Co-funded by the European Union

ΕΣΠΑ 2021-2027 Partnership Agreement 2021-2027

Programme Central Macedonia

Programme: "CENTRAL MACEDONIA" 2021–2027

Action: "Investments for the creation, expansion or upgrading of RTDI infrastructure in public academic or research institutions in the Region of Central Macedonia"

Project Title:
«RISE: Flagship Infrastructure for Design and Simulation in Large-Scale to support Smart Power Grids 2.0 Applications».

Description:
The Centre for Research & Technology Hellas (CERTH), is participating in the "Central Macedonia" Programme of the "Partnership Agreement on Regional Development 2021-2027" through the Action "Investments for the creation, expansion or up grading of RTDI infrastructure in public academic or research institutions in the Region of Central Macedonia" co-funded by the European Union and National Resources.

The project titled "**RISE: Flagship Infrastructure for Design and Simulation in Large-Scale to support Smart Power Grids 2.0 Applications** " aims to: the use of a unique equipment for conducting quantum computing experiments that will allow to support Large-scale simulations in the electricity power grid, as well as new generation telemetry with the ability to highly encrypt data of critical grid infrastructures, while in parallel promoting green energy to address climate change, both at regional and national level. The ambition is for this equipment to be installed in VARLAB laboratory, in collaboration with the Microelectronics and Intelligent Embedded Systems Unit and the SmartHome Unit of CERTH, to constitute an emblematic multi-dimensional infrastructure to support the needs of Greece's energy transformation, with the region of central Macedonia, serving as a starting point.

Indicative expected benefits of this specific project, through its included interventions, are:

- Implementation of optimal energy saving and efficiency practices for industrial facilities and other building infrastructures, such as hotels,
- The utilization of digital twins for the emulation of critical energy infrastructures in combination with AI-based technologies for predictive maintenance applications,
- Utilization of quantum engineering for high data encryption and large-scale calculations

The social impact of the project lies in

- Supporting to the digital industrial transformation

- Greater penetration of Renewable Energy Sources, thus promoting Green Energy and reducing Greenhouse Gas emissions,
- Great benefits for the region, in sectors, such as, industry, environment, green development, sustainability, infrastructure, especially of electricity utilities and civil protection

The objective of the project is: the RISE infrastructure to pose as unique installation unit, combining new generation large-scale simulations with quantum computing, while being supported by applications and infrastructures of rapid standardization and assembling of intelligent embedded systems and sensors for the requirements for the energy transformation of Greece and Europe.

The project's results are:

- Digital Industrial transformation,
- Greater Renewable Penetration, utilization of new generation Distributed Energy Resources and efficient energy usage by the buildings, towards a greener and sustainable energy utilization,
- More robust, resilient and reliable energy grid for a safer use of energy,
- More sustainable development for local regions and authorities.

Duration: 15 Months

Total Project Budget: *1.000.000,00€*