Joint Call 2023 – Funded projects

Project acronym	Project title	Project abstract	Main coordinator
CASREM	An AI-based Cognitive Platform for Smart Renewable Energy Management	CASREM aims to develop an innovative platform to empower users in optimising their renewable energy use while reducing reliance on non-renewable sources. The platform offers real-time energy generation predictions derived from weather forecasts, thereby enabling users to efficiently manage the energy consumption of interconnected devices, leveraging AI and the Internet of Things (IoT). CASREM integrates variable renewable energy (VRE) generation with energy demand, creating a cohesive system for forecasting VRE generation. The SEM platform will be deployed on Edge devices e.g. smartphones with pilot trials in Scotland and Turkey and dissemination through Virtual Reality (VR) enabled education and training. CASREM aims to address inefficiencies encountered in VRE utilisation and accelerate the transition to clean energy. The innovative system will reduce VRE-related cost, alleviate grid constraints and support distribution network operators in maintaining a reliable energy supply.	EOS İstanbul Sürdürülebilir Enerji Çözümleri A.Ş., Türkiye
DEM4PED	DEM4PED - Data Exchange Model For Positive Energy Districts	Developing sustainable future cities depends on the opportunities to optimally integrate and mobilize food, water, and energy (FWE) resources in a synergistic way to reduce water, carbon, and ecological footprints, and to increase the community resilience against challenges exacerbated by climate change, population growth, and resources depletion. This authentic and original proposal; enables producers and consumers of renewable solar energy to exchange energy with each other with the most innovative processes and products offered by information technologies, ensuring smart and optimized energy demand /supply planning and execution capabilities and minimizing transmission and storage cost. The project focused on the realization of new Business Model by instant, subscription creation, energy trading and subscriber termination contracts (smart contrats) over the Blockchain network with the state-of-the-art information technologies of multi solar power generation districts.	Ostim Technical University, Türkiye

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GridCloud	Advancing Decision-Making in Distribution Grids through Digital Process Twin Integration for Grid Planning and Operations	The GridCloud project, aimed at European Distribution System Operators, seeks to advance decarbonization through innovative digital solutions. Positioned against Europe's energy transition challenges, GridCloud integrates artificial intelligence and data analytics to optimize grid management. The multifaceted strategy encompasses: fostering stakeholder collaboration for a seamless green energy transition; developing "Digital Process Twins" for system information digitalization and real-time decision-making; and automating digital twin creation while ensuring IoT compatibility for superior system performance. With country-specific goals in Austria (augmented grid control and stakeholder engagement), Germany (grid data integration and standardization), and Turkey (anomaly detection and operational optimization), GridCloud aspires for a sustainable, efficient, and reliable energy distribution landscape.	AIT Austrian Institute of Technology GmbH, Austria
INFUSE	Information Fusion of Multi-Vector Real-Time Data Streams for Energy Management in Emerging Power Grids	INFUSE project revolves around the development of a comprehensive data integration framework within a cross-platform software ecosystem, making use of the FIWARE open-source APIs and specific data formats capable of seamlessly integrating diverse data sources with varying reporting rates (including PMUs, smart meters and other contextual sensors). Additionally, the project will focus on an intelligent edge-computing engine for processing and correlating information from various sources using data analytics enabling real-time anomaly detection, predictive maintenance, and energy control, contributing to enhanced energy transfer in emerging (low inertia) power grids. Integration with real-time digital simulation tools using data from the crossplatform showcasing developmental opportunities across various demonstration sites and scenarios, based on in-project developed digital twins (on heterogeneous hardware-in-the-loop simulation platforms: e.g. Typhoon HIL, RTDS).	Universitatea Nationala de Stiinta si Tehnologie POLITEHNICA Bucuresti, Romania
QuantEE-Flex	Quantifying the economic value of energy flexibility in urban districts through digital twins and Living Labs	QuantEEFlex aims at quantifying the economic, technical and environmental value of energy flexibility within urban districts. Leveraging a combination of approaches such as digital twins, rule-based control strategies, and Living Labs, this project employs holistic approach to optimizing urban energy systems. Flexibility, a core focus of QuantEEFlex, emerges as a critical catalyst in the journey towards decarbonisation in urban districts. By exploring the intricate interplay between various elements, including distributed energy resources, demandside management, hydrogen storage and grid dynamics, it seeks to explore the potential for economic benefits while advancing environmental sustainability. For leveraging the replication potential of flexible and smart districts, the project aims at developing a flexibility assessment and planning tool, allowing efficient analysis and practical implementation of flexible control strategies.	e7 GmbH, Austria

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ZERODE-FECT4PV	Advanced Panel-Level Monitoring and Predictive Maintenance for Optimized Solar Plant Efficiency	Current solar power plants face challenges due to string-based monitoring systems, often overlooking critical panel-level defects. Existing monitoring methods limit precise defect identification, resulting in compromised data integrity and inefficient power output predictions. ZERODEFECT4PV offers a streamlined approach with prototype sensors, named Data Collection Units (DCUs), deployed on individual panels or clusters and linked via a mesh network for optimal panel-level monitoring. This master-slave architecture ensures seamless data transfer to the Energy Operations Center (EOC) and other analytic and storage components. Features, including a mathematical "toolbox", address data inconsistencies, promoting accurate forecasting. These innovations culminate in an assistant system designed to guide operators through large data volumes, offering actionable KPI-driven insights within the EOC environment.	BEIA Consult International, Romania