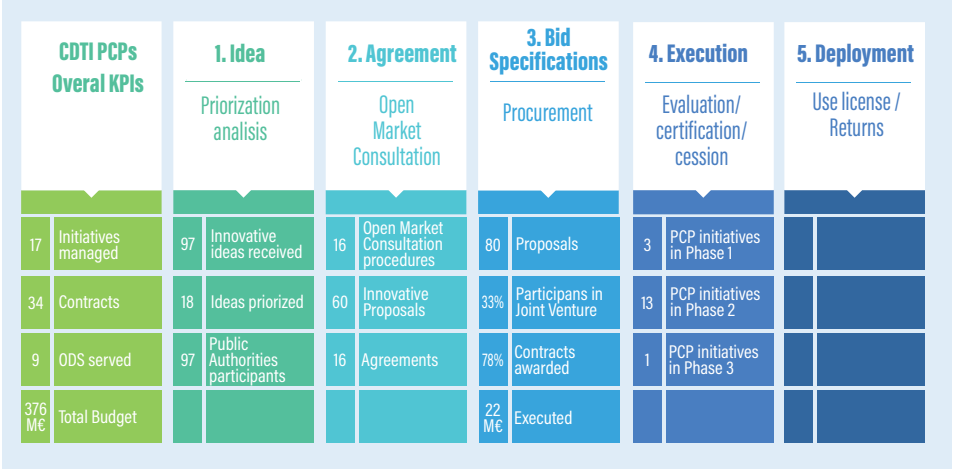


Innovation Procurement in numbers

Finished CDTI PCP KPIs and outcomes:



Actual CDTI PCPs in execution



CDTI PPI: Transforming Our World

CDTI procures R&D services to develop prototypes of initial products or services that address public needs. Therefore, CDTI's PPI initiatives and challenges are aligned with the Sustainable Development Goals.

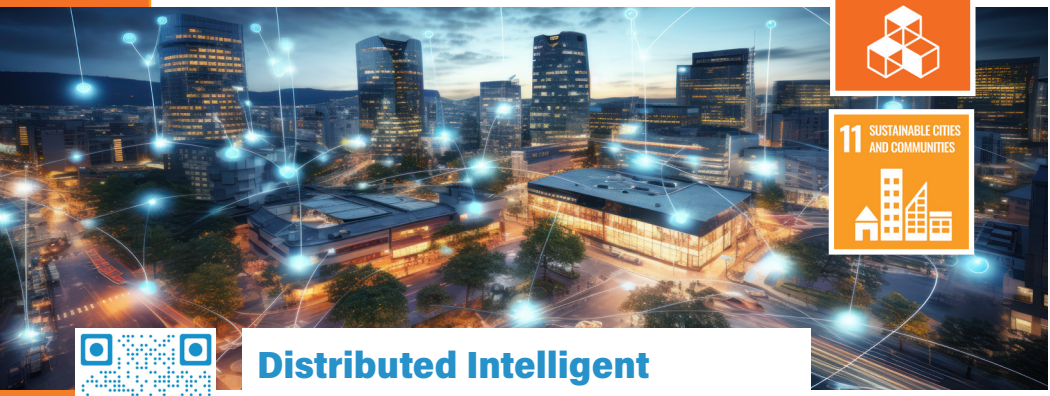
SUSTAINABLE DEVELOPMENT GOALS

In 2015, the UN adopted the 2030 Agenda for Sustainable Development, an opportunity for countries and their societies to embark on a new path to improve the lives of all people, leaving no one behind. The agenda includes 17 Sustainable Development Goals (SDGs), which establish that eradicating poverty must go hand in hand with strategies that promote economic growth and address a range of social needs such as education, healthcare, social protection, and employment opportunities, while also tackling climate change and protecting the environment.

The Sustainable Development Goals are universal and require action from all countries, both developed and developing, to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

Innovation Procurement at the Spanish Center for Technological Development and Innovation (CDTI)

CPP 01/2020



Distributed Intelligent Computing (UMU)

Budget:
€5,9M + VAT

Location:
Murcia

Implementation period:
24 months

Results:
2 prototypes transferred to University of Murcia in 2023

Smart Campus: integration of intelligence solutions at both the network and intermediate node levels, as well as in the interconnections between subsystems, enabling distributed and coordinated management of information processing and, consequently, decision-making.

