SUSTAINABLE PLACES 2024

Organised by:

R2M RESEARCH TO MARKET SOLUTION

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY | LIST

23 - 25 SEPTEMBER 2024
EUROPEAN CONVENTION CENTER LUXEMBOURG

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Innovation through Collaboration: The #SmartEnergyCluster Fueling the Smart Energy Transition

25 September 2024

Katerina Papapostolou (NTUA)

Table of Content

Who we are

- **#SmartEnergyCluster is an initiative of the InEExS project**
  - ✔ The core concept of the LIFE project InEExS is the deployment of integrated energy services across sectors and carriers, and the tokenisation of energy saving data in a public blockchain
- **Managed by IEECP and EPU NTUA**
- **It has currently 25 EU (LIFE and Horizon 2020) projects**

InEExS
ENERGY SERVICES ON THE BLOCKCHAIN

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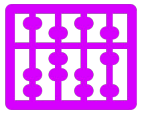
IEECP INSTITUTE FOR EUROPEAN ENERGY AND CLIMATE POLICY

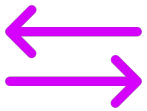
EPU N · T · U · A

#SmartEnergyCluster *is a collaborative effort of more than 20 EU projects focused on merging different* ***energy services*** *and incorporating* ***non-energy benefits*** *whilst overcoming market fragmentation and fostering* ***cooperation****. This inclusive approach bridges gaps and creates a common ground for* ***business development*** *across different segments.*

Purpose of the cluster



Establish synergies among projects with common topics of interest and KPIs.



Exchange knowledge in aspects of dissemination and communication activities and stakeholder engagement.

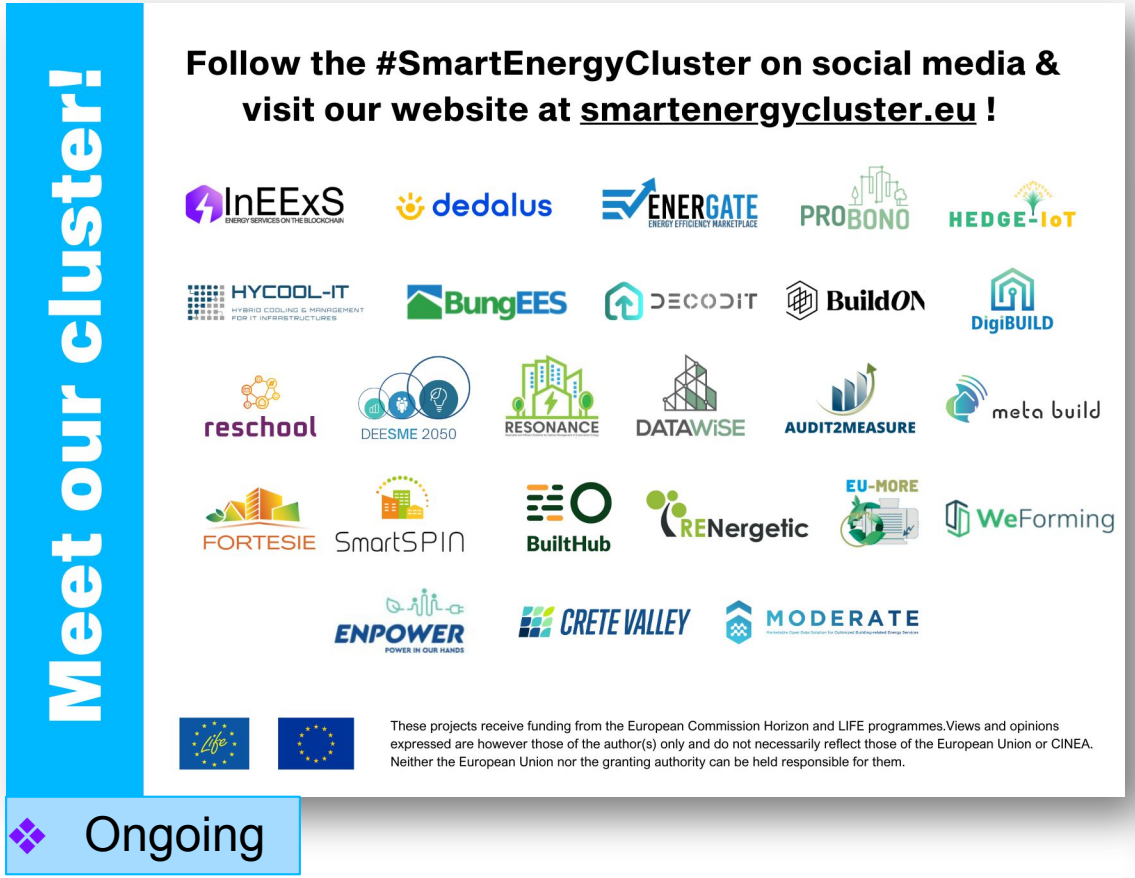
Take advantage of our combined experience, know-how and active participation with the scope of successfully promoting our projects.

Join our forces and work together in the framework of the dissemination, communication and exploitation of our projects activities and results, aiming at engaging interested and common target groups and multiplying our messages.

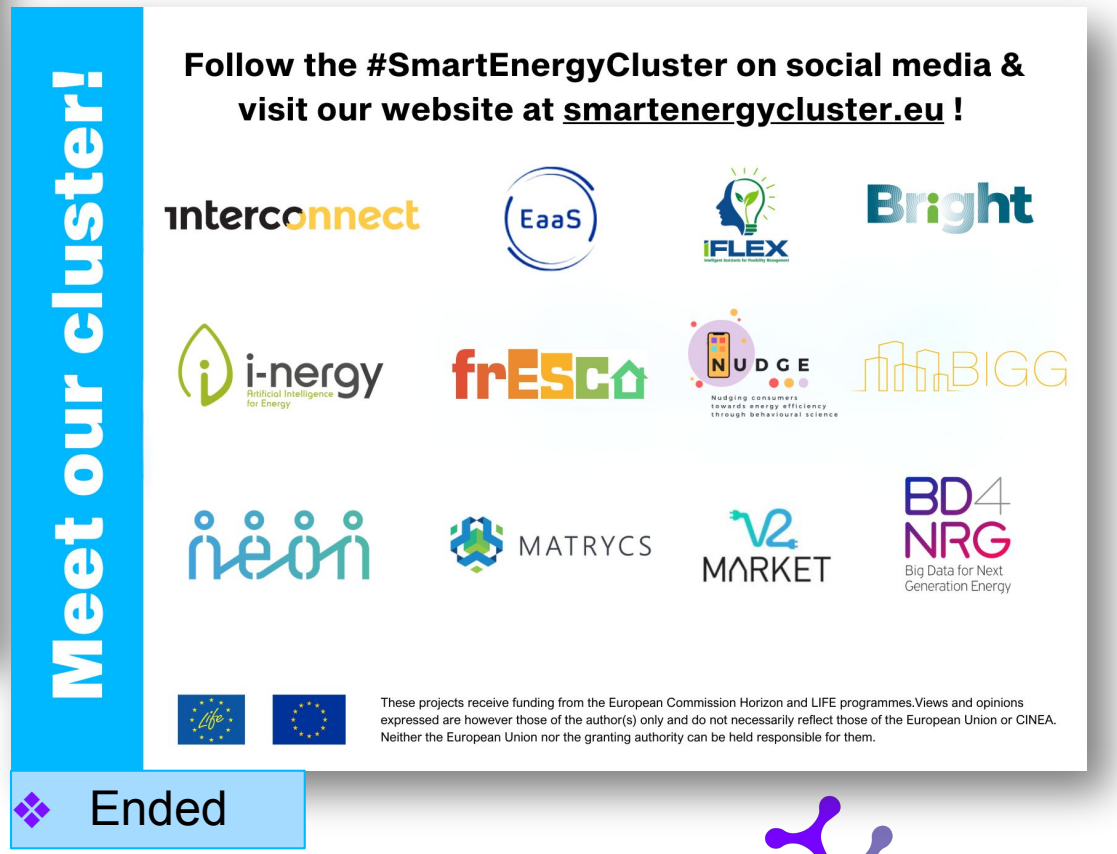
Define a common strategy building on cross-promotion, joint events and other collaboration activities that we can define together.

#SmartEnergyCluster Projects

- The cluster has 25 Ongoing Projects and 12 Ended Projects



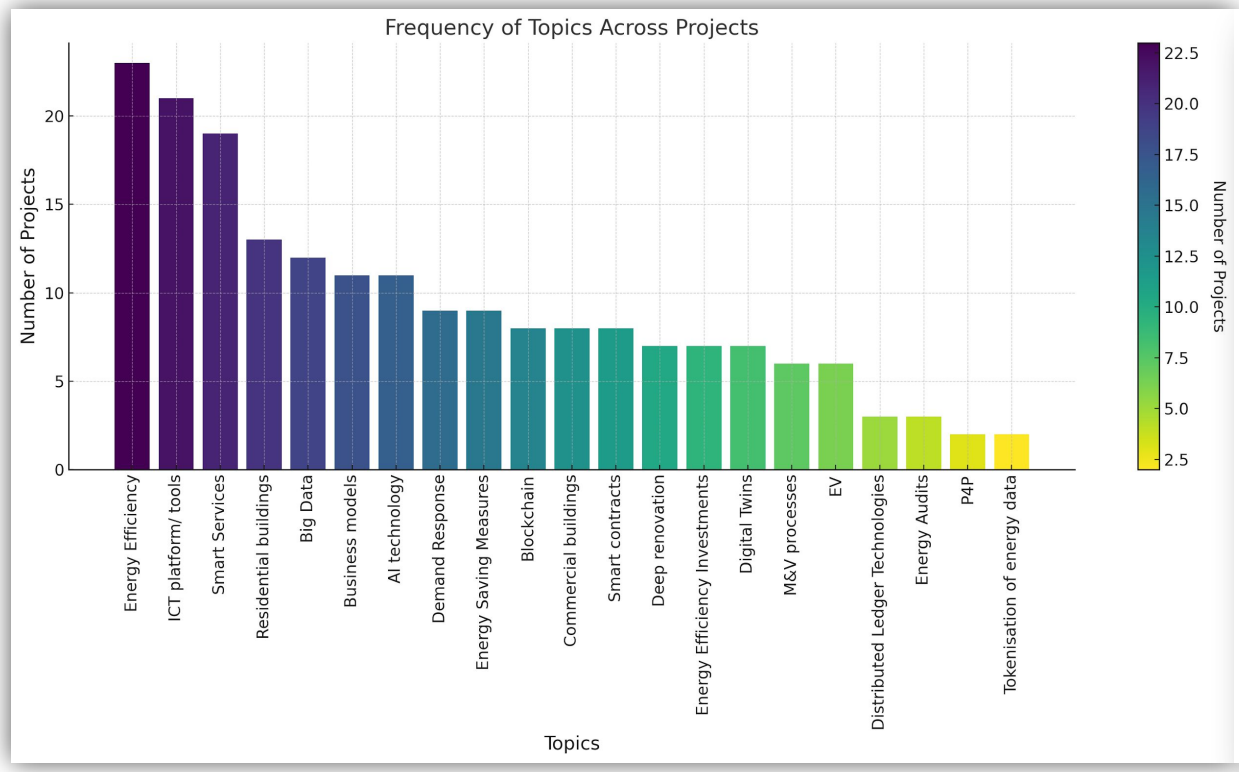
Ongoing

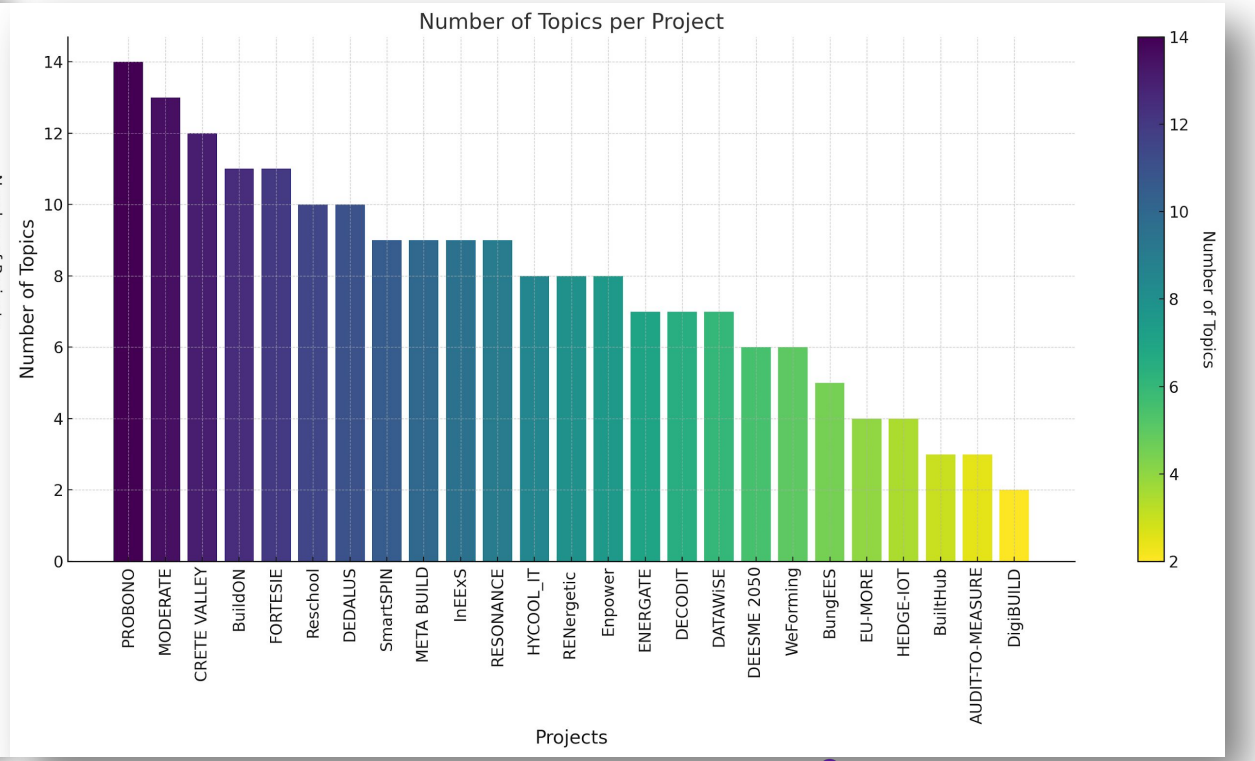


Ended

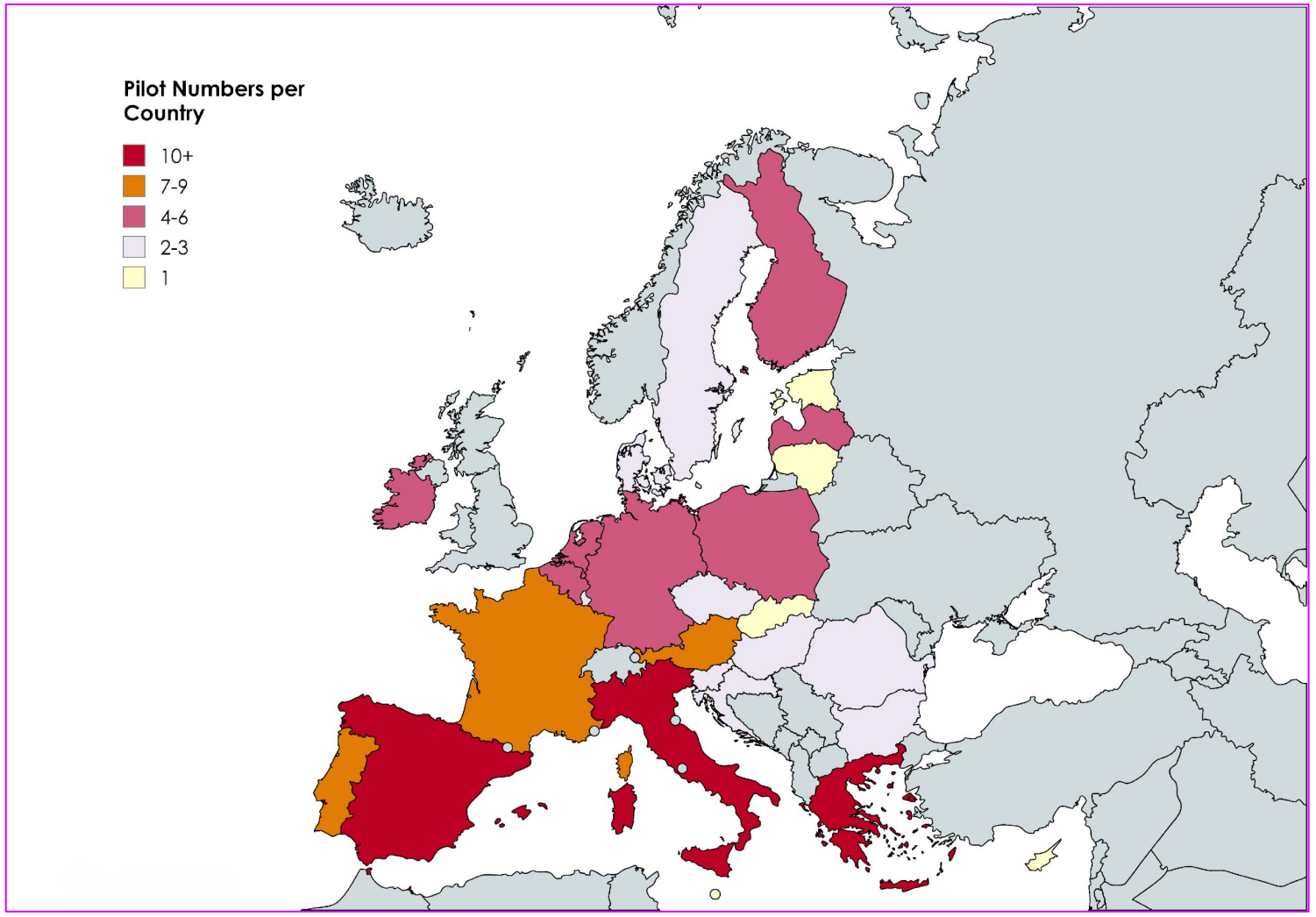
Cluster topics

- 21 topics identified through research in order to group projects.
- All projects are requested to fill in the application form.
- Filtering capabilities for identifying commonalities and similar fields of activities among the projects.
- This helps in creating bilateral synergies in technical aspects but also events organisation or material development.
- Energy Efficiency stands at the core of the cluster, with other topics varying in importance, represented from left





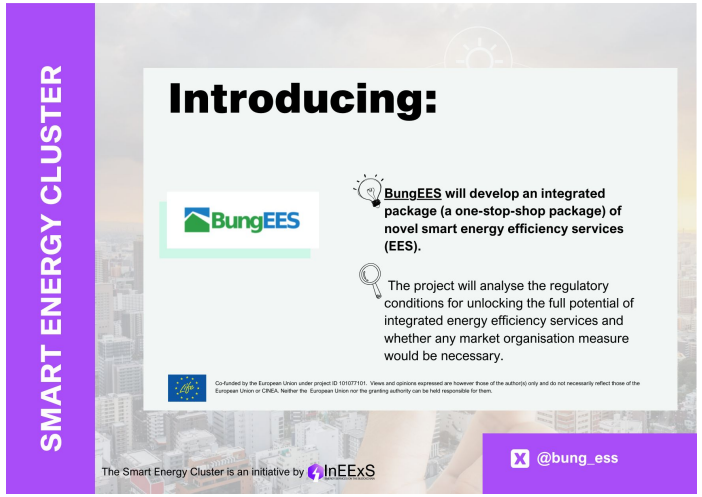
Cluster Pilot Countries

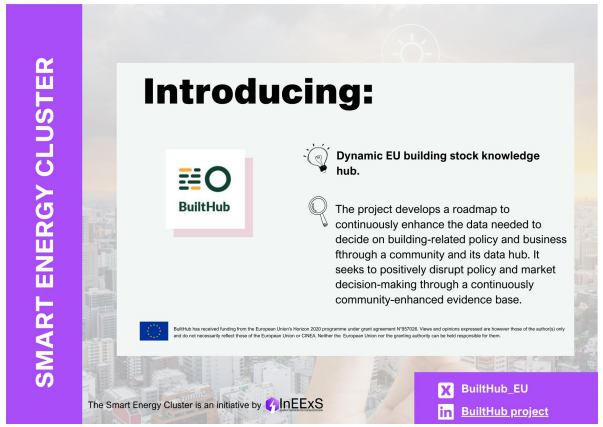


- Most Pilots in Greece, Italy and Spain
- 3 Pilots from other countries in Europe (not in EU Zone)
- Many pilots across 30 different countries that bring unique expertise in the #SmartEnergyCluster

Social media campaigns

- #SmartEnergyCluster
- #MeetourSmartEnergyCluster





Social media campaigns

InEExS Promotion of New Projects through Social Media

Meet our cluster!

