



**CONSUMERS
AT THE HEART
OF THE ENERGY
TRANSITION
THROUGH
DIGITAL
INNOVATION**



Funded by
the European Union

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The projects that form the E-ENERGY Cluster have received funding from the European Union's Horizon Europe research and innovation programme under the following Grant agreements:

- N. 101160667 (CELINE)
- N. 101160660 (DECODIT)
- N. 101160671 (DIGITISE)
- N. 101160720 (ENERGENIUS)
- N. 101160614 (EU-DREAM)

TABLE OF CONTENTS

ABOUT THE CLUSTER *P. 05*

CELINE *P. 06*

DECODIT *P. 08*

DIGITISE *P. 10*

ENERGENIUS *P. 12*

EU-DREAM *P. 14*

ABOUT THE CLUSTER

The **E-ENERGY** Cluster unites 5 European funded projects with the aim of empowering consumers in the energy sector by using digital technologies to make energy information more accessible and engaging. By working together, the projects seek to break down barriers, fostering greater public participation in the energy transition.

The name **E-ENERGY** reflects the cluster's mission, blending "energy" with the simplicity of e-mails. Just as e-mails revolutionised communication, **E-ENERGY** strives to make energy data seamless and easy to access. This initiative is designed to democratise energy information, enabling individuals and communities to make informed choices and actively contribute to a more sustainable future.

Through this partnership, **E-ENERGY** will share innovative tools and systems that place consumers at the centre of the energy transition. By making the process inclusive and intuitive, the cluster sets a foundation for a digitally empowered energy sector where everyone has the opportunity to participate.

CLUSTER MEMBERS



KEY FACTS

12
MONTHS
of intensive collaboration

5
PROJECTS
involved

85
PARTNERS

20
COUNTRIES



CELINE

Cross-sectorial integrated digital services Enabling energy Localized Innovation and community Empowerment

COORDINATED BY:

Mario Conci, Spindox Labs

START DATE:

December 2024

END DATE:

November 2027

PARTNERS:

15 (SPINDOX LABS, SET Distribuzione, FONDAZIONE BRUNO KESSLER, GREEN LAND, COOPERATIVA DI COMUNITÀ, AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH, UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA, INTERNATIONAL CENTRE FOR NUMERICAL METHODS IN ENGINEERING (CIMNE) and BEEDATA ANALYTICS, ECOSERVEIS, SAPIENS ENERGIA, TRIALOG, SMARTEN - SMART ENERGY EUROPE, LAPPEENRANNAN KAUPUNKI - CITY OF LAPPEENRANTA, LUT UNIVERSITY)

CONCEPT & MAIN OBJECTIVES

The CELINE project aims accelerate the digital transformation of the energy ecosystem (especially Energy Communities) by developing an integrated, user-friendly digital framework. This framework will enhance local energy production, consumption, and market participation, addressing regulatory, technical, and economic barriers. CELINE focuses on cross-sector data connectivity, citizen empowerment, and standardized digital services. Through pilot demonstrations across Europe, co-design methodologies, and innovative business models, CELINE fosters community-led energy management, promoting a decentralized, sustainable, and inclusive energy transition. And it aims to create these cross-sectoral digital energy ecosystem by:

- Developing digital tools for a secure and efficient data

collection, management, and exchange, across the energy sector.

- Facilitating local energy exchange and peer-to-peer trading through new business models.
- Promoting citizen participation and empowerment with co-design methodologies, participatory governance and training programs.
- Defining standardized policies and frameworks to align with the needs and regulations of the energy communities.

CELINE's demonstrations across different European regions will validate its scalable and adaptable solutions for diverse EC models.

RESULTS & EXPECTED IMPACT

- Integrated digital framework for Energy Communities (ECs).
- Cross-sector data exchange models to enhance market participation.

- Citizen engagement toolkit with co-design methodologies, living labs approach, and training resources.
- Standardized guidelines and learning materials for energy end-users.
- Pilot demonstrations in diverse ECs across Europe to validate these tools.
- Open repository of existing and new digital services to promote knowledge sharing.
- Innovative business models for community-driven energy management.
- CELINE Toolbox for community energy projects, including: Community digital twin, AI-assistant for Energy Management & Cross-sector Data Space connectors.

By developing scalable and replicable solutions, CELINE aims to establish a new standard for a more digitalized, decentralized, and community-led energy systems in Europe.