Región de Murcia

UNIVERSIDAD DE MURCIA

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Monitoring the Quality of Surface Waters (DUERO)

Budget:
€4,05M + VAT

Location:
Castilla y León

Implementation period:
24 months

Results:
2 prototypes transferred to the Duero Hydrographic Confederation in 2023

Low-cost, high-efficiency surface water quality alert system for the Spanish part of the Duero River basin. Includes the development of innovative sensors, data acquisition and remote-control systems, communications with the Basin Control Center, autonomous power supply, and the external structure.

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MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO
CONFEDERACIÓN HIDROGRÁFICA DEL DUERO, O.A.
CHD CONFEDERACIÓN HIDROGRÁFICA DEL DUERO

CPP 01/2021

Organ Preservation (PRESORG)

Budget:
€5,03M + VAT

Location:
Extremadura

Implementation period:
22 months

Results:
2 prototypes transferred to the Jesus Usón Minimally Invasive Surgery Centre in 2023

Innovative solutions for organ transplantation, capable of maintaining the organ's normal function, improving its hemodynamics, and reducing ischemia-reperfusion damage, creating an environment for the organ that is virtually identical to that of the body.

Centro de Cirugía de Mínima Invasión
Minimally Invasive Surgery Centre
Jesús Usón

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Information System to Support Decision-Making in Water Management (SEGURA)

Budget:
€3,4M + VAT

Location:
Castilla y León

Implementation period:
21 months

Results:
2 prototypes transferred to the Segura Hydrographic Confederation in 2023

Computer system for operation within the Segura Hydrographic Basin, based on a modular software platform that allows real-time optimization of water use and costs, including alert management and predictive models for decision-making through AI-based tools.

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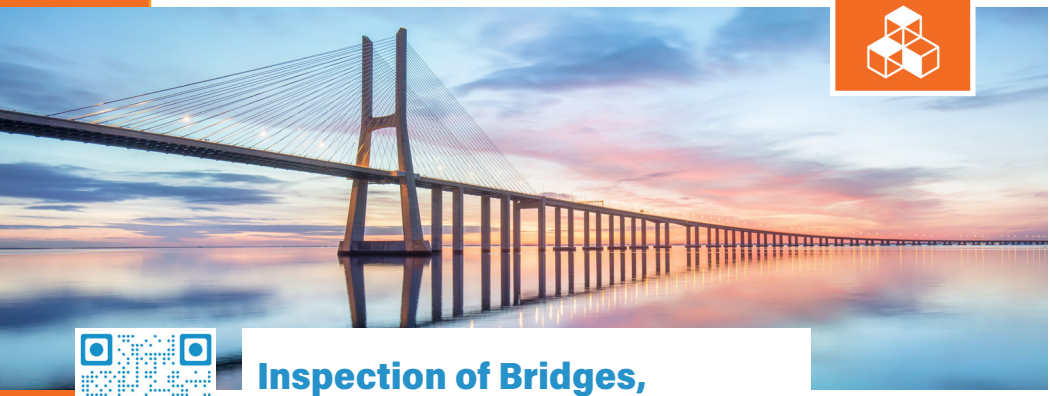
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Inspection of Bridges, Viaducts and Track Switches (ADIF)

Budget:
€5,86M + VAT

Location:
Andalucía

Implementation period:
22 months

Results:
3 prototypes transferred to ADIF in 2023

The objective of this initiative is to monitor the condition of railway infrastructure in two areas: bridges and viaducts on one hand, and turnout systems on the other, in order to optimize maintenance and minimize operational risks during service.

adif

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Seawater Desalination (CABILDO)

Budget:
€11,49M + VAT

Location:
Canarias

Implementation period:
19 months

Results:
1 prototype transferred to the Cabildo of Gran Canaria in 2023

Design, installation, testing, and real-world validation of a highly innovative desalination technology at a demonstrative scale, aimed at improving conventional seawater reverse osmosis desalination plants.