Follow the #SmartEnergyCluster on social media & visit our website at smartenergycluster.eu !

These projects receive funding from the European Commission Horizon and LIFE programmes.Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

Tweet: ⚡Meet the members of the #SmartEnergyCluster, an initiative by #InEExS
We start with:

👫 @NUDGEH2020 - nudging consumers towards EE https://lnkd.in/eSqeTYpp
🏢 @matrycs_h2020 - big data applications for energy-efficient buildings https://matrycs.eu

Stay tuned for more!

LinkedIn Post: 💡A smart collaboration to make the energy transition a reality!

Meet our #SmartEnergyCluster, a team of 20 projects that have joined forces to maximise the impact of their work on #EnergyEfficiency.

Presenting🥁

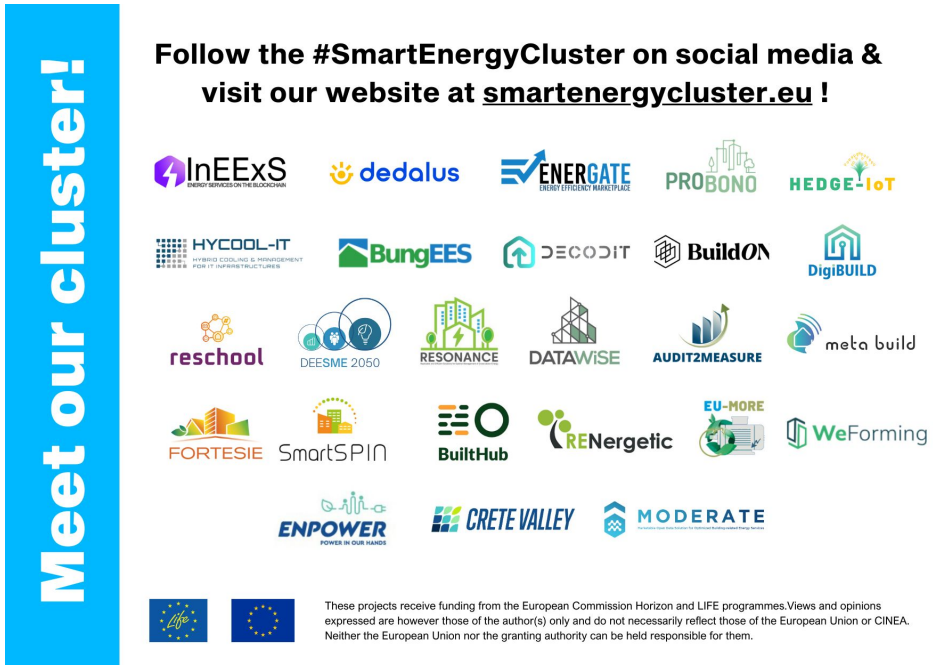
👫#NUDGE - nudging consumers towards energy efficiency using interventions based on behavioural science
🏢MATRYCS - addressing challenges in #bigdata management for energy-efficient buildings
Find out more about the projects👇
https://lnkd.in/eSqeTYpp
https://matrycs.eu/

And that's not all, over the coming weeks, keep an eye out for more #SmartEnergyCluster intros 🤝

#SustainableEnergy #EnergyTransition #EUGreenDeal LIFE Programme Institute for European Energy and Climate Policy Foundation (IEECP) SEVEn, The Energy Efficiency Center ICLEI Europe

Social media campaigns

Posts for new projects in the cluster



Tweet: 📣 Big News! 🙌🎉
🔹 We're thrilled to announce that our project is now a proud member of the #SmartEnergyCluster! 👏
Together with @LIFEprogramme & @HorizonEU projects, we're committed to driving forward the #Smart #EnergyTransition. 💪
🔹 Discover more about our collective efforts and what this means for the future of energy:
You can add here the link of your website announcement
👉Follow #SmartEnergyCluster to stay updated!

LinkedIn Post: 📣 We're proud to be part of the #SmartEnergyCluster!
💠 This collaboration marks a significant step towards the smart energy transition, with many projects uniting to leverage and amplify their outcomes collectively and transform our energy landscape.
The #SmartEnergyCluster aims to:
1️⃣ Collaborative Synergies: Aligning with projects that have overlapping interests and performance goals, we're setting the stage for a unified energy transition.
2️⃣ Exchange & Engagement: We prioritize the exchange of knowledge and engaging stakeholders through shared communication efforts, fostering a collaborative network.
3️⃣ Combined Expertise: Capitalizing on our collective experience and active participation, we aim to elevate the promotion of our innovative projects.
4️⃣ United Action: In the spirit of partnership, we are committed to the joint dissemination and exploitation of our results, targeting meaningful engagement and message amplification.
5️⃣ Strategic Development: We're dedicated to defining a cohesive strategy that includes cross-promotion and joint events to enhance our collaborative impact.

👉Follow #SmartEnergyCluster to stay updated!
For further insights into the #SmartEnergyCluster and to keep up with our progress, visit: You can add here the link of your website announcement

Some numbers from the cluster

- **37** total projects that have been part of the Cluster
- **25** projects currently part of the Cluster
- **2** Collaboration workshops
- **190** times the #SmartenergyCluster hashtag was used on social media
- **SharePoint** for pushing collaborations with supportive documents to share information and news

#SmartEnergyCluster Website (1/6)

Home page

- Information about the number of ongoing projects and what is the #SmartEnergyCluster
- Cluster goals and a slideshow of our projects within the cluster (ongoing)
- Latest News and Events and who is behind the creation of the cluster (with links to InEExS and EPU-NTUA)

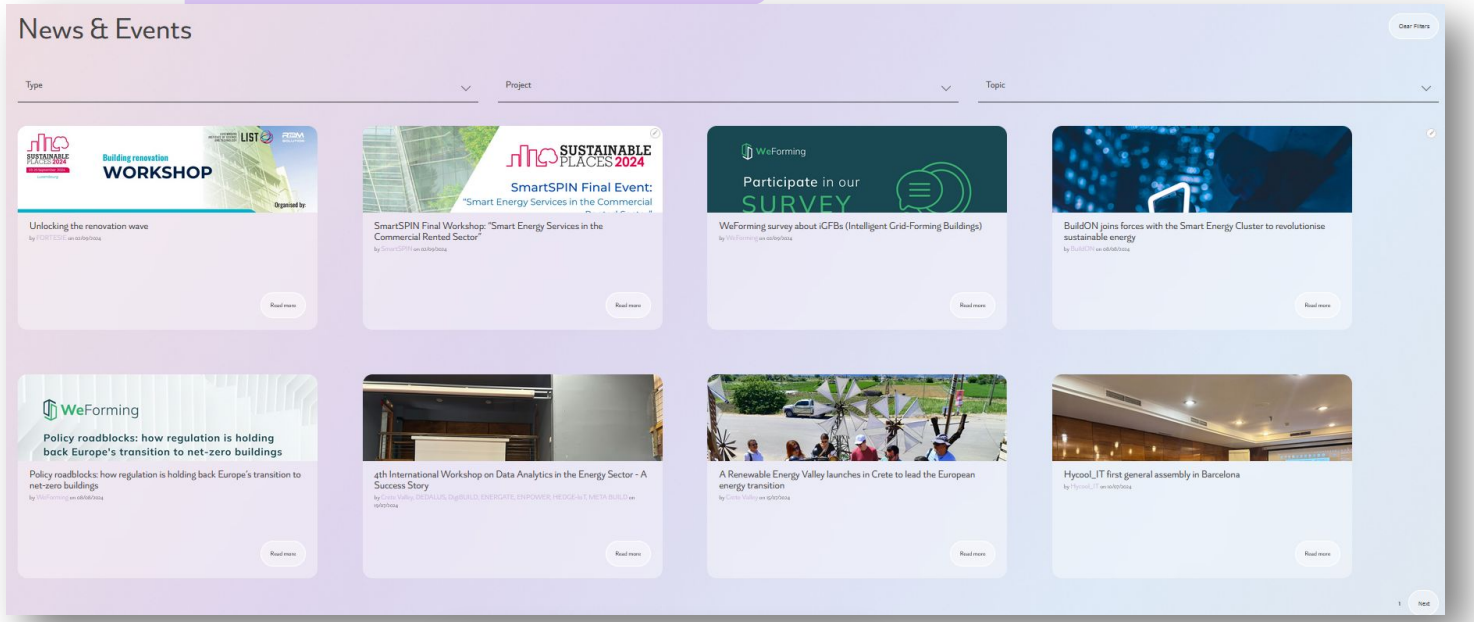
#SmartEnergyCluster Website (2/6)

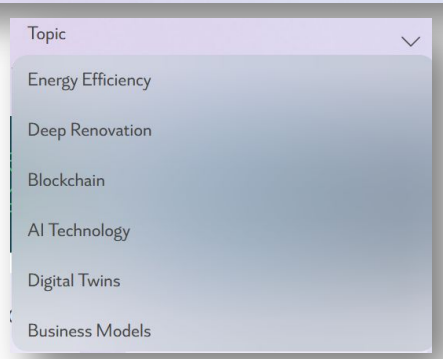
Our Cluster page

- All project logos are displayed
- Ongoing and past projects
- Links to the projects Websites

#SmartEnergyCluster Website (3/6)

News & Events Page

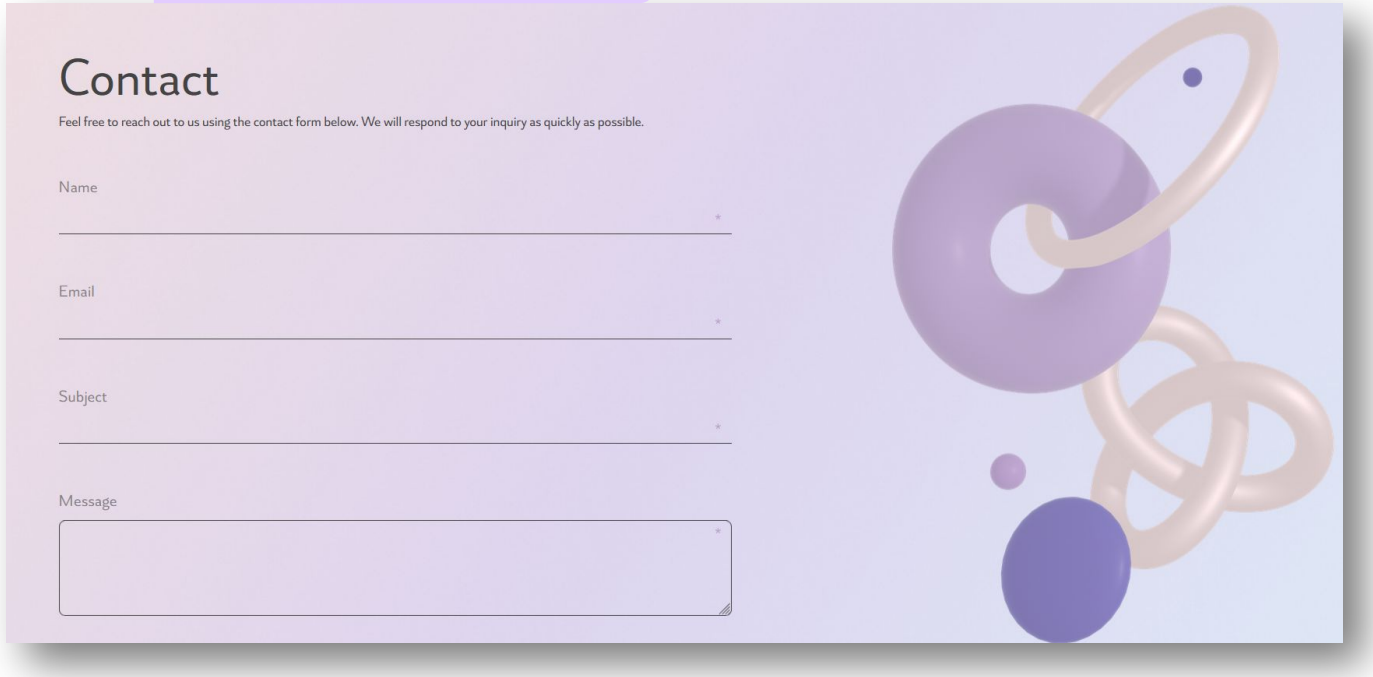




- News & Events in chronological order from projects within the cluster
- The user can filter the information based on project, type (News or Events) and per Topic

#SmartEnergyCluster Website (4/6)

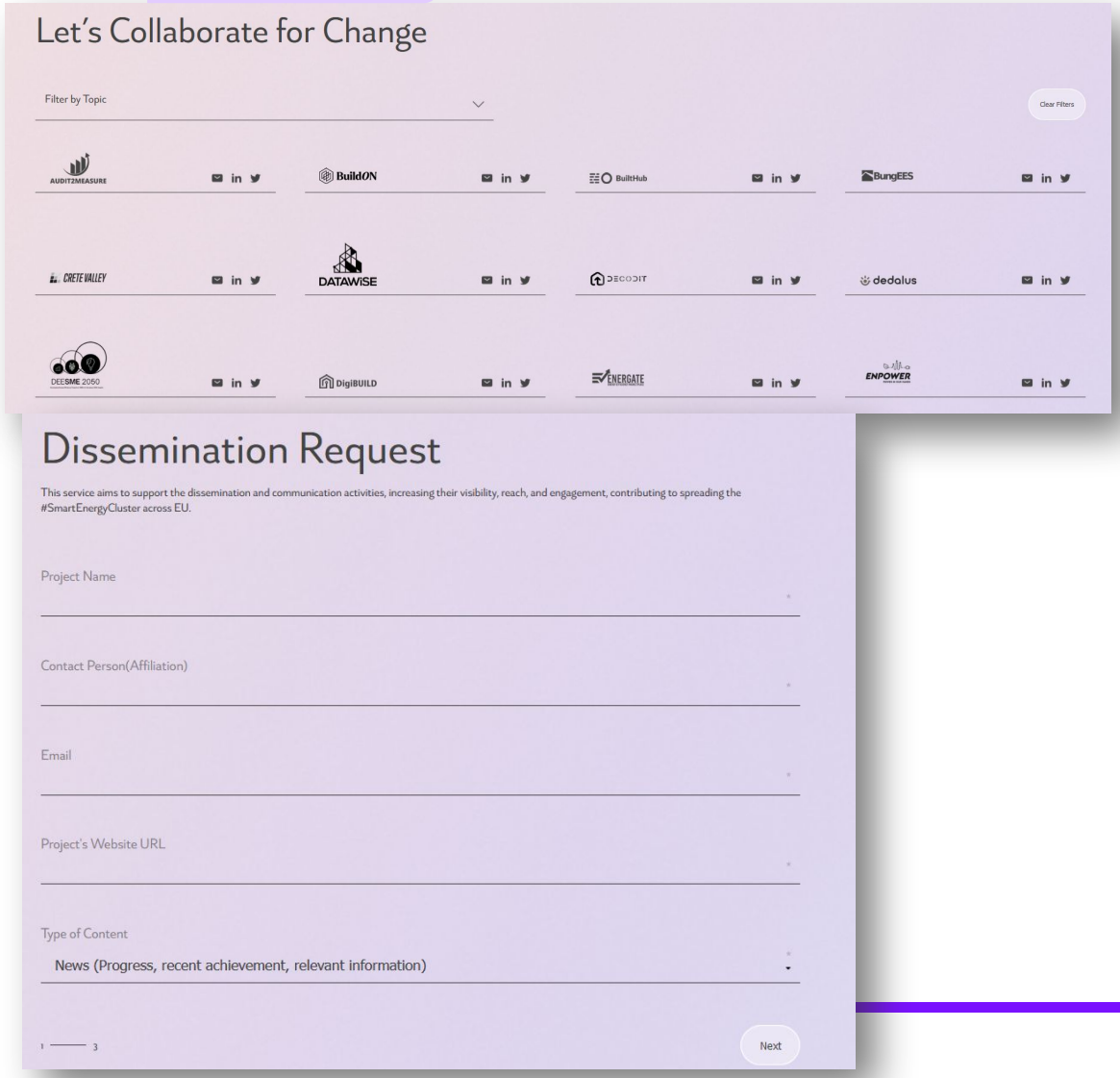
Contact page



- Navigate to the contact page of the website, fill out the necessary fields, and submit any queries or requests.