DECODIT

Digitally empowering citizens to deliver the twin transition

COORDINATED BY:

Stratis Kanarachos, European Dynamics

START DATE:

June 2024

END DATE:

November 2027

PARTNERS:

18 (EUROPEAN DYNAMICS LUXEMBOURG SA, QUE TECHNOLOGIES KEFALAIOUCHIKI ETAIREIA, FREDERICK RESEARCH CENTER, INNOVATION ENGINEERING SRL, EUROCOP INVESTMENT SERVICES SA, HARDWARE AND SOFTWARE ENGINEERING EPE, PRAGMA -IOT AE, AALBORG UNIVERSITET, SMART ENERGY EUROPE, INESC TEC - INSTITUTO DE ENGENHARIA DE SISTEMAS E CO, Synergy B.V., LA SOLAR ENERGIA SOCIEDAD COOPERATIVA, MY ENERGIA ONER SL, RENESCO SIA, ENERGEIAKI KOINOTITA PERIORISMENIS EVTHINIS, AZIENDA ELETTRICA DI MASSAGNO (AEM) SA, HIVE POWER SA, and R2M SOLUTION SPAIN SL.)

CONCEPT & MAIN OBJECTIVES

Homes transitioning towards EU decarbonization face complex choices, from renovations to smart grid integration, often finding generic advice unhelpful. Real-time household data is essential for service providers to overcome high tailoring costs, enabling personalized energy solutions for upgrades and efficient management. DECODIT aims to empower citizens in the energy transition by providing data-driven services that enhance awareness, support decision-making for home upgrades, facilitate financing, and improve daily energy management, all while developing necessary data infrastructure, designing user-centric digital services, and advocating for policy amendments.

RESULTS & EXPECTED IMPACT

Our project successfully developed an **innovative co-creation and service design methodology** based on analyzing energy practices. We've also begun delivering **personalized, comparable energy propositions** to citizens through federated, data-driven services from various providers. This will allow individuals to easily compare and choose the best options for their needs via user-friendly apps with **natural language interfaces**, making them accessible even to those with low energy or digital literacy.



DIGITISE

Digital Innovative cross-sector services for Greater citizen Integration in a just energy Transition and Societal Empowerment

COORDINATED BY:

Eleni Tsironi, Ubitech

PARTNERS:

12 (Ubitech, Suite5, UCD, Circe, AppArt, Unparallel, Metlen, Miw Energía, ZEZ, Arden Energy, Mission Publiques, AUSTRALO)

START DATE:

June 2024

END DATE:

May 2027

CONCEPT & MAIN OBJECTIVES

The DIGITISE project (Digital Innovative cross-sector services for Greater citizen Integration in a just energy Transition and Societal Empowerment), aims to enhance digital literacy and empower consumers and prosumers in the energy sector. This ambitious initiative aspires to enable active engagement in digital energy activities and markets, promoting a pivotal role for consumers and prosumers in the ongoing energy transition.

DIGITISE emphasises social and human engagement within digital ecosystems, integrating technologies such as Innovative Cross-Sector Services, Digital Twins, DLT-enabled Marketplaces, AI Analytics, and Big Data Management.

The project also prioritises interoperability and security, crafting a comprehensive consumer empowerment framework. This framework will undergo extensive validation across one well-established Living Lab and 4 large-scale demonstration sites located in Greece, Spain, Croatia, and Ireland. These sites will involve various stakeholders, including consumers, prosumers, and business actors such as Retailers, Aggregators, and Local Energy Communities (LECs). Additionally, they will utilise diverse cross-domain data sources and heterogeneous energy and non-energy systems, accounting for multi-variate climatic and socio-economic characteristics.

RESULTS & EXPECTED IMPACT

DIGITISE will provide:

A Personalised Empowerment and Capacity Building for consumer uptake of innovative data-driven

services: it will provide innovative, cross-sector services that address persisting knowledge gaps and analytical skills of consumers and provide seamless omnichannel experiences.

An Automated participation in energy activities over bullet-proof data sovereignty & privacy mechanism, by the establishment of a data sharing framework and by motivating consumers to be part of the data economy

A Consumer centered market design and innovative technologies for active consumer engagement in energy activities: an automated and effortless journey of active participation in a just energy transition towards flourishing unchallengeable and profound benefits.

DIGITISE is at work to deliver the 10 DIGITISE TOOLS.