Cabildo de Gran Canaria

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Rural Area Security (RURAL)

Budget:
€7,04M + VAT

Location:
Castilla la Mancha

Implementation period:
18 months

Results:
2 prototypes transferred to the Guardia Civil in 2023

Technologies to monitor large areas of land in rural zones, addressing specific scenarios such as theft of agricultural machinery or cultural assets, management of mass events, detection of marijuana plantations, and environmental crimes.

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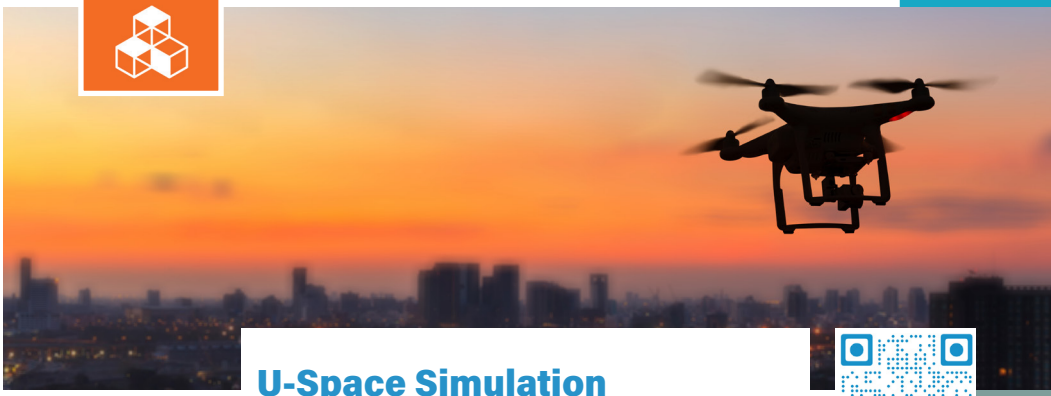

U-Space Simulation Environment (GAIN)

Budget:
€10,9M + VAT

Location:
Galicia

Implementation period:
16 months

Results:
2 prototypes transferred to the Axencia Galefa of Innovation in 2023

U-Space simulation platform to expand Rozas' capabilities as a reference center for the development and experimentation of UAVs (unmanned aerial vehicles).

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CPP 01/2022

3 GOOD HEALTH AND WELL-BEING

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Clinical Trials (INNOVATRIAL)

Budget:
€10,07M + VAT

Location:
Galicia

Implementation period:
30 months

Computer system providing an innovative, comprehensive solution for all actors and processes involved in clinical research, covering all types of studies–from treatment, prevention, and diagnosis to disease detection research, genetic studies, epidemiological studies, and preclinical and clinical trials–integrated with healthcare activities.

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XUNTA DE GALICIA | CONSELLERÍA DE SANIDADE

AXENCIA GALEGA DE COÑECEMENTO EN SAÚDE

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Small Satellite Launcher (LAUNCHER)

Presupuesto:
€45M + VAT

Implementation period:
29 months

Development of a launcher prototype capable of placing satellites of at least 300 kg into low Earth orbit.

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9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Quantum Key Distribution System (QKD)

Budget:
€125M + VAT

Location:
Madrid

Implementation period:
24 months

Development of two experimental payload prototypes and their associated ground segments, which will constitute complete end-to-end quantum key generation and distribution (QKD) systems, with a view to future secure communication services by Public Administrations and other operators within the upcoming European Euro-QCI network.

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Compact Linear Accelerator for Hadron Therapy (HADRONTHERAPY)

Budget:
€18M + VAT

Location:
Valencia

Implementation period:
55 months

Compact carbon ion injector for use in radiobiological studies of hadron therapy against cancer, offering a less aggressive and more targeted treatment. The project aims to develop a compact linear ion accelerator for subsequent use in hadron therapy. The challenge focuses on creating a demonstrator for the injection phase of a carbon ion accelerator (injector) based on a compact radio-frequency linear accelerator (LINAC) to verify that the associated technology and infrastructure are economically viable and sustainable.