#SmartEnergyCluster Website (5/6)

Services

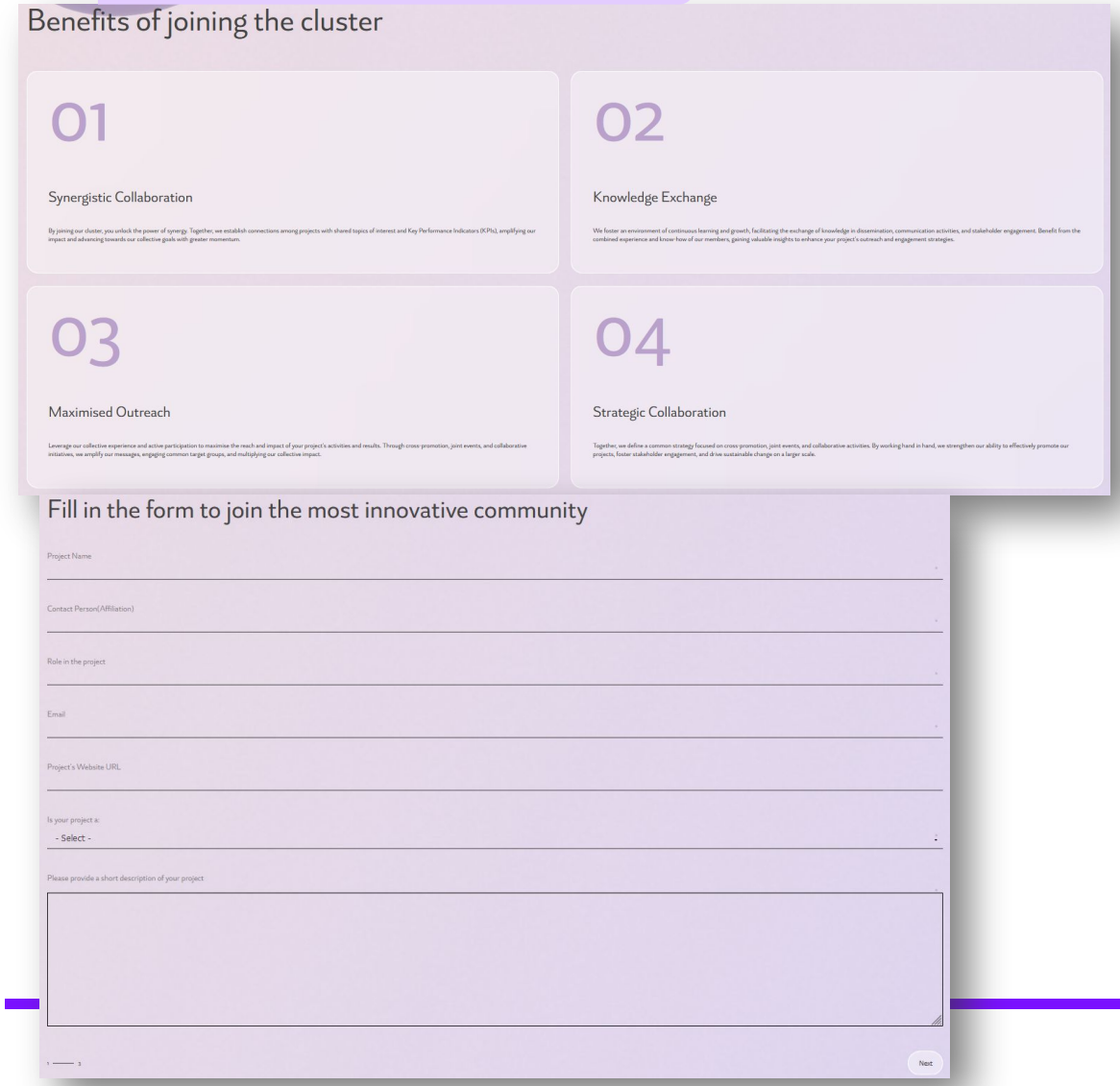


- All the information of the ongoing projects (social media, website, contact) so the collaboration becomes easier
- A dissemination request field, so that projects that joined the cluster can disseminate any activity through website or social media

Smart Energy Cluster

#SmartEnergyCluster Website (6/6)

Join The Cluster Page



- Benefits of joining the cluster
- <u>Simple form for any project to join the cluster</u> and use the services
- If the Projects connect with more than 50% of the topics, then they are accepted in the #SmartEnergyCluster and e-mail with instructions and detailed information on how to use the clusters' folders will be sent.

THANK YOU!

For more info, follow our hashtag, visit our website or contact us:

#SmartEnergyCluster

https://smartenergycluster.eu/

contact@smartenergycluster.eu kpapap@epu.ntua.gr; roberta@ieecp.org

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SmartSPIN

Introduction to the SmartSPIN project

Final Event, 25th September 2024
Sustainable Places 2024, European Convention Centre, Luxembourg

Ruchi Agrawal
International Energy Research Centre, Ireland

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

PROJECT OVERVIEW

Grant Agreement No: 10133744

Coordinator: IERC International Energy Research

Participants: 7 partners from 4 countries: Ireland, Greece, Netherlands, Spain.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

40%	36%	75%	25%
of energy consumption	of carbon emissions	buildings are energy ineffcient	non-residential category

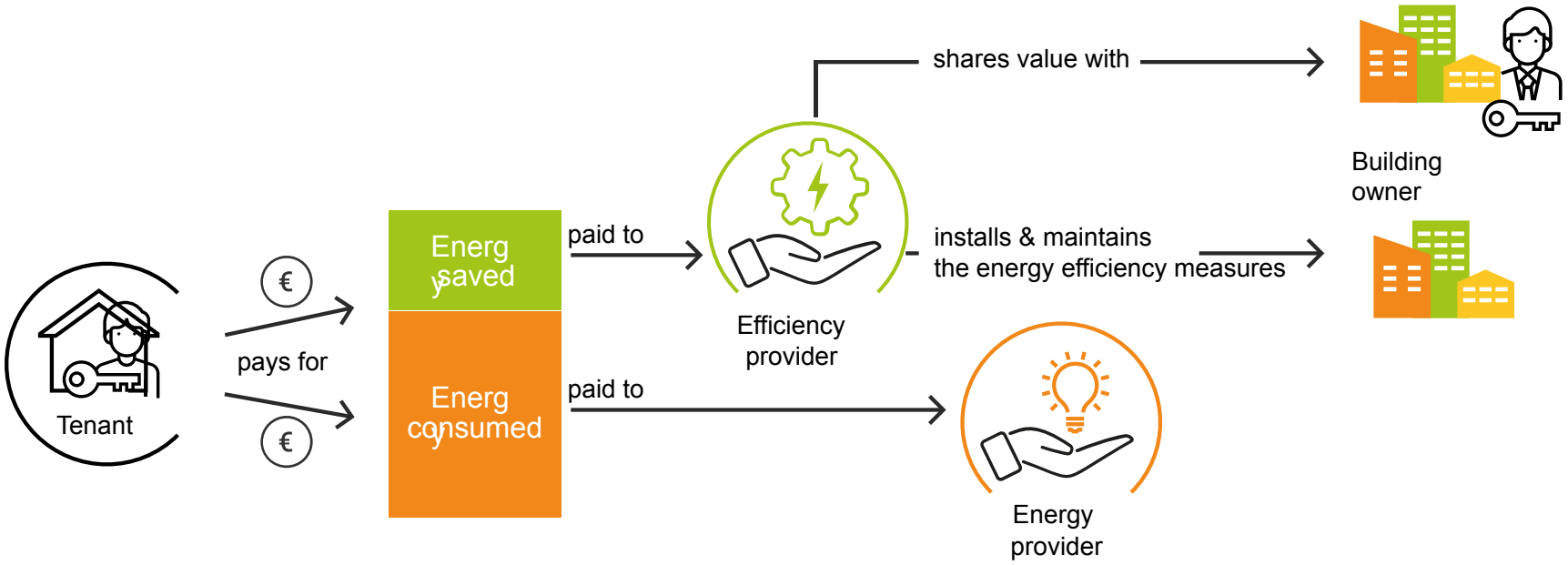
Problem Description

- In Europe buildings -
  - 40% of energy consumption
  - 36% of carbon emissions.
  - Over 75% are energy ineffcient
  - 25% non-residential category
  - Split incentive problem

- Article 19 of the Energy Efficiency Directive (EED)

SmartSPIN Solution

- Innovative business model
- Improve energy efficiency and flexibility
- Smart Energy Services
- Commercial rented sector
- Fairer shared benefits to all parties involved



SmartSPIN Objectives

1

Developing an innovative business model and new contractual templates

Demonstrating feasibility, and effectiveness of the novel business model

2

3

Showcasing use of data generated from smart equipment for control measuresx

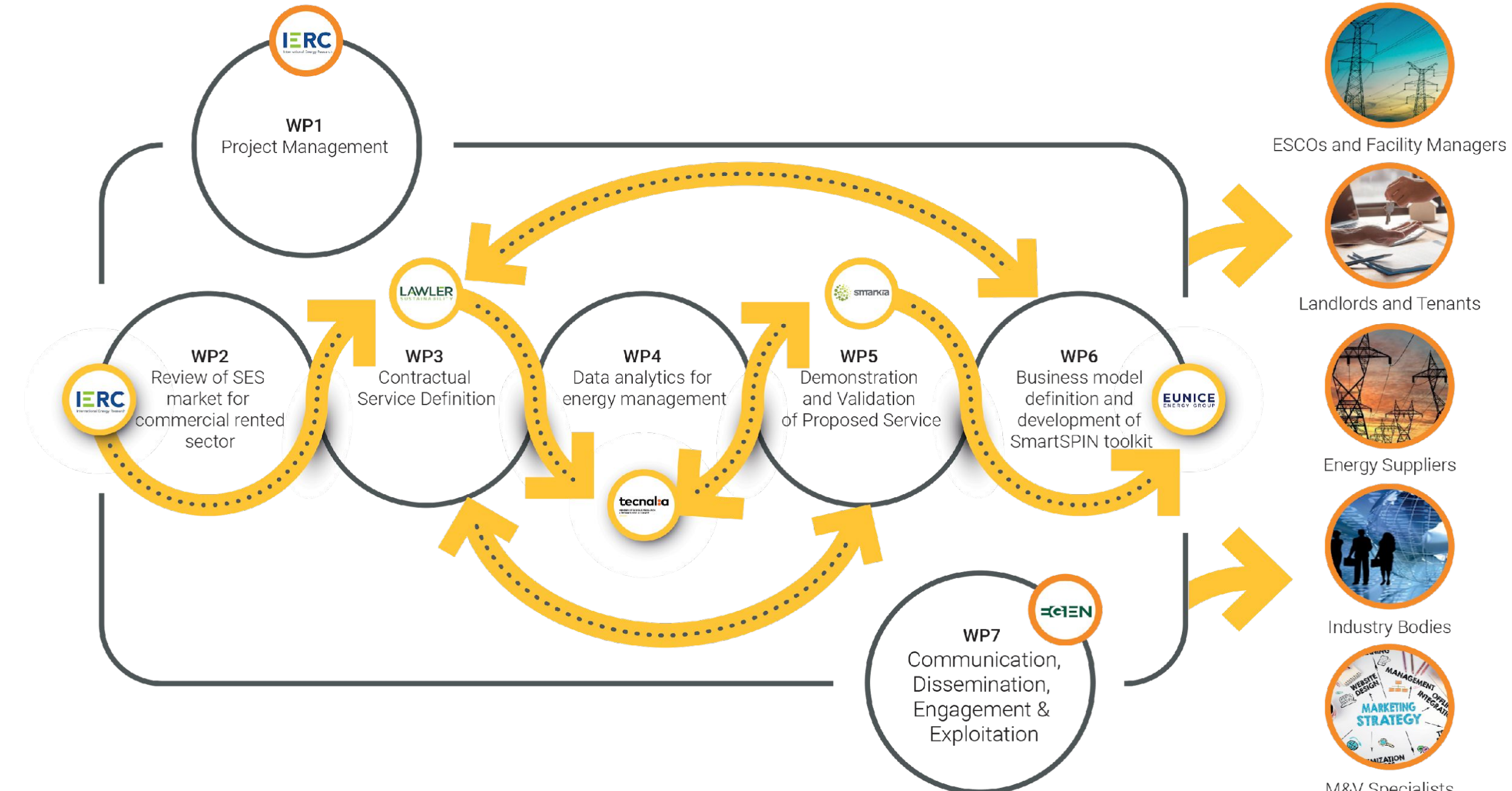
Addressing the barriers to energy efficiency projects in targeted sector.

4

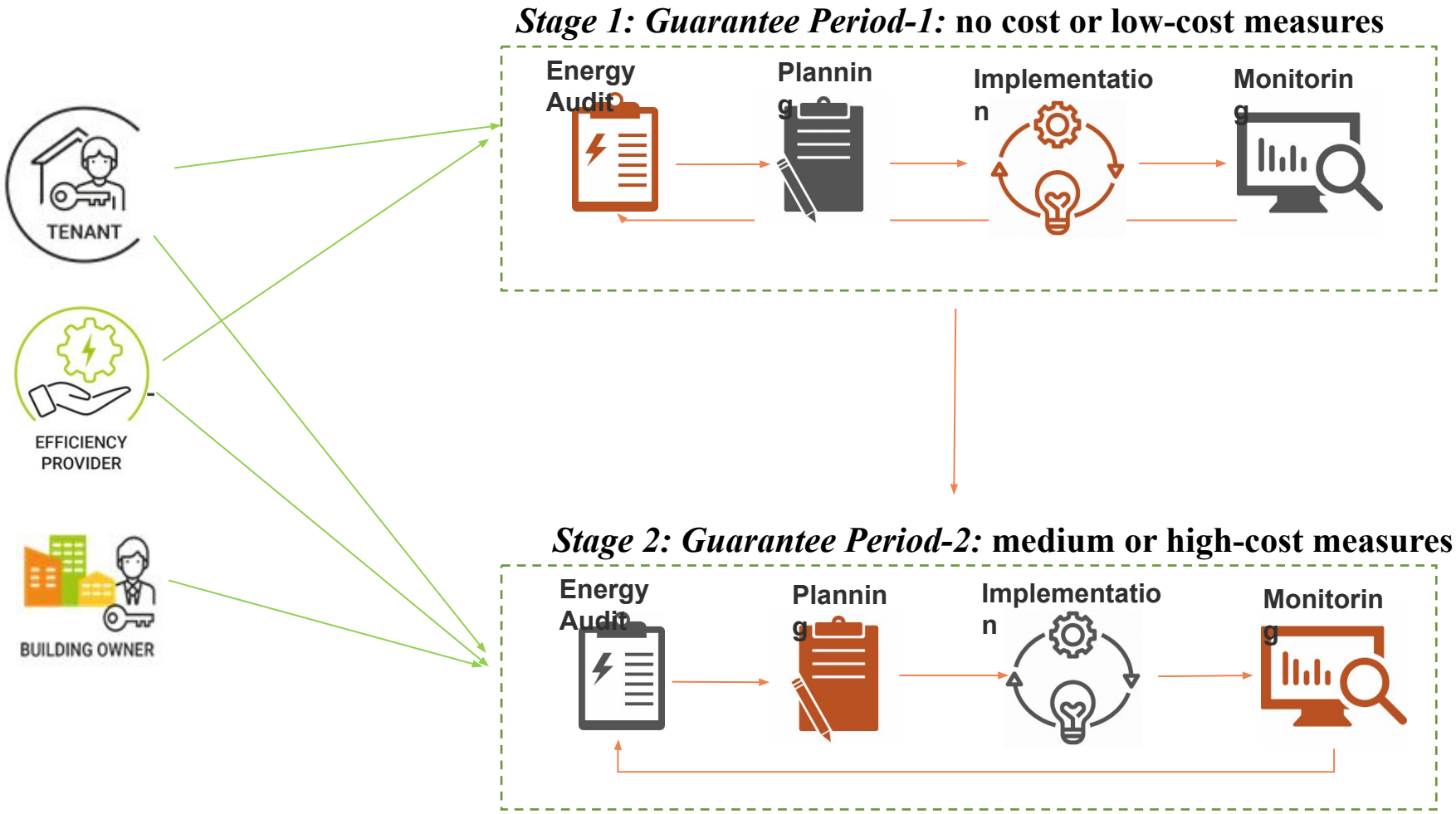
5

Engaging and training key market stakeholders

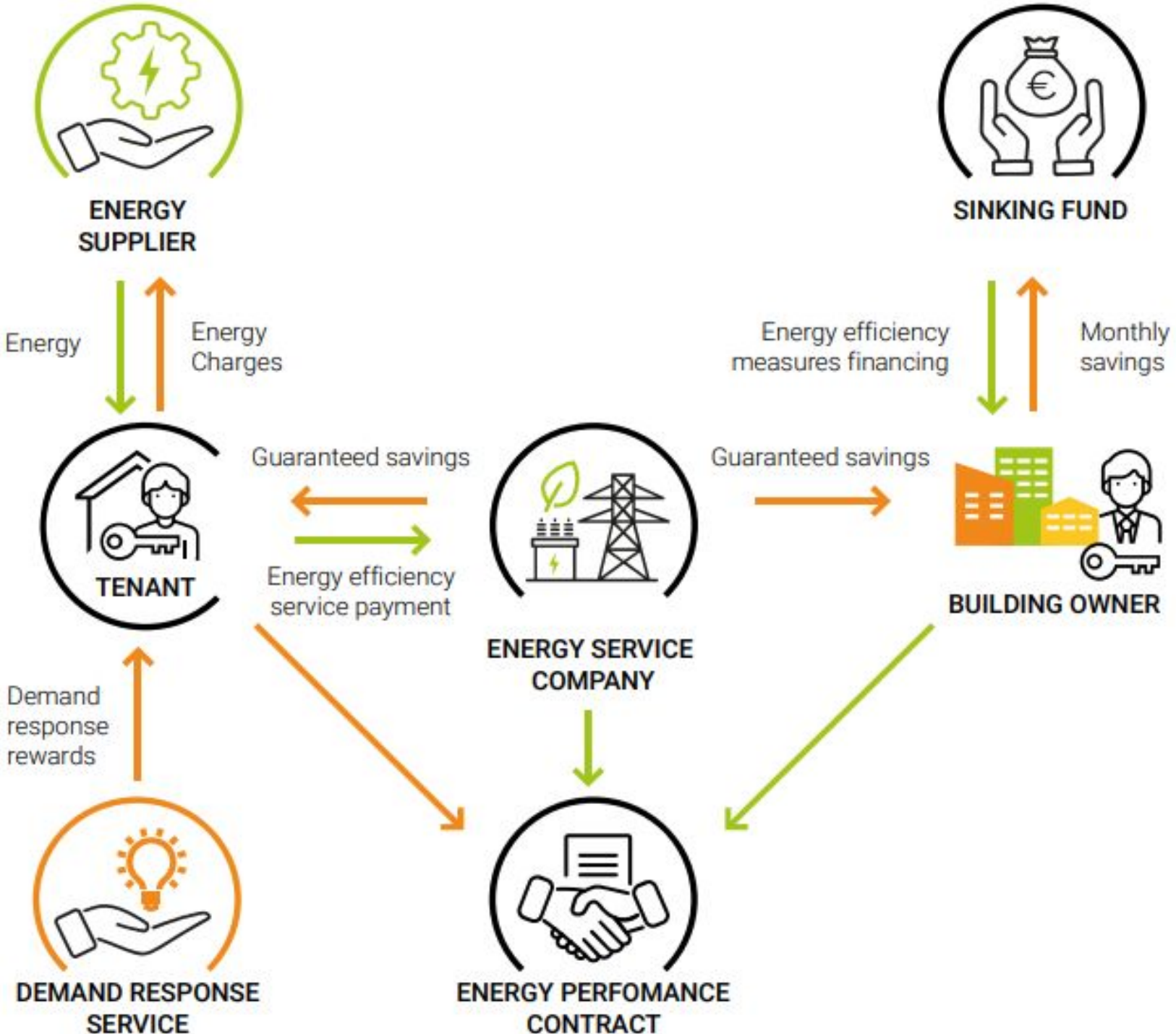
Work Plan


IERC
WP1
Project Management
IERC
WP2
Review of SES market for commercial rented sector
LAWLER
WP3
Contractual Service Definition
tecnalia
WP4
Data analytics for energy management
smarkia
WP5
Demonstration and Validation of Proposed Service
EUNICE ENERGY GROUP
WP6
Business model definition and development of SmartSPIN toolkit
ECIEN
WP7
Communication, Dissemination, Engagement & Exploitation
ESCOs and Facility Managers
Landlords and Tenants
Energy Suppliers
Industry Bodies
MARKETING STRATEGY
M&V Specialists