THE 10 DIGITISE TOOLS



DIGITISE Data Space



Household Digital Twin Application



Asset Investment Optimization App



DIGITISE VPP App



Smart Home and DER Automated Control App



AI Baseline Energy and Cross-Sector Analytics



Energy Savings and Self-Consumption App



Health and Security App



Flexibility Marketplace App



Behavioural Insights Application



ENERGENIUS

**levEraging the eNErgy transition by gamifiEd
learning and AI, guided by cRoss sectoral
inteGrated sERvices and digital twiN models to
foster accessible and hUman-centered energy
Saving experiences**

COORDINATED BY:

Pablo Barrachina, MIWenergia

START DATE:

September 2024

PARTNERS:

17 (MIW, POLIMI, EUR, TITIC,
PSACEA/USUST, EDENTIFY, DTT,
INNO, RHOE, WEBRATIO, AQV,
ZENTRIX, EVIDENZE, ETRA,
SERVITLY, EMPA, SUPSI)

END DATE:

February 2028

CONCEPT & MAIN OBJECTIVES

ENERGENIUS is a project designed to empower citizens, communities, and organizations to take meaningful action in the energy transition.

ENERGENIUS aims to **democratize access to energy knowledge and tools**, helping everyone—not just experts—make smarter, greener choices, by combining digital innovation with behavioral transformation.

The project introduces the ENERGENIUS ECOSYSTEM an interoperable platform combining:

The ENERGENIUS COMMUNITY (ENC): a citizen-driven network for learning, sharing, and co-creating solutions.

The ENERGENIUS SUITE of Tools: Digital innovations that make energy efficiency easy and engaging including:

- **Scan-to-Digital Twin (S2DT):** Visualize and model buildings in 3D.

- **EN-PLAY:** A gamified learning environment to simulate and test energy actions.
- **GURU:** An AI-powered coach that offers personalized advice.
- **PANORAMA:** A visual analytics system integrating cross-sectoral data.

The ENMARKT: A dynamic marketplace where users can earn and spend ENcoins, the project's reward currency, by adopting sustainable behaviours.

A unique feature of ENERGENIUS is its integration of cross-sectoral data, spanning energy, mobility, real estate, healthcare, traffic, and environmental systems, into unified, intuitive dashboards and “Knowledge Arenas.” These insights will help users, planners, and policymakers better understand energy flows and opportunities for action.

The project will be validated in 10 pilot sites across Europe using the “3L” piloting methodology (Leaders, Learners, and Listeners), ensuring relevance across diverse geographic and socio-economic contexts.

RESULTS & EXPECTED IMPACT

ENERGENIUS will deliver a comprehensive, citizen-focused ecosystem of tools and services that foster digital energy literacy, behavioral change, and community-driven innovation.

Expected outcomes include:

- Broader **adoption of energy-saving practices**
- Improved **indoor comfort and awareness**
- Measurable **reductions in energy use**, particularly among **vulnerable and underrepresented groups**
- **Green tourism incentives**

The project contributes to a digitally inclusive energy market that values participation, rewards sustainable behaviour, and leaves no one behind—fostering social equity, environmental responsibility, and long-term resilience across Europe.



EU-DREAM

Bridging the digital divide in energy

COORDINATED BY:

João Catalão, Universidade do Porto

START DATE:

July 2024

END DATE:

December 2027

PARTNERS:

16 (Universidade do Porto, Aalborg Universitet, Universidad De Castilla-La Mancha, ensiel – Consorzio Interuniversitario, Aristotelio Panepistimio Thessalonikis, EPRI Europe, VITO, Fondazione Links, ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development, VTT -Teknologian Tutkimuskeskus, Cleanwatts Digital SA, SSE Airtricity LTD, DCSix Technologies Limited, Akkodis High Tech, IREN SPA, DOMX)

CONCEPT & MAIN OBJECTIVES

EU-DREAM designs and implements innovative digital technologies to assist citizens in exploring all the digitalisation possibilities. We aim to help citizens to increase control over energy use, providing them with an active role in the just energy transition, and supporting easy access to energy and flexibility markets.

Incorporating Digital Twins, Artificial Intelligence and Natural Language Processing technologies, users' digital interaction will be vastly simplified, empowering them with a user-friendly visualisation environment with oral control instructions. Multi-disciplinary approaches for consumer engagement in energy policy will be also offered together with social innovation tools.

RESULTS & EXPECTED IMPACT

We focus on overcoming barriers and understanding consumer motivations, combining technological advancements with social sciences and humanities expertise. We are now wrapping up the technical work surrounding our platform design and operation. In the next phase, our initiatives will be tested and demonstrated in six Living Labs across Portugal, Belgium, Italy, Ireland, Greece, and Denmark. By the end of the project, all our technical solutions will achieve high-level TRL 6-7 results. Through our work we expect to engage citizens in the energy transition, enhanced consumer satisfaction, foster new energy services and business models, speed up digitalization in the energy sector, and promote a human-centred digital and green transition.



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