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9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Earth Observation. Onboard Processing in Satellites (RT2)

Budget:
€4,6M + VAT

Location:
Madrid

Implementation period:
22 months

Onboard data processing system for radar (SAR) and/or high-resolution optical satellites (V/IR). AI-based techniques reduce transmitted data volume, improve latency, and accelerate satellite image-based decision-making.

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DIGEID

Technologically Advanced Vehicles for the Transfer of Detainees, Prisoners and Convicts (PRISONERS)

Budget:
€6,01M + VAT

Location:
Andalucía

Implementation period:
24 months

Optimal, safe, comfortable, and environmentally sustainable prisoner transport compliant with road safety, penitentiary, human rights, and occupational safety regulations. Includes interior design, propulsion, integrated technology, and cybersecurity systems.

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Single-Use Bioreactor Platforms for the Production of Autologous Cell-Based Biopharmaceuticals (BIOREACTORS)

Budget:
€7,9M + VAT

Location:
Madrid

Implementation period:
24 months

Single-use bioreactor platform for the production of autologous cell-based biopharmaceuticals. Autologous cell-based therapies are a unique type of Personalized Medicine, as they require obtaining the patient's own cells, modifying them, and reinfusing them into the patient for treatment.

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Plan de Recuperación, Transformación y Resiliencia

Instituto de Salud Carlos III

Multi-Mission Autonomous Aerial Systems for Wildfire Suppression (FIRES)

Budget:
€12M + VAT

Location:
Madrid

Implementation period:
36 months

New solutions for integrating autonomous aircraft into wildfire fighting, aimed at removing both technological and commercial access barriers, enabling their near-future deployment as optimal and operational solutions for intensive suppression of large wildfires. These solutions provide greater control over the fires while simultaneously offering inherent benefits, such as reduced risk to personnel and lower operational costs.

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CPP 08/2023

High-Sensitivity and High-Resolution Positron Emission Tomography Scanner for Brain Use (PET)

Budget:
€9,2M + VAT

Location:
Basque Country and Valencia

Implementation period:
24 months

Development of a new PET scanner that improves the limited capabilities of existing whole-body systems for brain studies, in terms of specifications, and addresses the growing demand for neurological applications due to the increasing prevalence of age-related pathologies worldwide.

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ciber CENTRO DE INVESTIGACIÓN BIOMÉDICA EN RED

Non-Invasive Technologies in Neuromodulation (NEURO)

Budget:
€20M + VAT

Location:
Madrid

Implementation period:
24 months

Technologies enabling interaction with the brain, providing non-invasive access to the central nervous system, and allowing the study and testing of drugs being developed for neurodegenerative diseases, while also supporting neurological rehabilitation.

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Backup Systems with Green Hydrogen-Based Generation and Storage, Integrable into the Hospital Smart Energy Management (H2 HOSPITALS)

Budget:
€6M + VAT

Location:
Catalonia

Implementation period:
24 months

Backup systems with green hydrogen-based generation and storage, integrable into the hospital's smart energy management. They should incorporate circularity measures, such as utilizing by-products from the electrolysis and fuel cell processes –oxygen and water, respectively– as well as residual heat from the electrolyzer and fuel cell, to maximize overall system performance (cost, efficiency, and emissions).