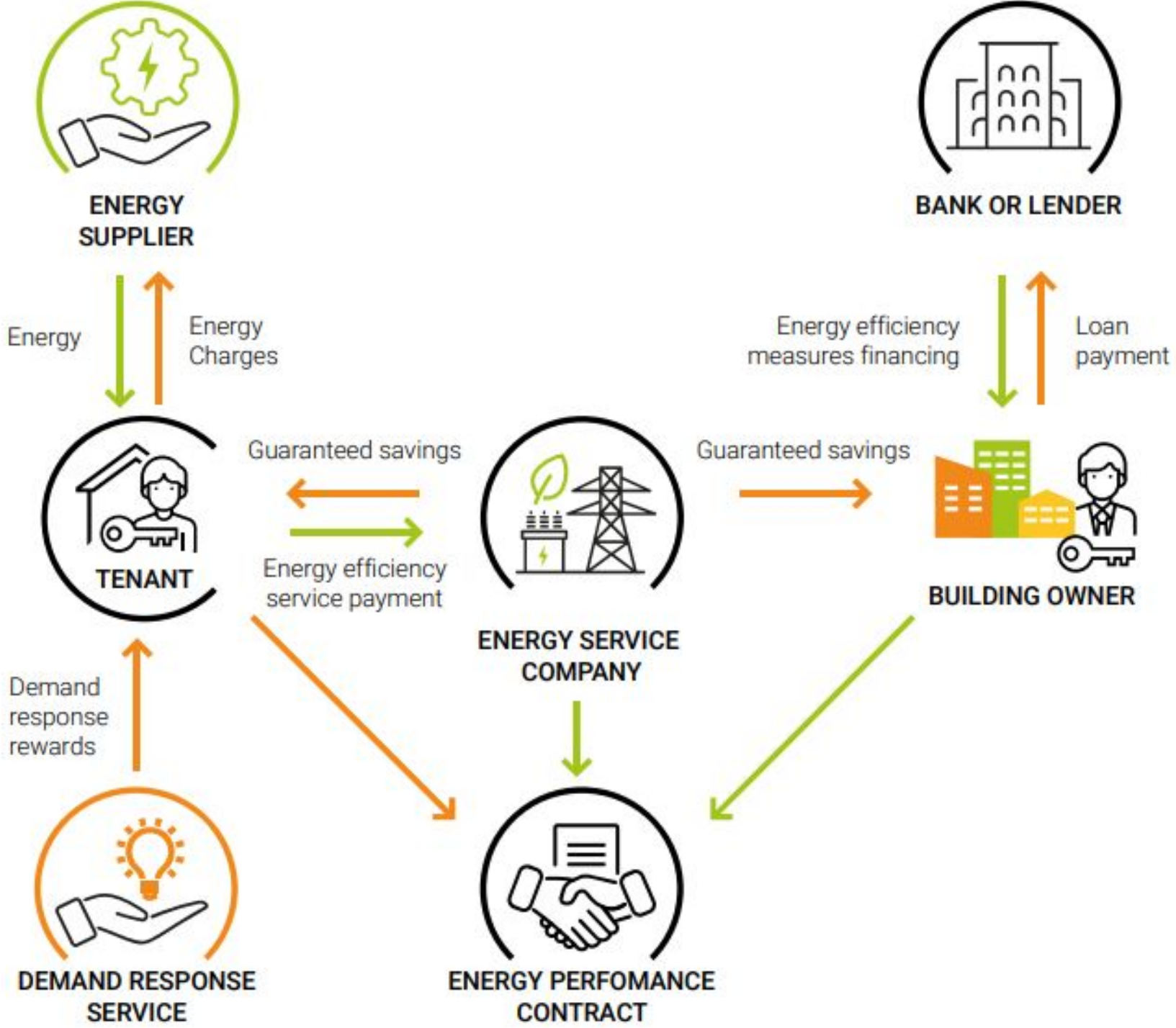
SmartSPIN Business Model – 2 stage approach



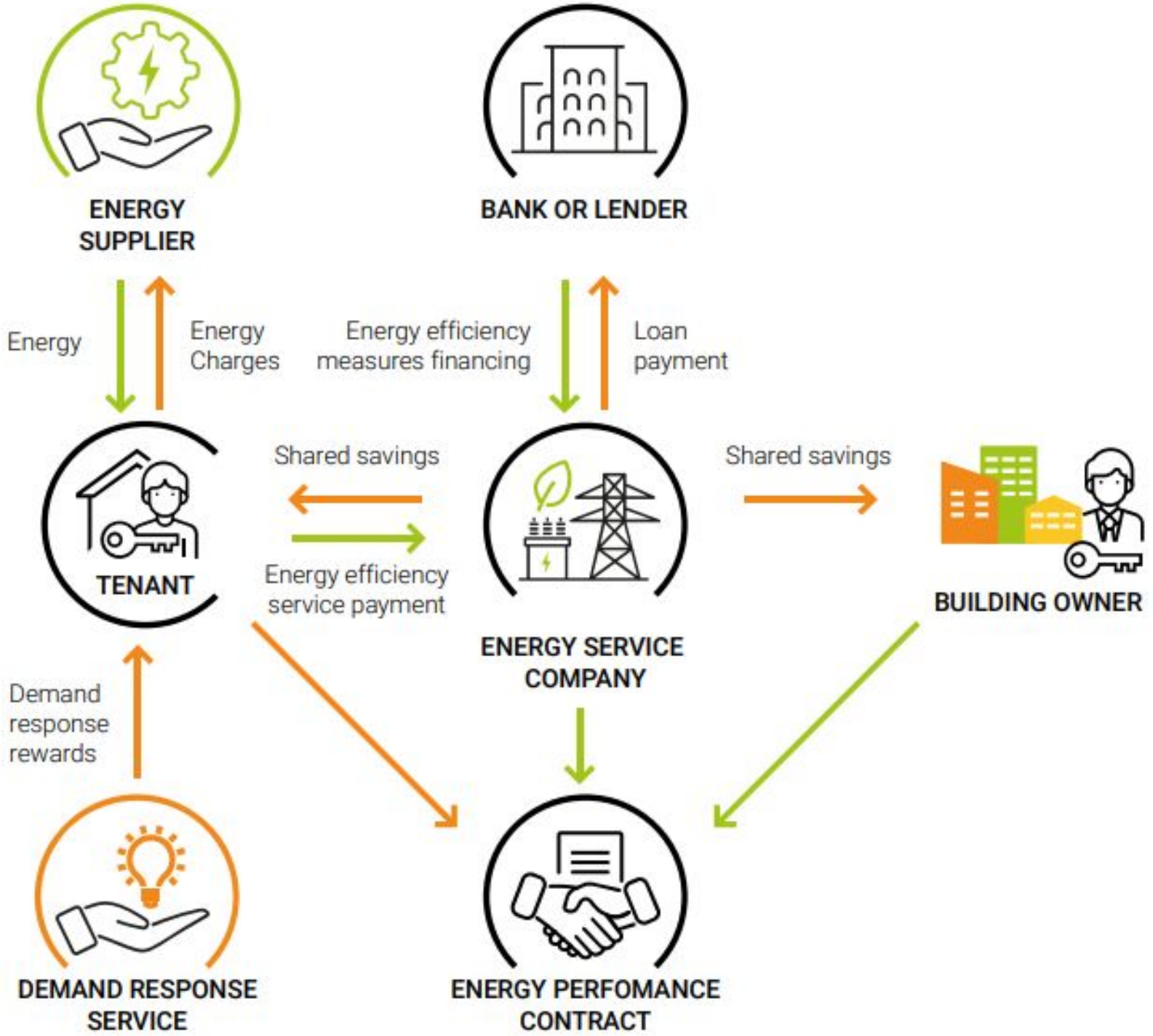
SmartSPIN Business Model



SmartSPIN Business Model



SmartSPIN Business Model



SmartSPIN Pilot Building in Ireland

- Office Building at 30 Herbert Street, Dublin, Ireland

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

SmartSPIN Pilot Building in Greece

- i4G building complex, Thessaloniki, Greece

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

SmartSPIN Pilot Buildings in Spain

Plenilunio Mall, Madrid

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

SmartSPIN Pilot Buildings in Spain

La Gavia, Madrid

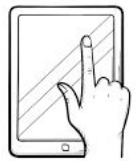
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Elements of SmartSPIN Toolkit

1

SmartSPIN Contractual Template

SmartSPIN Interactive Web-App



2

3

SmartSPIN Early Building Performance Diagnostics Web-dashboard

SmartSPIN Measurement & Verification App

4

5

SmartSPIN Visualisation Dashboard

SmartSPIN Gamification App

6

Expected Impacts

1

4.72 GWh/year primary energy saving

812 tCO_{2eq}/year GHG saving

2

3

€7.38m investment in energy efficiency

Improved up-take of innovative data gathering and processing methods

4

5

126 new job opportunities

Thank you!

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

SmartSPIN

The SmartSPIN project: results, lessons learned and exploitation

Luciano De Tommasi

Final Event

Sustainable Places 2024, European Convention Center, Luxembourg

25th September 2024

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

Outline

- Update on Key Performance Indicators
- Validation of the SmartSPIN Business model
- Proposed arrangements of the Smart Energy Service at Pilot sites
- Further exploitation and conclusions

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Key Performance Indicators for Ireland

30 Herbert Street, Dublin

Project Performance Indicator	Planned	Current estimation
Floor Area (m^2)	7,100	
Baseline Electricity Consumption (GWh/year)	0.89	0.89
Baseline Natural Gas Consumption (GWh/year)	0.91	0.91
Renewable Electricity Generation (GWh/year)	0.03	0
Primary Energy Saving triggered by the project (GWh/year)	0.29	**0.16**
Reduction in GHG emission triggered by the project (tonnes CO2eq/year)	59	**43.65**
Investment in sustainable energy triggered by the project (€M)	0.5	**0.07**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Key Performance Indicators for Greece

Project Performance Indicator	Planned	Current estimation
Floor Area (m^2)	3,400	
Baseline Electricity Consumption (GWh/year)	0.40	0.40
Baseline Natural Gas Consumption (GWh/year)	0.00	0.00
Renewable Electricity Generation (GWh/year)	0.17	0.17
Primary Energy Saving triggered by the project (GWh/year)	0.45	0.45
Reduction in GHG emission triggered by the project (tonnes CO2eq/year)	137	137
Investment in sustainable energy triggered by the project (€M)	0.17	0.17

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Key Performance Indicators for Spain

Project Performance Indicator	Planned	Current estimation
Floor Area (m^2)	156,066	
Baseline Electricity Consumption (GWh/year)	9.21 (GA)	7.66 (2021)
Baseline Natural Gas Consumption (GWh/year)	1.41	1.41
Renewable Electricity Generation (GWh/year)	1.16	**2.08***
Primary Energy Saving triggered by the project (GWh/year)	3.99	**4.81****
Reduction in GHG emission triggered by the project (tonnes CO2eq/year)	617	**743**
Investment in sustainable energy triggered by the project (€M)	6.71	6.71

* Plenilunio: 1.369 GWh/year; La Gavia: 0.707 GWh/year
** Plenilunio (electricity): 2.65 GWh/year, La Gavia (electricity): 2.07 GWh/year, Total natural gas: 0.09 GWh/year

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Key Performance Indicators total

Project Performance Indicator	Planned	Current estimation
Floor Area (m^2)	166,566	166,566
Baseline Electricity Consumption (GWh/year)	11.54	9.99
Baseline Natural Gas Consumption (GWh/year)	3.93	3.93
Renewable Electricity Generation (GWh/year)	1.36	**2.25**
Primary Energy Saving triggered by the project (GWh/year)	4.72	**5.42**
Reduction in GHG emission triggered by the project (tonnes CO2eq/year)	812	**923.65**
Investment in sustainable energy triggered by the project (€M)	7.38	**6.95**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Validation of the SmartSPIN Business Model

Validation: *Focus on the core aspects of the business model, making it more compact and simpler*

SmartSPIN Business Model

Designed for: Energy Service Companies

Designed by: SmartSPIN project

Version: 2.0

Key Partners

Materials and components suppliers (smart devices, renewable energy sources, energy storage components and infrastructure, e-mobility infrastructure, smart monitoring & management platform).

Building automation and technology installers.

Building services engineering companies.

Project financiers.

Energy Performance Contracting Facilitators.

Building services engineers and designers.

Energy efficiency consultants.

Key Activities

Select of one or more energy efficiency measures. Elaborate an implementation plan for energy efficiency measures.

Define the energy efficiency service price (service fee paid by clients) and plan of payments.

Implement agreed energy efficiency measures.

Collect energy consumption data (system monitoring) and optimise the installed measures.

Run the energy performance contract. Measure and verify energy savings and determine recurring payments of clients.

Perform system maintenance regularly.

Train clients on how to use of their equipment and appliances to reduce energy consumption.

Key Resources

Capital from project financiers and grants for the installation of energy efficiency measures.

Contractual templates to implement the smart energy service in commercial rented properties.

Energy efficient equipment and measures. Technologies for smart controls. Building Management Systems. Meters, sensors, data loggers.

Gamification app, building performance diagnostic app, measurement and verification app.

Value Propositions

Increased value of the property after installation of energy efficiency measures and BMS upgrades.

Renovated property and non-energy benefits such as increased indoor comfort (e.g. thermal comfort and air quality).

The service fee paid monthly by the renters to the ESCO for the energy efficiency service.

The monthly payment performed by ESCO to the building owner to share the value of the energy savings achieved by renters.

The service fee paid by the building owner to the ESCO (optional, applicable only if the building owner occupies part of the building).

The responsibility taken by the ESCO for the installation, commissioning, monitoring and regular maintenance of equipment, devices and systems and the provision of guaranteed energy savings to their clients.

Customer Relationships

Agreement between ESCO and clients about energy efficiency measures to be installed and the subject responsible for project financing (ESCO or building owner).

Negotiation about the recurring service fee payment performed by each client to the ESCO.

Invoice for the energy efficiency service sent by ESCO to clients.

Receipt for the recurring payment received by the building owner from the ESCO.

Channels

Website and blog.
Printed posters displayed at strategic locations. Printed or digital flyers or brochures.
Social media channels.
Printed or emailed newsletters.
Press releases. TV or radio advertisements.
Outreach at trade shows and sectoral events.
Outreach via building owners and managers associations.
Business referral.

Customer Segments

Building owners and renters of different typologies of commercial properties, such as:

- Industrial buildings (e.g. manufacturing facilities, warehouses, etc)
- Retail (e.g. clothing stores, commercial banks, restaurants, etc)
- Office buildings
- Healthcare facilities
- Hotels and hospitality buildings
- Special or mixed purpose buildings (e.g., airports, shopping centres, recreational centres)

Cost Structure

Purchase cost of equipment and energy efficiency measures. Financing costs. Installation costs. Operation and Maintenance costs. Costs for consultants and contractors. Costs associated with the measurement and verification of energy savings. ESCO personnel costs. Recurrent monetary reward to the building owner. Marketing and advertisement costs.

Revenue Streams

Main revenue stream associated with the value of part of the energy savings obtained by the clients, i.e., renters and building owner (the latter only if they occupy part of the building). Revenue stream for the operation and maintenance service. Additional revenue stream for equipment rent, in case the ESCO owns the equipment and rents it to the client for a fixed monthly fee. All the revenue streams are collected through the service fee.

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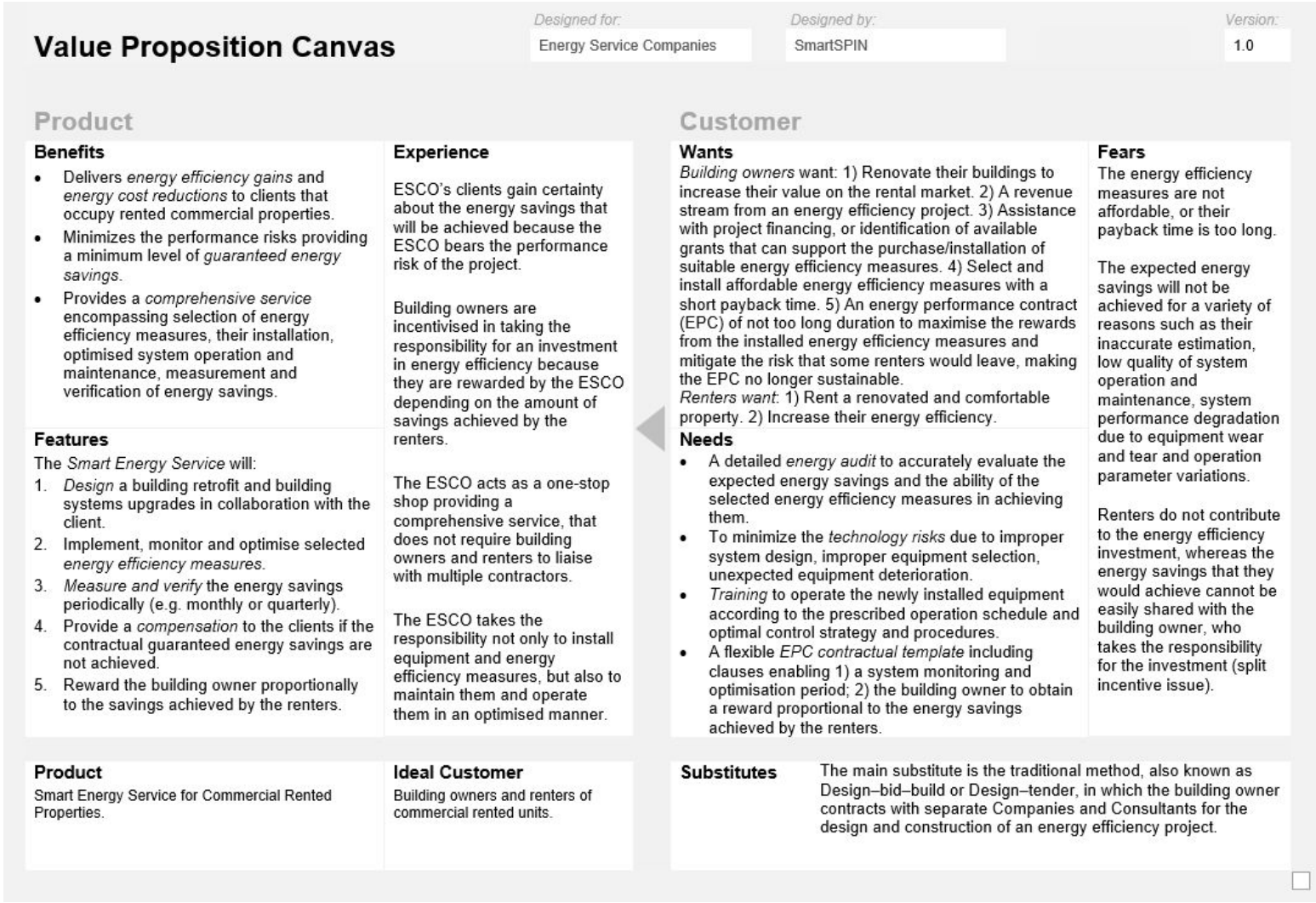
Validation of the SmartSPIN Business Model

Validation: *Value proposition matching customer's wants, needs and fears*



Value Proposition Canvas

Designed for: Energy Service Companies | Designed by: SmartSPIN | Version: 1.0

Product

Benefits

- Delivers *energy efficiency gains* and *energy cost reductions* to clients that occupy rented commercial properties.
- Minimizes the performance risks providing a minimum level of *guaranteed energy savings*.
- Provides a *comprehensive service* encompassing selection of energy efficiency measures, their installation, optimised system operation and maintenance, measurement and verification of energy savings.

Features

The *Smart Energy Service* will:

1. *Design* a building retrofit and building systems upgrades in collaboration with the client.
2. Implement, monitor and optimise selected *energy efficiency measures*.
3. *Measure and verify* the energy savings periodically (e.g. monthly or quarterly).
4. Provide a *compensation* to the clients if the contractual guaranteed energy savings are not achieved.
5. Reward the building owner proportionally to the savings achieved by the renters.

Experience

ESCO's clients gain certainty about the energy savings that will be achieved because the ESCO bears the performance risk of the project.

Building owners are incentivised in taking the responsibility for an investment in energy efficiency because they are rewarded by the ESCO depending on the amount of savings achieved by the renters.

The ESCO acts as a one-stop shop providing a comprehensive service, that does not require building owners and renters to liaise with multiple contractors.

The ESCO takes the responsibility not only to install equipment and energy efficiency measures, but also to maintain them and operate them in an optimised manner.

Customer

Wants

Building owners want: 1) Renovate their buildings to increase their value on the rental market. 2) A revenue stream from an energy efficiency project. 3) Assistance with project financing, or identification of available grants that can support the purchase/installation of suitable energy efficiency measures. 4) Select and install affordable energy efficiency measures with a short payback time. 5) An energy performance contract (EPC) of not too long duration to maximise the rewards from the installed energy efficiency measures and mitigate the risk that some renters would leave, making the EPC no longer sustainable.
Renters want: 1) Rent a renovated and comfortable property. 2) Increase their energy efficiency.

Needs

- A detailed *energy audit* to accurately evaluate the expected energy savings and the ability of the selected energy efficiency measures in achieving them.
- To minimize the *technology risks* due to improper system design, improper equipment selection, unexpected equipment deterioration.
- *Training* to operate the newly installed equipment according to the prescribed operation schedule and optimal control strategy and procedures.
- A flexible *EPC contractual template* including clauses enabling 1) a system monitoring and optimisation period; 2) the building owner to obtain a reward proportional to the energy savings achieved by the renters.

Fears

The energy efficiency measures are not affordable, or their payback time is too long.

The expected energy savings will not be achieved for a variety of reasons such as their inaccurate estimation, low quality of system operation and maintenance, system performance degradation due to equipment wear and tear and operation parameter variations.

Renters do not contribute to the energy efficiency investment, whereas the energy savings that they would achieve cannot be easily shared with the building owner, who takes the responsibility for the investment (split incentive issue).

Product

Smart Energy Service for Commercial Rented Properties.

Ideal Customer

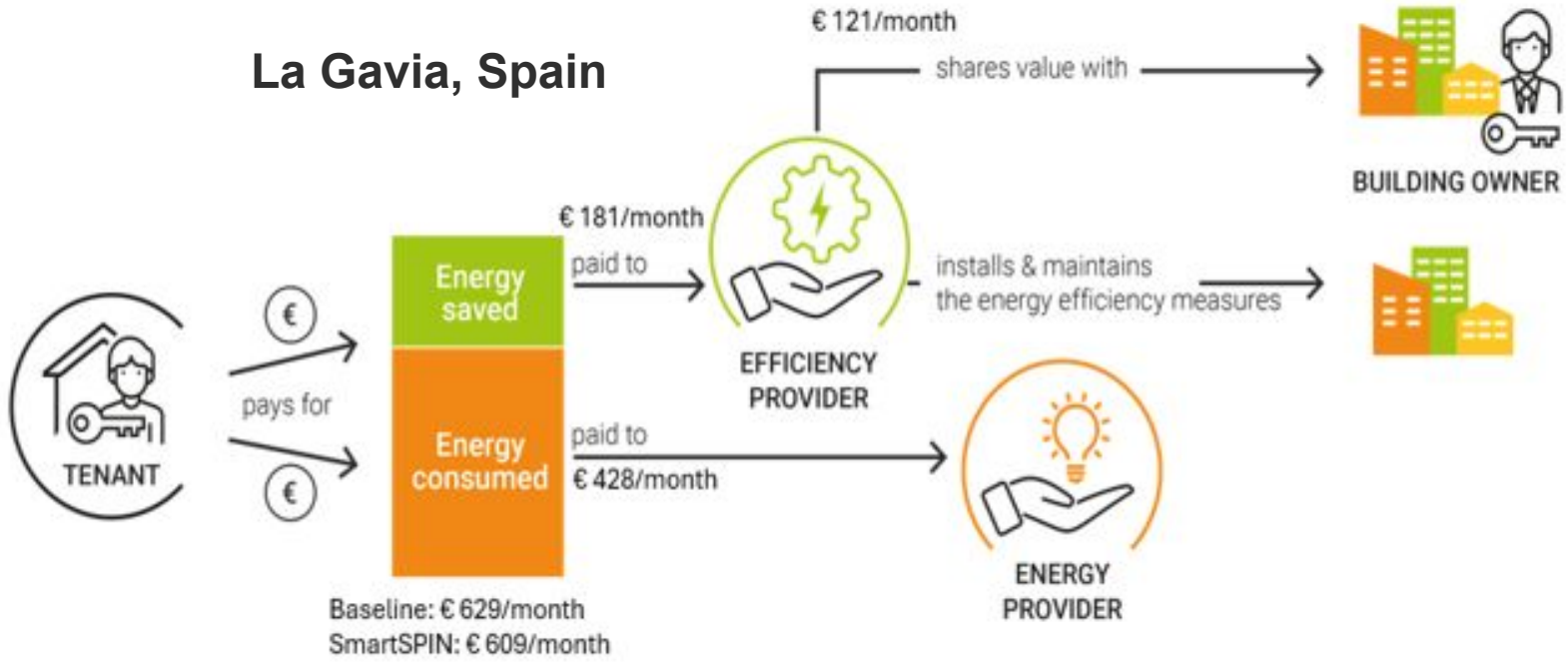
Building owners and renters of commercial rented units.

Substitutes

The main substitute is the traditional method, also known as Design–bid–build or Design–tender, in which the building owner contracts with separate Companies and Consultants for the design and construction of an energy efficiency project.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Proposed contractual agreements at Pilot sites



Indicative agreement for average renter to be presented to building owner and renters

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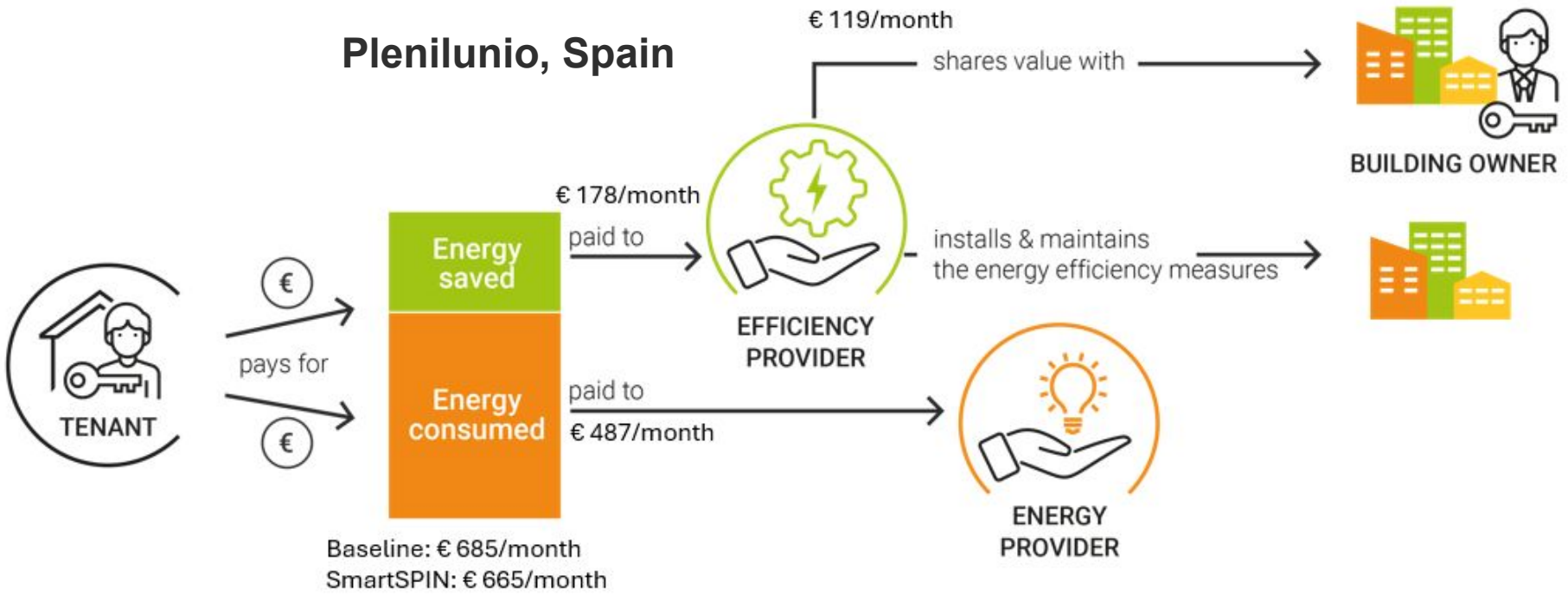
Proposed contractual agreements at Pilot sites



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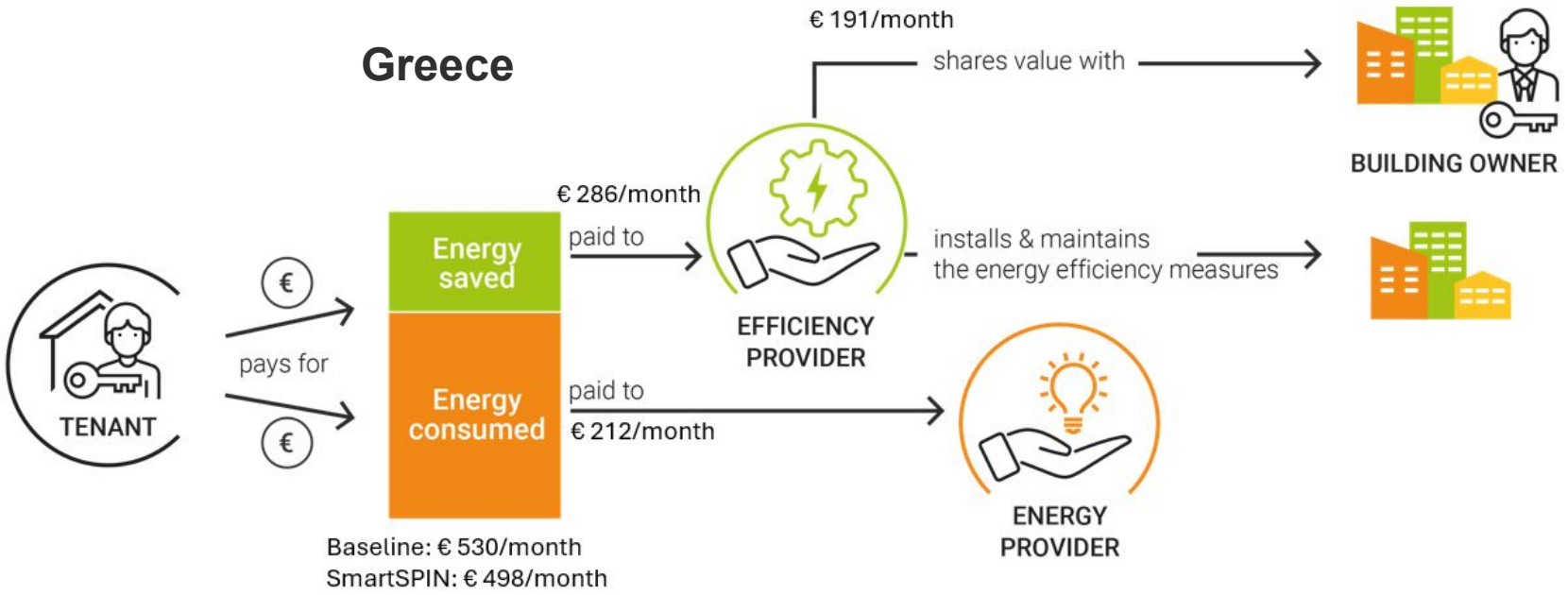
Proposed contractual agreements at Pilot sites



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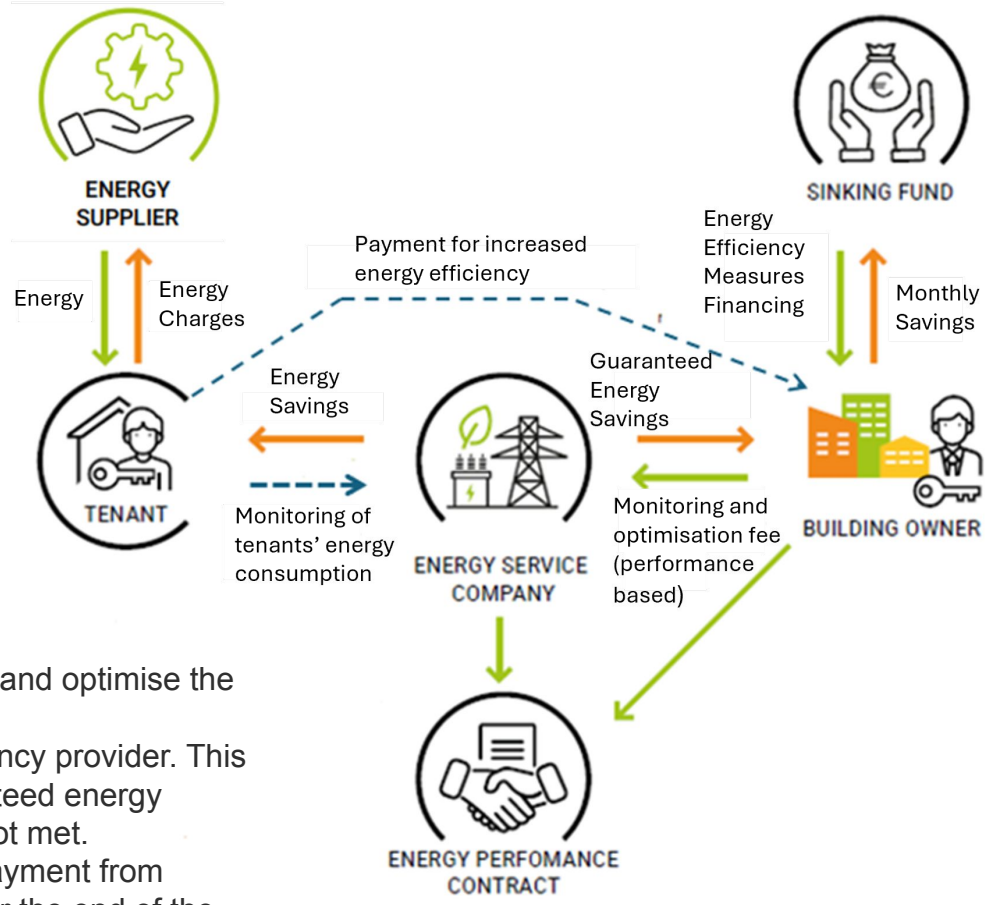
Proposed contractual agreements at Pilot sites

Ireland



- The energy efficiency provider will monitor the system, measure the energy savings, and optimise the system if necessary.
- The building owner will pay a **monitoring and optimisation fee** to the energy efficiency provider. This fee is performance based and it will be about €1,000/month if the contractual guaranteed energy savings are met and will be lowered to €500/month in case the energy savings are not met.
- During the first two years after the installation of the BMS upgrade there will be no payment from tenants for the energy efficiency service. Tenants' payments will be implemented after the end of the monitoring/optimisation period.