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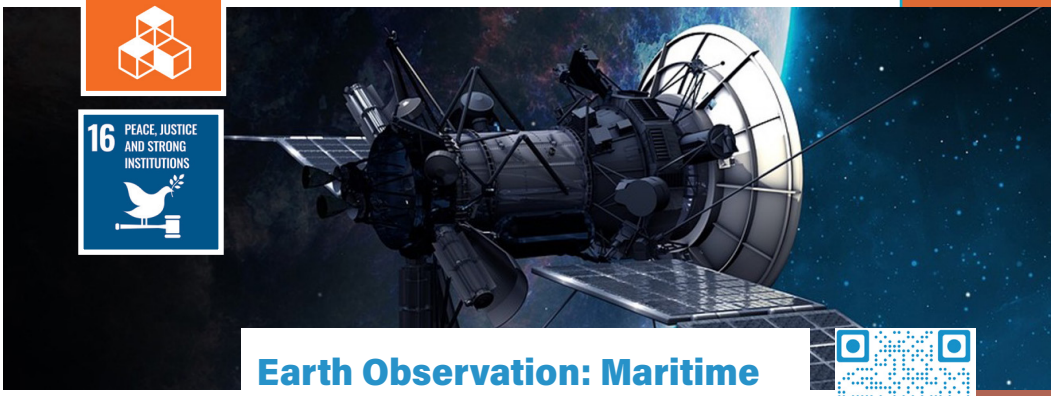
Plan de Recuperación, Transformación y Resiliencia

Generalitat de Catalunya

Germans Trias i Pujol Hospital



Earth Observation: Maritime Surveillance and Rescue Applications (RT1)

Budget:
€5,3M + VAT

Location:
Murcia

Implementation period:
24 months

Application based on Artificial Intelligence algorithms that performs detection, identification, and classification of vessels from satellite images, providing a real-time decision support system.

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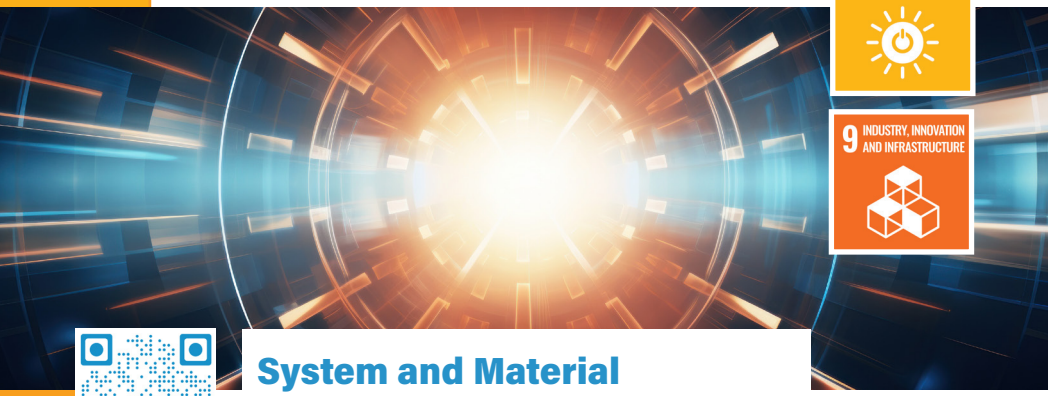

System and Material Validators for Fusion Energy (DONES)

Budget:
€40M + VAT

Location:
Andalucía

Implementation period:
40 months

Development of Integrated Technological Validators for Accelerator Systems (VATIAC) and Test Area Systems (VATIST), enabling long-term testing of critical systems and components for the future large-scale international scientific facility IFMIF-DONES. IFMIF-DONES will serve as a neutron source, essential for testing the most critical materials for future fusion facilities, making it unique in the world.

IFMIF-DONES ESPAÑA

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Automation of Tasks and Processes in Surgical Robotics Systems (AUTOPILOT)

Budget:
€10M + VAT

Location:
Extremadura

Implementation period:
42 months

Development of innovative solutions for task and process automation in surgical robotics systems. Additionally, the project aims to develop a robotic platform for laparoscopic MIS Surgery, enabling surgeons to design personalized surgical plans before operations through training environments in the metaverse and to improve procedures through AI-driven automation of surgical tasks.