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Outcomes of the project available for exploitation

	Key Exploitable Result	SmartSPIN partner	Targets for exploitation
1	Performance-based contractual template for ESCOs	Lawler Sustainability	ESCOs, building owners, renters and their associations
2	Interactive assessment tool	Tecnalia	ESCOs, building services engineers, energy consultants, researchers
3	Platform-agnostic SmartSPIN models	Tecnalia	Researchers, energy consultants, building services engineers
4	Mobile app for gamification	Smarkia	ESCOs, building occupiers/energy consumers
5	Measurement and verification app	Hebes	ESCOs, energy consultants, experts of M&V, researchers

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Luciano De Tommasi, Senior Research Engineer, IERC

Ruchi Agrawal, Researcher, IERC

Thank you!

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

SmartSPIN

Business Model and Flexible Tariff Contract

EUNICE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

PROJECT OVERVIEW

Grant Agreement No: 10133744

Coordinator: IERC International Energy Research

Participants: 7 partners from 4 countries: Ireland, Greece, Netherlands, Spain.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

SmartSPIN Objectives

Objective 1: To demonstrate the feasibility, effectiveness and advantages of the SmartSPIN innovative business model that combines both energy and non-energy benefits in a smart energy services offering for the commercial rented sector.

Objective 2: To address the barriers that prevent the commercial rented sector from engaging in energy services, energy efficiency projects and performance-based contracting.

Objective 3: To demonstrate how big data generated from smart equipment can be used to better control energy consumption buildings and more accurately measure and verify energy savings and flexible energy consumption.

Objective 4: To develop an innovative business model and new contractual templates that allow the proposed SES to be deployed in the commercial rented sector.

Objective 5: To engage and train key market stakeholders (ESCOs, landlords, tenants, industry bodies, M&V practitioners, smart technology manufacturers) in the deployment of the SmartSPIN business model.

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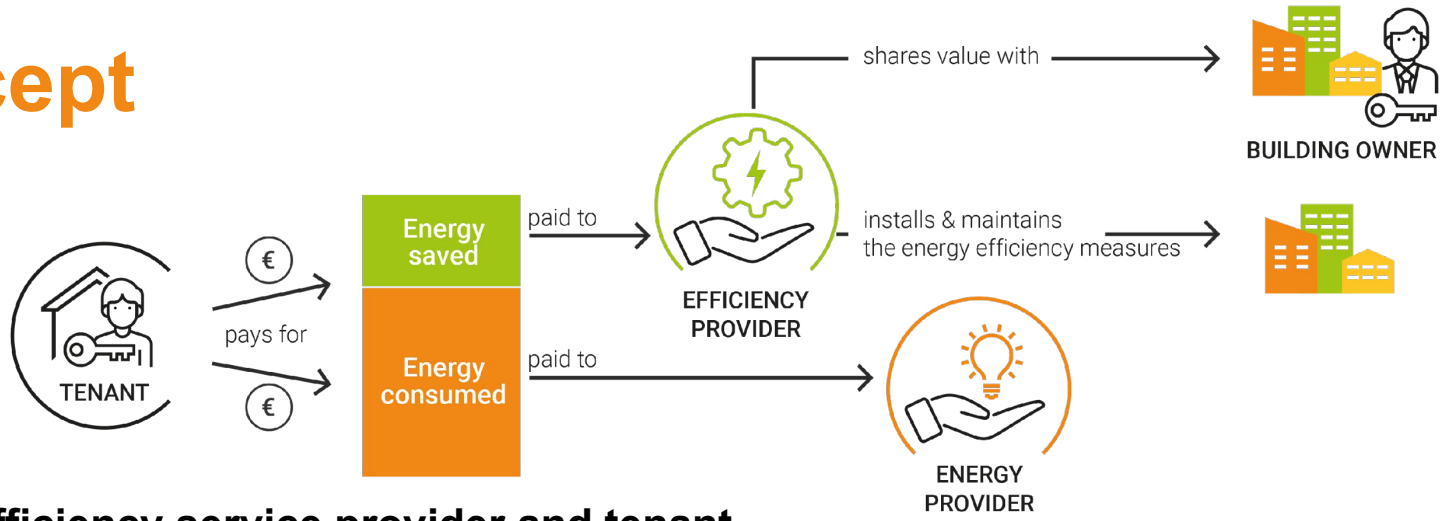
The SmartSPIN Concept



***Step1:* Bilateral agreement between energy efficiency service provider and tenant**.

- The agreement concerns only services of optimized energy management and equipment performance monitoring, which do not require upfront investments.
- The provider monitors the performance of the building systems improving their control strategies and sequences.
- SLA for outcome of system operation (e.g. indoor conditions for the case of a heating system)
- Tenants pay for the energy saved to the efficiency provider
- M&V process estimating the impact of the interventions and quantifies their added value.

***Step2:* Agreement between energy efficiency service provider and tenant with building owner's consent**.

- Service providers engage with building's owner to get his consent for installing equipment and performing construction works
- Service providers fund the upfront costs: equipment, construction, operations, monitoring and maintenance
- Tenants pay for the energy saved to the efficiency provider
- Service providers share value with building's owner

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SmartSPIN Business Model Canvas

- SmartSPIN’s business model delves into the details of the nine key segments as these were identified through the examination of the proposed solution, based on Osterwald's Business Model Canvas.

- These segments encompass crucial aspects such as key partners, resources, key activities, value proposition, customer relationships, customer segments, channels, cost structure, and revenue streams.

- By exploring these components, SmartSPIN aims to revolutionize energy management and create sustainable value for stakeholders across Europe, with a focus on optimizing energy usage, fostering partnerships, and delivering tailored solutions to diverse customer segments.

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SmartSPIN Business Model Canvas

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITION	CUSTOMER RELATIONSHIP	CUSTOMER SEGMENT
1. Main Materials/Components suppliers like Smart Devices, RES & Storage components and infrastructure, E-Mobility infrastructure, Smart Monitoring & Management Platform 2. Contractors/Technical support network 3. EaaS providers/ Market Facilitators 4. Energy Service Companies (ESCOs) 5. Project financiers 6. Energy Performance Contracting facilitators 7. Energy efficiency consultants	1. Awareness raising and customer engagement. 2. Activities to define customer's needs and requirements for the integration of the solution/toolkit 3. Selection of one or more packages of energy conservation measures (that form the solution) 4. Definition of a staggered plan to implement energy conservation measures 5. Set the price of the SmartSPIN energy efficiency service and determine a plan of payments (service fee paid by tenants) 6. Implement agreed energy saving measures 7. Energy management data collection & consulting for energy management optimization 8. Run an Energy Performance Contract 9. Measure & verify energy savings 10. Training and behavioural change of users	1. The SmartSPIN Toolkit is an all-in-one solution for solving the split-incentive issue in the Commercial Rented sector offering along with significant energy optimization techniques, transparent methods for electricity billings in a more democratized way. 2. The service fee paid by the tenants to the energy efficiency provider, which represents the monetary value of the SmartSPIN energy efficiency service. 3. The monetary value of the energy efficient equipment and measures, which are installed in the building as part of the implementation of the SmartSPIN energy efficiency service, including: - Standard & flexible/adaptable solutions. - User Friendly Dashboard for energy monitoring - Smart energy management and control system - Electricity Prices Forecasting platform 4. The maintenance service and its monetary value that is represented by the costs incurred by the energy efficiency provider to maintain the energy efficiency equipment installed and the energy efficiency	1. Face customer as partner. Seek dedicated solutions together. 2. Co-Creation for tailor made solutions 3. Quotation for the SmartSPIN energy efficiency service (provided by the energy efficiency provider to their clients) including cost of the service for renters and rewards for building's owner. 4. Agreement between energy efficiency provider and clients about energy efficiency measures that will be installed to implement the service 5. Flexible contracts 6. Green Lease 7. On bill financing 8. Tri-partite Energy Performance Contracting 9. Invoice for the SmartSPIN energy efficiency service (sent to renters) 10. Receipt for the monthly or quarterly payment received by the building owner from the energy efficiency provider	1. Building owners (commercial or business buildings, Malls, industrial plants) 2. Facility Managers & Companies - Landlord - Building Management Companies 3. Energy users (businesses, industries) 4. Renters of commercial buildings and facilities

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SmartSPIN Business Model Canvas

	KEY RESOURCES 1. HUMAN: 1.1 Entrepreneurs and Managers 1.2 Partners: Technicians, Engineers and Contractors 1.3 Energy Experts/consultants 2. PROCUREMENT: 2.1 Supply chain (orders, procurement process, warehouse) 2.2 Contractual and tariff templates 3. INTELLECTUAL: 3.1 Know-how about energy efficiency measures and service implementation 4. CAPITAL: 4.1 Capital from National or EU funding schemes 5. TECHNOLOGY: 5.1 Energy efficient equipment and measures 5.2 Building diagnostics tool 5.3 Technologies for smart controls in building 5.4 Gamification app 5.5 Interactive web-app 5.6 Early building performance diagnostics web-dashboard 5.7 Measurement and verification app	measures. 5. Exploitation of flexibility in energy consumption under a dynamic tariff for electricity consumption 6. Sharing the benefits of energy efficiency and the energy savings between the parties in a fair manner 7. Maximize the investments in energy efficiency in the commercial rented sector. 8. Improved thermal comfort of the building's occupiers 9. Green image of the building with reduced carbon footprint and better competitive opportunity in the market	**CHANNELS** 1. B2B & B2C contacts 2. Partnerships (Contractors, Technicians) 3. Energy Service and Utility Companies 4. Digital Payment channels 5.. Public tenders 6. Website, Sales & Marketing 7. Registers of Energy Performance Contracting facilitators 8. Associations of ESCOs 9. Social-media, conferences, workshops 10. Local/National authorities 11. Regulation/Ministry of Energy	

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SmartSPIN Business Model Canvas

COST STRUCTURE	REVENUE STREAMS
1. Equipment (RES infrastructure and components, smart devices, and EV Chargers) represent vast majority of the cost. 2. Software development costs 3. Contractor's related costs 4. O&M services 5. Costs associated with measurement and verification of energy savings 6. Fixed Costs (Licensing, Cloud services and data-storage) 7. Marketing/Dissemination activities (brochures, videos etc) 8. Cost of the energy efficiency service for commercial clients 9. Service provided may pay rent to the building owner	1. Provision services (Consulting, Management) 2. Service fees - ECM implementation, M&V Service 3. Energy savings 4. Added value of energy efficiency upgrades

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SmartSPIN Key Partners

The four most crucial stakeholders in SmartSPIN business model are the *energy providers, market facilitator finance providers, energy efficiency material/component providers* and *energy performance contracting facilator.*

The role of the energy provider could be attributed to an **Energy Service Company (ESCO)**, an **Energy as a Service (EaaS)** provider, an **Energy efficiency consultant**.

- **Energy Service Companies (ESCOs)** specialize in implementing energy efficiency projects and delivering energy-saving solutions to their clients typically offer a wide range of services.
- The **Energy as a Service (EaaS)** providers offer comprehensive energy solutions on a subscription or pay-for-performance basis.
- **Energy efficiency consultants** play a crucial role in advising clients on the most suitable strategies and technologies to improve energy efficiency in their buildings.

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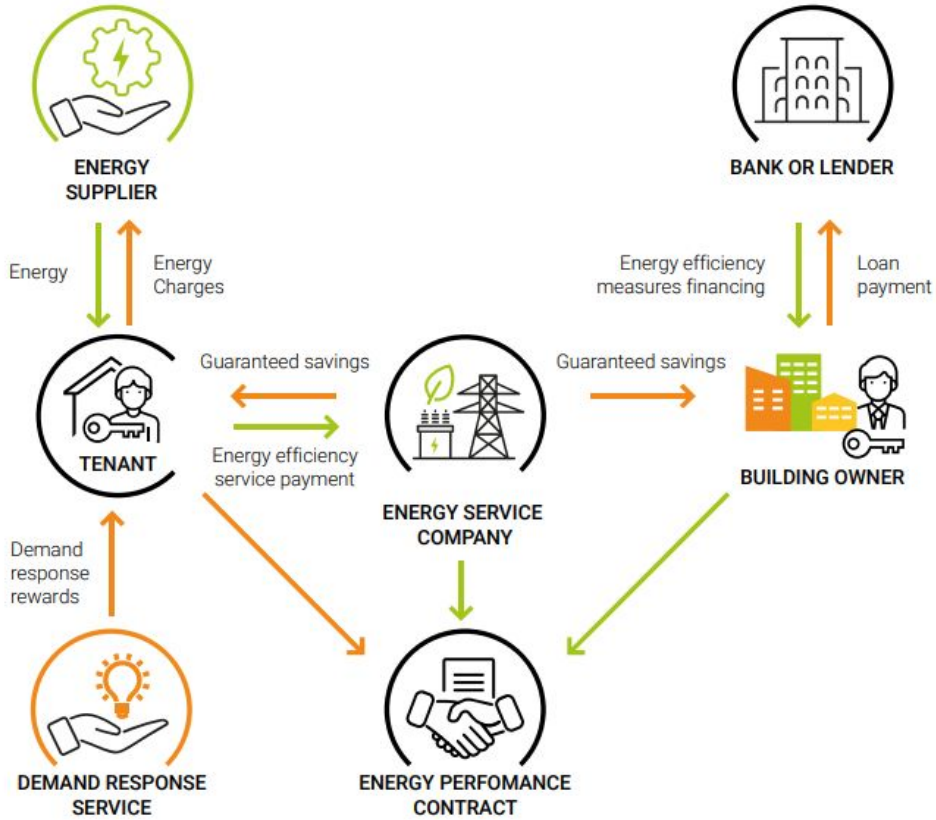
SmartSPIN Business Model & Findings

BUSINESS MODEL & VALUE PROPOSITION

- **Tri-partite Energy performance contracting**
- Project Financier could either be a) Building Owner (via own funds) or b) Energy Service Company (via own funds and/or loan).
- **Energy Service Company can act as both technology provider and installation and monitoring manager** carrying out the energy efficiency upgrades and subsequent maintenance and monitoring of equipment.

SmartSPIN Business Model Approach Proposition



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SmartSPIN Business Model & Findings

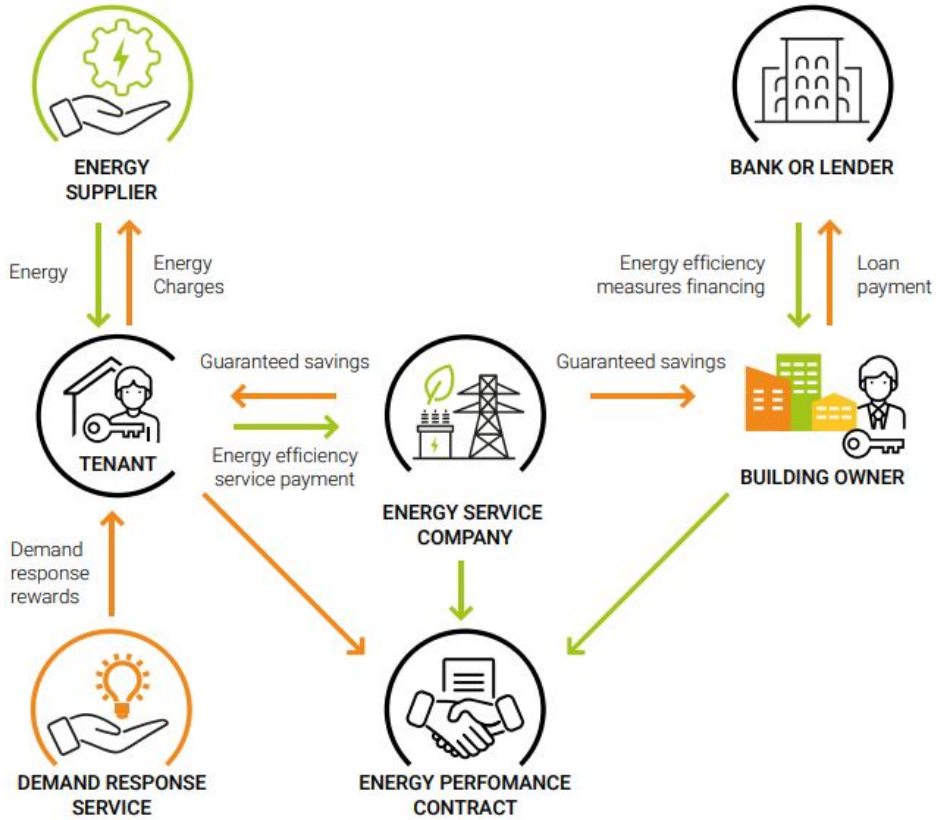
BUSINESS MODEL & VALUE PROPOSITION

- Energy Service Provider receives remuneration for performance from the building user (Tenants, Building Owner if no tenancy available) based on the energy savings due to the energy conservation measures applied.

- Tenant pays the energy utility company based on its actual energy consumption, however via the implementation of dynamic tariff contracts, reduced energy costs can be achieved based on load shifting capabilities.

- At the end of the contract duration, both the tenant and the building owner can choose to purchase the equipment according to its residual value, extend the contract, or (less commonly) return the equipment

SmartSPIN Business Model Approach Proposition



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SmartSPIN FLEXIBLE-DYNAMIC TARIFF DESIGN

- SmartSPIN has defined a contractual model to:
  - ✔ Optimize the building energy services between ESCO, landlord and tenant
  - ✔ Address the needs and obligations of all parties involved in the commercial rented sector and can be freely used as a basis for drafting a contract involving more than two parties
  - ✔ Offer a contract template with a tri-partite model including Landlord/Tenant/ESCO

- Flexible tariff template links the system marginal price, (SMP) i.e., electricity market hourly clearing price to the electricity price paid by the customer

- The flexible tariff template attempts to compare 15-minute consumption data for clients with the SMP for every hour of every day using data provided by the authorized DSO.

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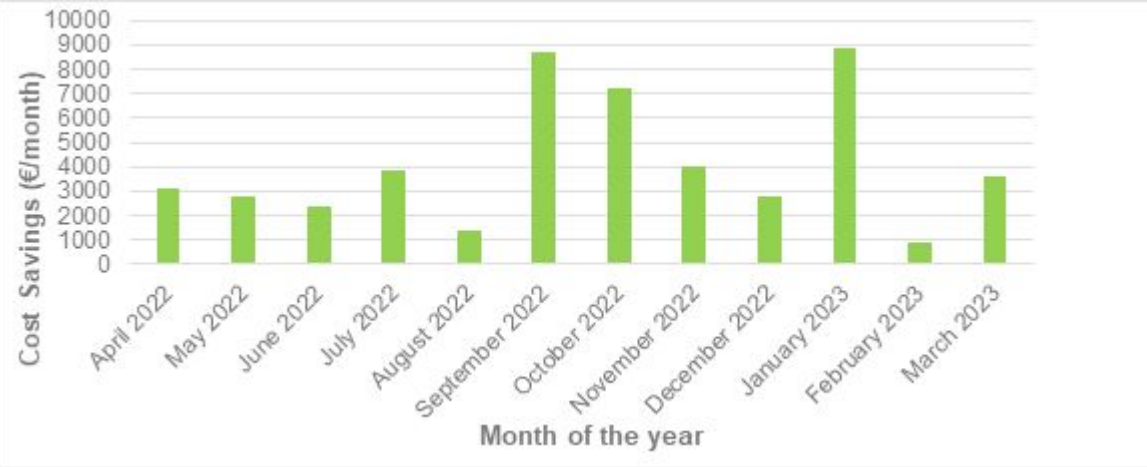
PROGRESS ON THE GREEK DEMO SITE

GREECE (I4G BUILDING COMPLEX)

IMPLEMENT ENERGY EFFICIENCY & FLEXIBILITY MEASURES

- EUNICE worked on implementing the efficiency & flexibility measures in the Greek Demo Site. The idea is to increase the transparency of energy costs metering between landlord, tenant and energy utility company via real-time monitoring of electricity consumption.
- The flexible tariff contract, based on Greek Electricity System Marginal Prices (SMP) has been applied to the Greek Demo Site, in the context of a theoretical analysis giving the opportunity to tenants to avail their flexibility, shifting electricity consumption from peak hours to non-peak hours. The overall goal is to investigate the optimal flexible tariff design, showcasing potential monetary benefits between all interested parties (tenant, landlord, energy utility company).



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Thank you!

EUNICE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

SmartSPIN

SmartSPIN early building performance diagnostics

Final Event, 25th September 2024

Sustainable Places 2024, European Convention Centre, Luxembourg

Olaia Eguiarte

TECNALIA R&I

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

PROBLEM DESCRIPTION

- Buildings account for 40% of energy consumption resulting to 36% of carbon emissions across aurope
- Over 75% of the buildings are energy ineffcient due to the lack of renovation activites that enhance energy efficiency
- 25% of Europe's building fall under non-residential category – of which a vast majortity of them are rented through a commercial landlord
- This causes **the split incentive problem** – benefits of building renovations do not accure to the renters who pay the energy bill
- This is one of the European priority (Article 19 of the Energy Efficiency Directive (EED)). This where SmartSPIN will come into play.

40%	36%	75%	25%
of energy consumption	of carbon emissions	buildings are energy ineffcient	non-residential category

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CONTEXT

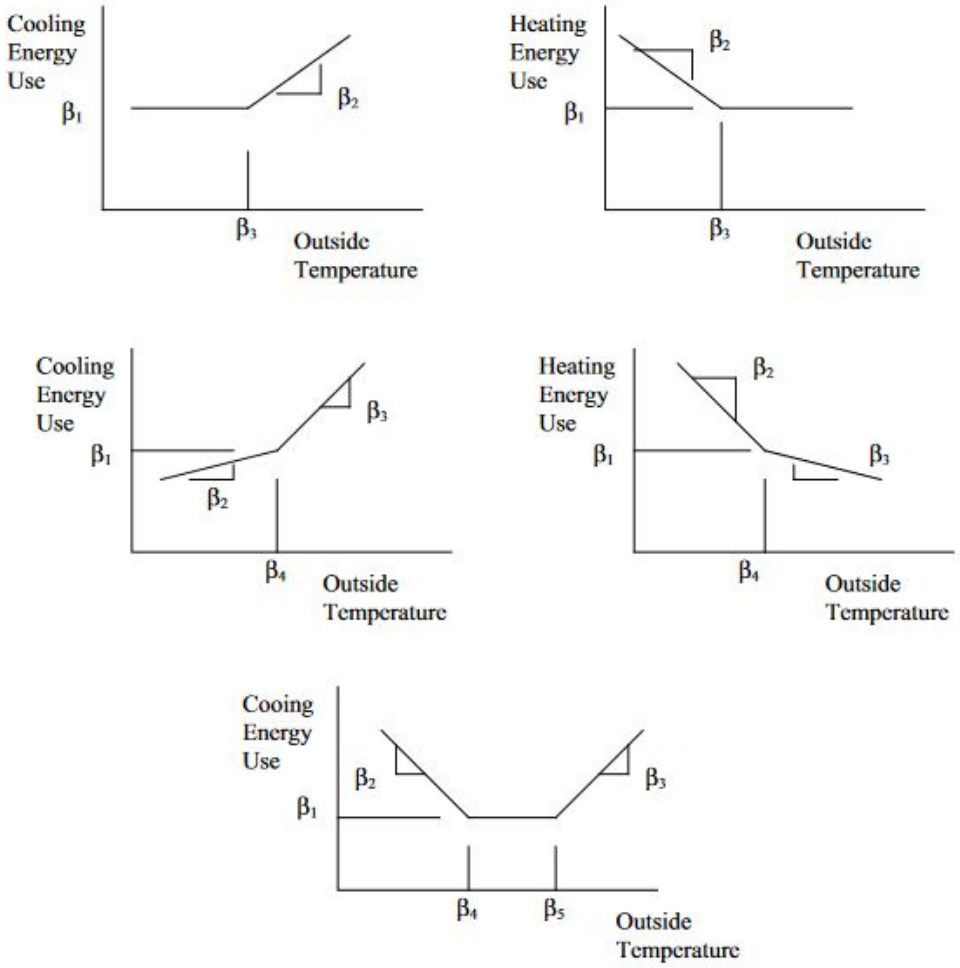
- The characterization of the energy consumption of buildings in the Measurement and Verification (M&V) processes is **defined in a particular way for each installation** and is **highly intensive** in specialized labour.
  The growing interest in Energy Savings Certificates (EACs) as an innovative tool to recognize energy savings leads to a necessary **homogenization** in M&V processes.
  In parallel, the upward trend in the amount of building monitoring data implies a **higher business opportunity**, so the automation of the process is essential.

BESMART: Universal energy characterization process, alternative to current processes using *Energy Signature methodology*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

CHARACTERISTICS

- Energy characterization of a building/system by means of a linear relationship of energy consumption data against climate using energy consumption/production data.
  The characterisation is carried out according to the so-called **ASHRAE's changepoint models**, which allow the linear characterisation of heating, cooling and domestic hot water consumption.
  The algorithm also includes a diagnosis of consumption that is **considered abnormal**.



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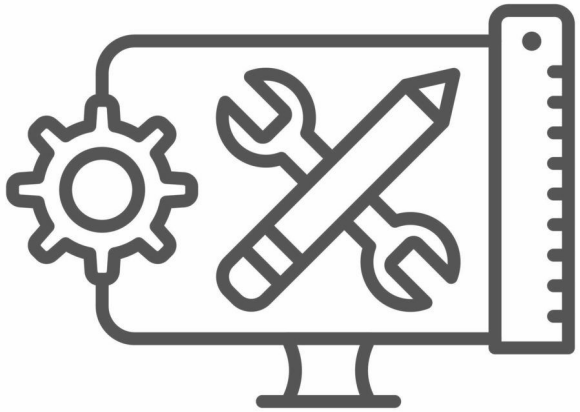
VARIOUS USES OF THE TOOL

BESMart has a direct application in the following areas:



- Measurement and verification (M&V) of savings.

  Preliminary energy diagnosis.

  Rapid visualization and diagnosis of anomalies for immediate identification of deficiencies, allowing an early intervention.

  Contextualization of a specific asset/building within a portfolio.

  Evaluation of the performance of an asset over time.

  Management of business operations such as cost forecasting.

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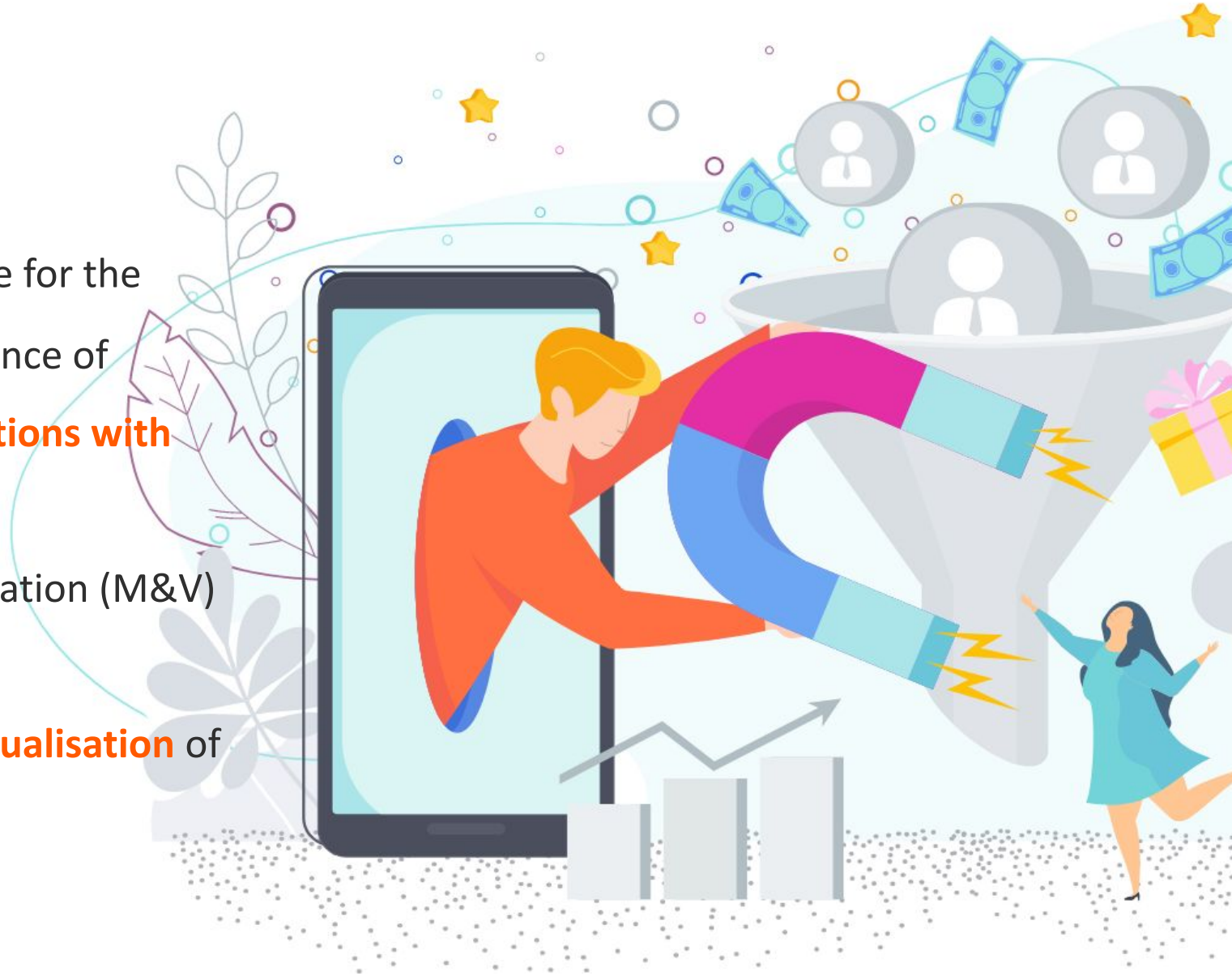
POTENTIAL USERS

- Energy service companies (responsible for the construction, operation and maintenance of facilities) that can thus **manage deviations with accuracy** and agility.

  Experienced measurement and verification (M&V) professionals.

  Companies specialising in the **data visualisation** of buildings energy.



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CASE STUDY

Building characteristics:

Location: Dublin.

Building size: 6,209 m².

Main use of the building: offices.

Opening hours: Monday to Friday. From 8 a.m. to 5 p.m.

There are no energy-intensive processes (i.e., laundries) associated with the usual operation of the building.

Energy supplies:

Electricity: Hourly data on total electricity consumption.

Natural gas: Hourly data on natural gas consumption.

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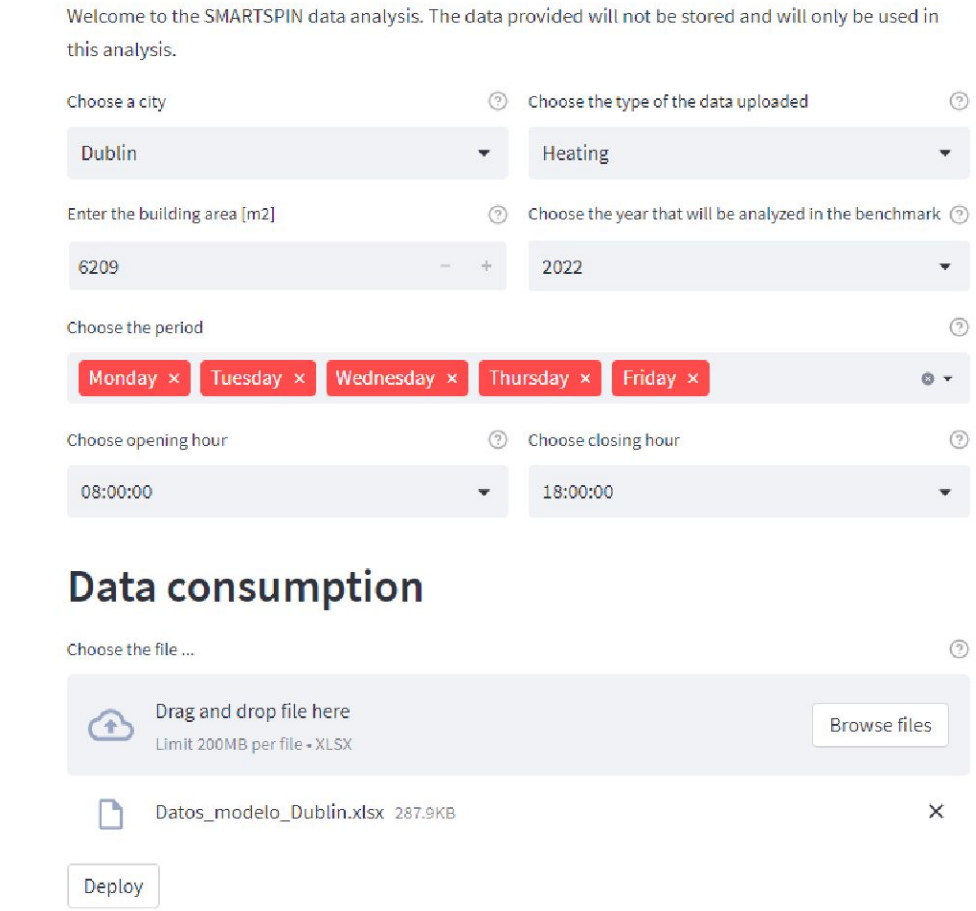
CASE STUDY



The required input data has been simplified to increase ease of use.

Building Features:

- Building Location:
  - Thessaloniki.
  - Dublin.
  - Madrid.
- Building size (m²)

Energy data entered:

- Electricity.
- Natural gas.
- Other fuels.

Services provided:

- Heating.
- Refrigeration.
- Heating and cooling.

Opening and closing hours

Days of the week

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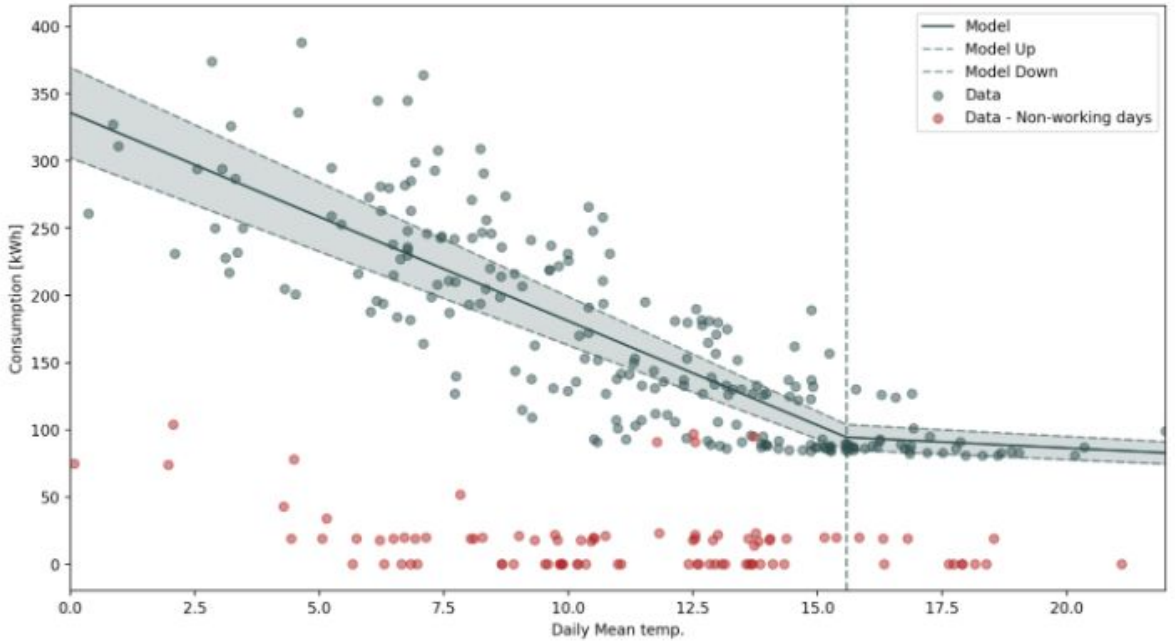
CASE STUDY

- Your building's consumption during <u>non-working hours</u> is **29.04%** of the total annual consumption.
  Your building begins to demand heating when the outside temperature is **15.58ºC** (This could be considered high)
  This could mean that there is low insulation of the building, high infiltrations or systems that do not work properly

Your building's consumption at non-working hours is the 29.04% of the total annual consumption.

Your building starts demanding heating when the outdoor temperature is: 15.58°C. (This could be considered as High)

These could mean that there is low insulation of the building, high infiltrations, or non-well functioning systems.