Centro de Cirugía de Mínima Invasión
Minimally Invasive Surgery Centre
Jesús Usón

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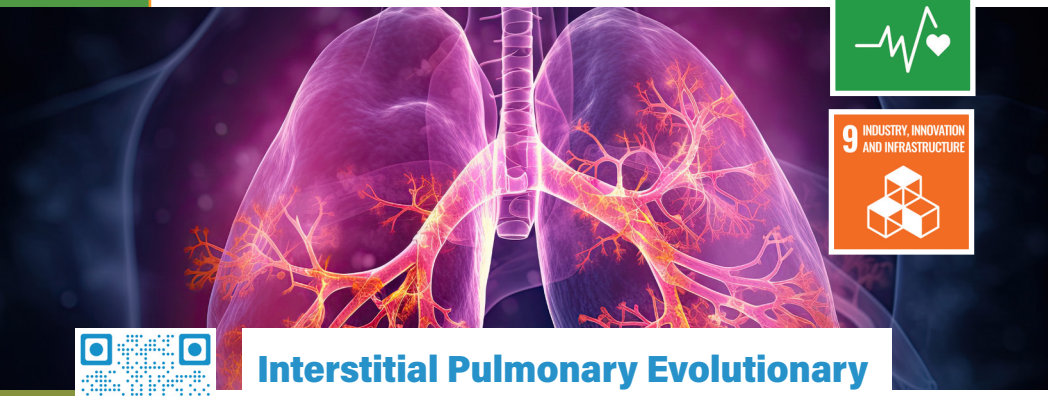
CPP 03/2024



Interstitial Pulmonary Evolutionary Simulation System Using Artificial Intelligence (SEPI-IA)

Budget:
€5M + VAT

Location:
Catalonia

Implementation period:
17 months

Software focused on creating intelligent algorithms for detecting critical elements, both for diagnosis and for developing a predictive model of the progression of Diffuse Interstitial Lung Diseases (DILDs). In this context, integrating the information detected, identified, and classified from chest HRCT images, along with other patient data (functional, clinical, etc.), will contextualize and improve the prognostic and therapeutic approach to these diseases.

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Plan de Recuperación, Transformación y Resiliencia

Generalitat de Catalunya
Bellvitge Hospital Universitari
Institut Català de la Salut

Innovative Forensic Intelligence System for All Crime Scene Management and Subsequent Analysis Processes (FORENSIC)

Budget:
€24,45M + VAT

Location:
Andalucía

Implementation period:
36 months

Soluciones innovadoras en Innovative solutions in forensic research adapted to the crime scene environment, aimed at generating early information to feed an advanced forensic intelligence system throughout all crime scene management and subsequent analysis processes.

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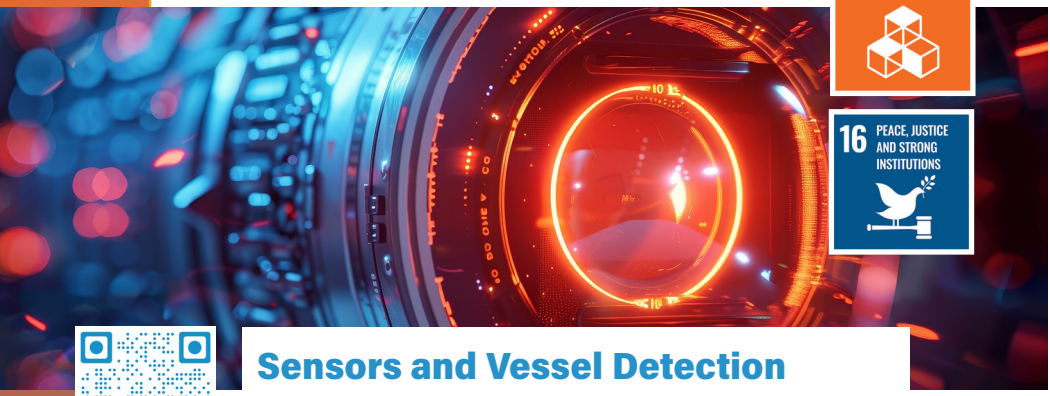

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16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Sensors and Vessel Detection Systems for Border Surveillance, Control of Illicit Trafficking and Irregular Immigration (INFRARED SENSOR)

Budget:
€21,21M + VAT

Location:
Andalucía

Implementation period:
36 months

Development of sensors and vessel detection systems (for safe interception) for border surveillance, illicit traffic control, and irregular migration monitoring.

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