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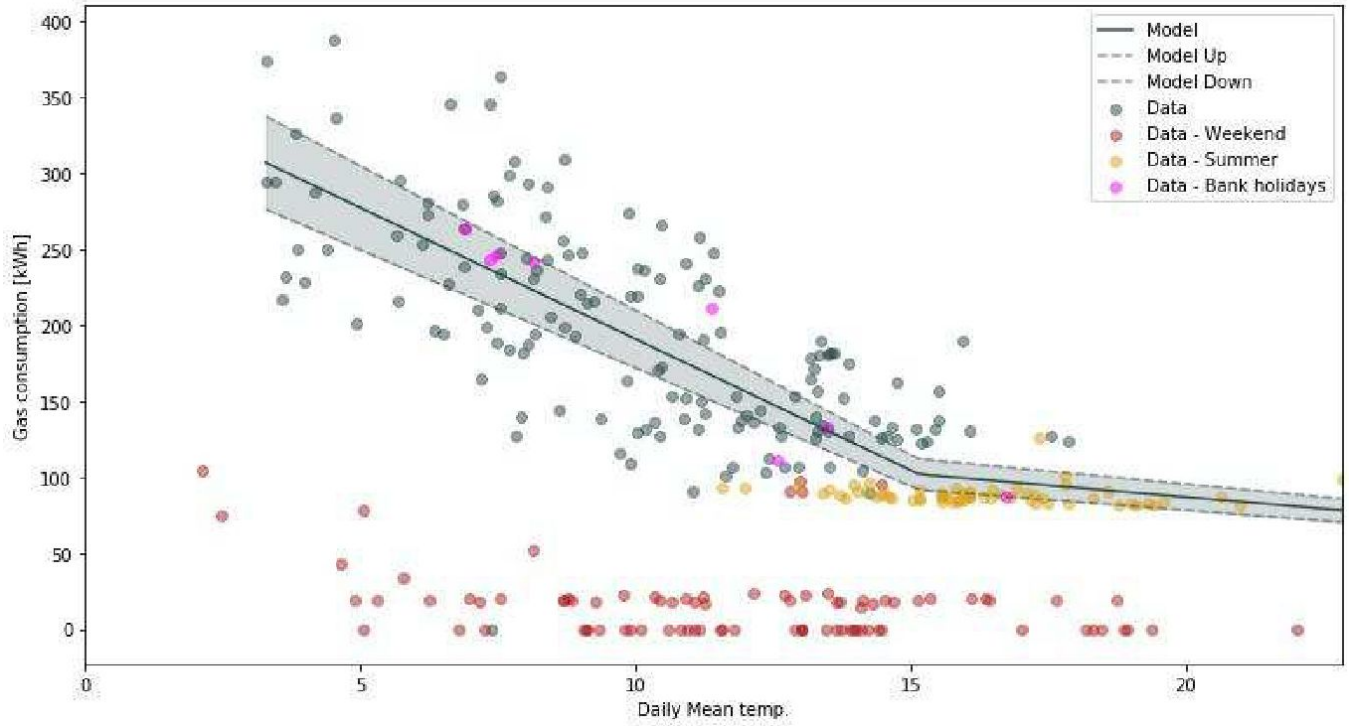
CASE STUDY



- **Weekend consumption:** Abnormal consumption is observed on several weekend days.
  Consumption on bank holidays: The system is found to be working on bank holidays, a clear example of misused energy that generates extra costs.
  Consumption in summer: On summer days with low a average daily temperature there is no heating consumption. It is assumed that the heating system is turned off during the summer period.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

TECNALIA R&I

Olaia Eguiarte
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Thank you!

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

SmartSPIN

Dynamic dashboards for empowering energy efficiency

Alvaro Diez
Smarkia

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

Context & Overview

Overview: The SmartSPIN project focuses on improving energy efficiency in rented commercial spaces by solving the 'split incentive' problem. The use of data-driven dashboards to enhance stakeholder collaboration and decision-making is key in that matter

Context: SmartSPIN provides dynamic tools that enable users to optimize energy usage and track key metrics effectively.

IERC International Energy Research · HEBES · EGEN · EUNICE ENERGY GROUP · Smarkia · tecnalia · LAWLER SUSTAINABILITY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Dashboard Stakeholders

Who Benefits?

- Tenants
- Landlords
- Facility Managers
- ESCOs (Energy Service Companies)

Purpose: Tailored insights to track and improve energy performance, making energy management transparent and actionable.

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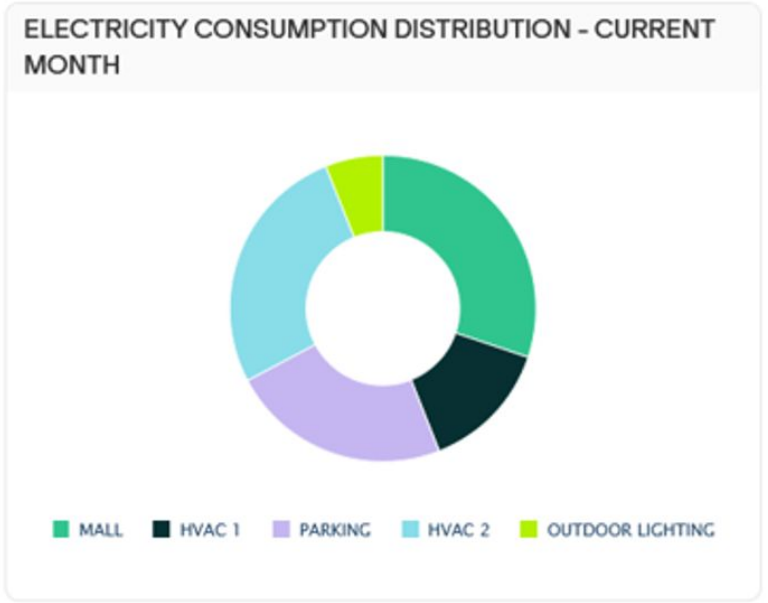
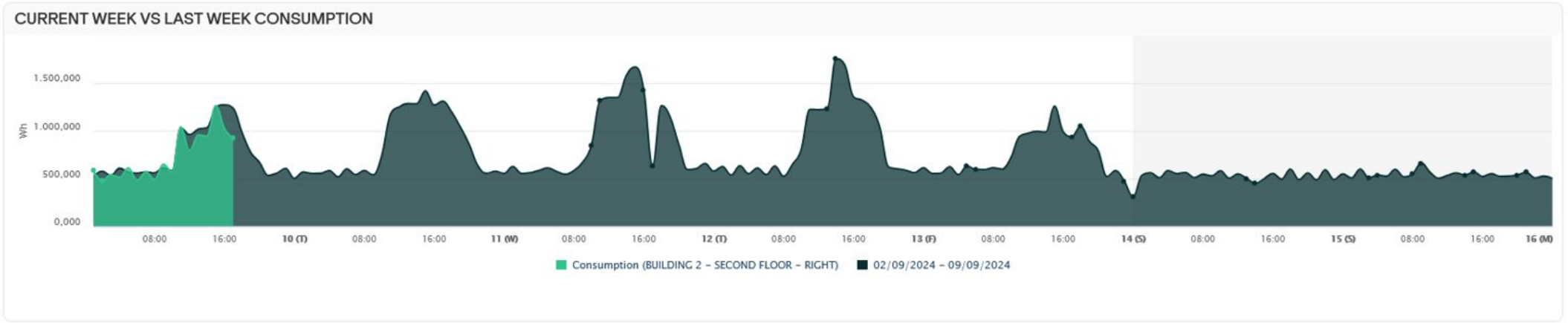
Key Metrics and Insights

Metrics Provided:

- Real-time energy consumption.
- Comparison with baselines.
- Recommendations for improving efficiency.



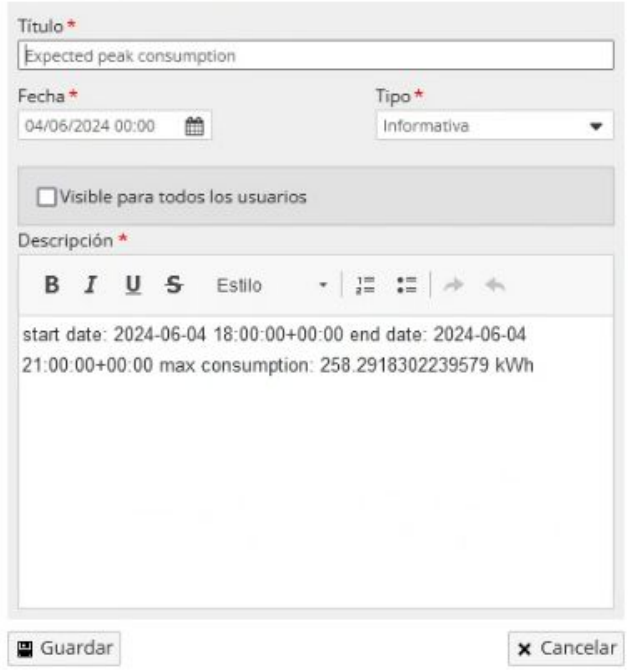


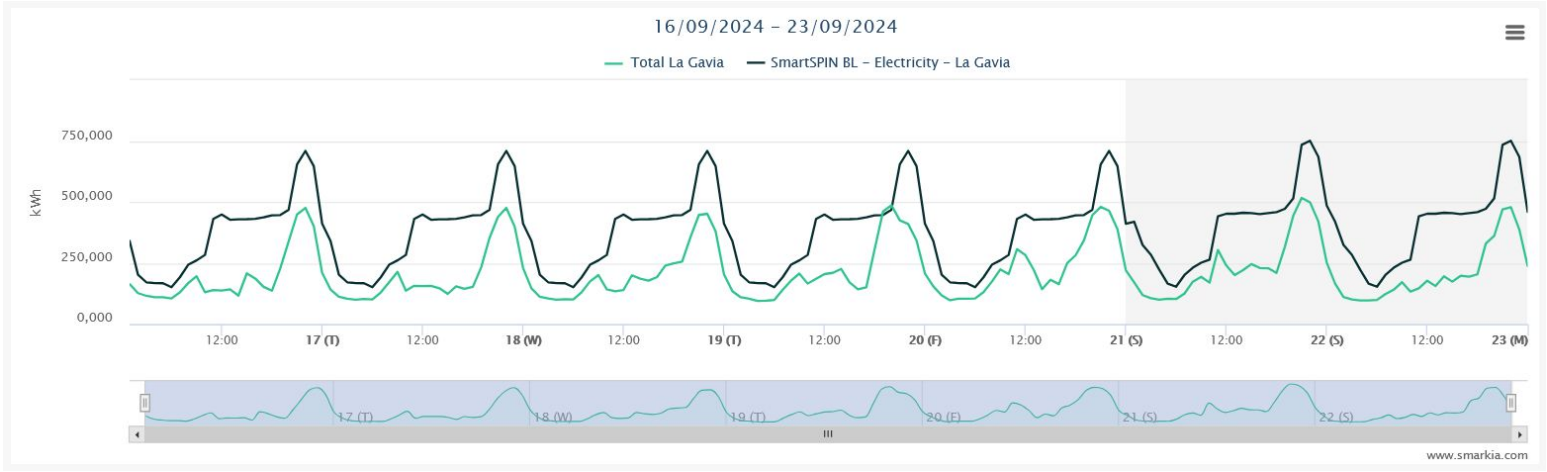
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Data-Driven Algorithms

Predictive Analysis:

- Forecasting energy consumption using weather and occupancy data.
- Real-time integration into dashboards for proactive decision-making.

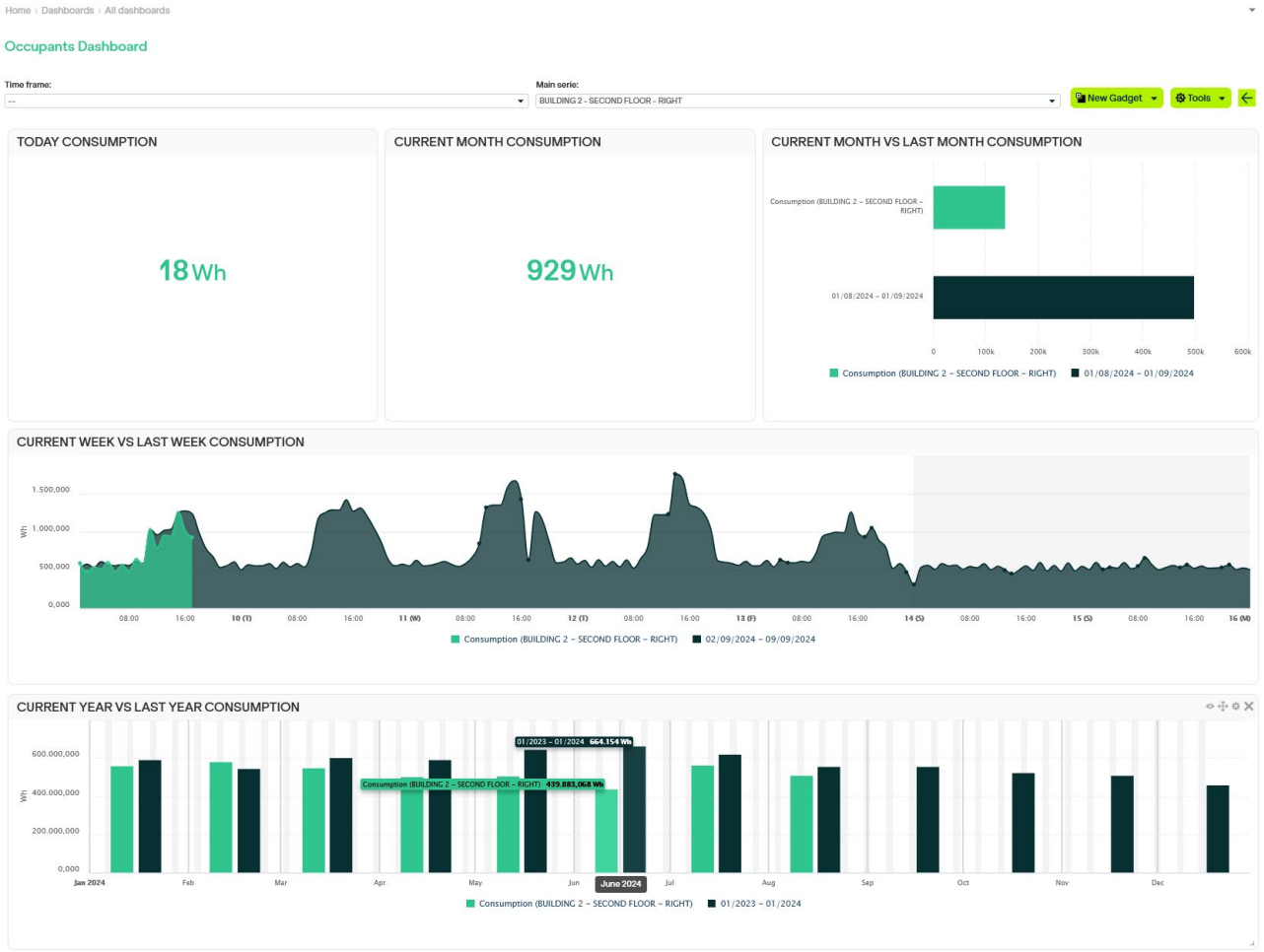




This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Tailored Dashboards for Each Role

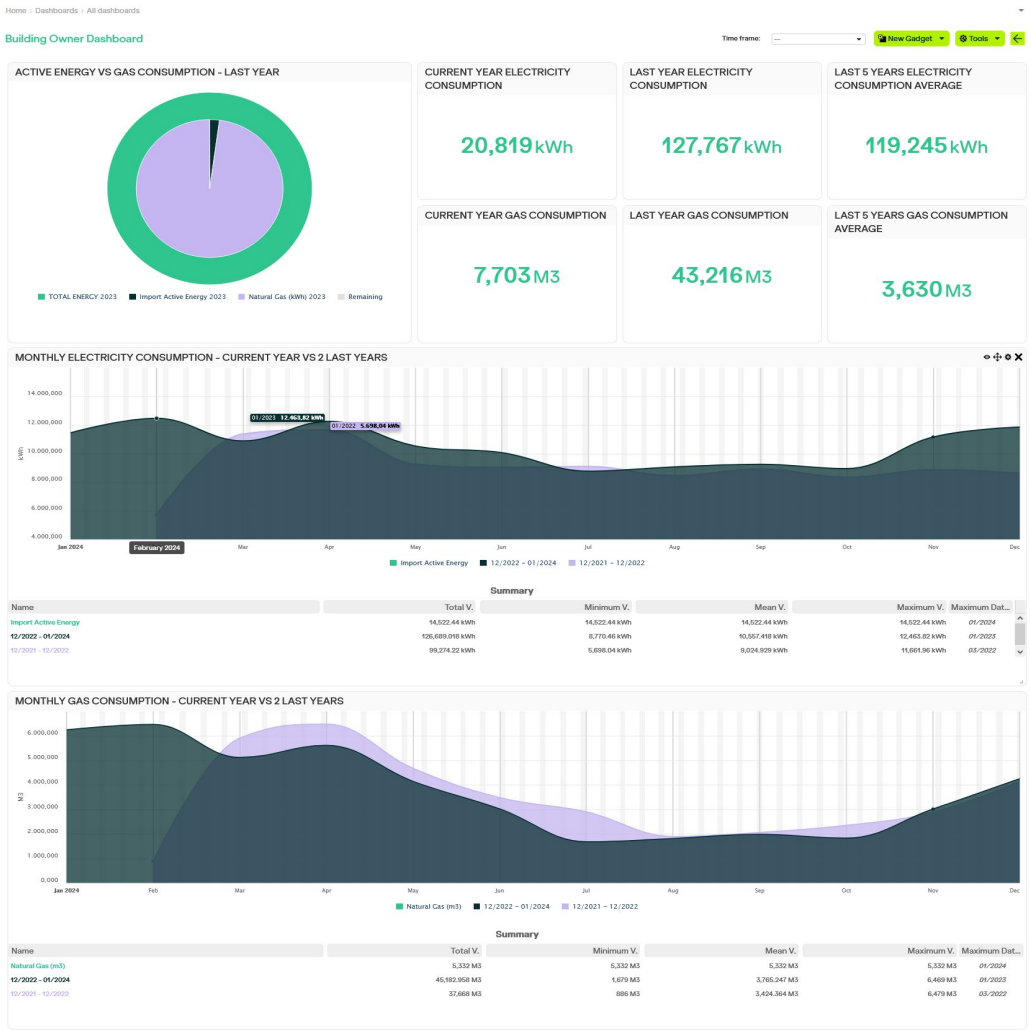
Tenants: Track personal energy consumption and compare with historical data.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Tailored Dashboards for Each Role

Landlords: Monitor overall building performance, identify inefficiencies.



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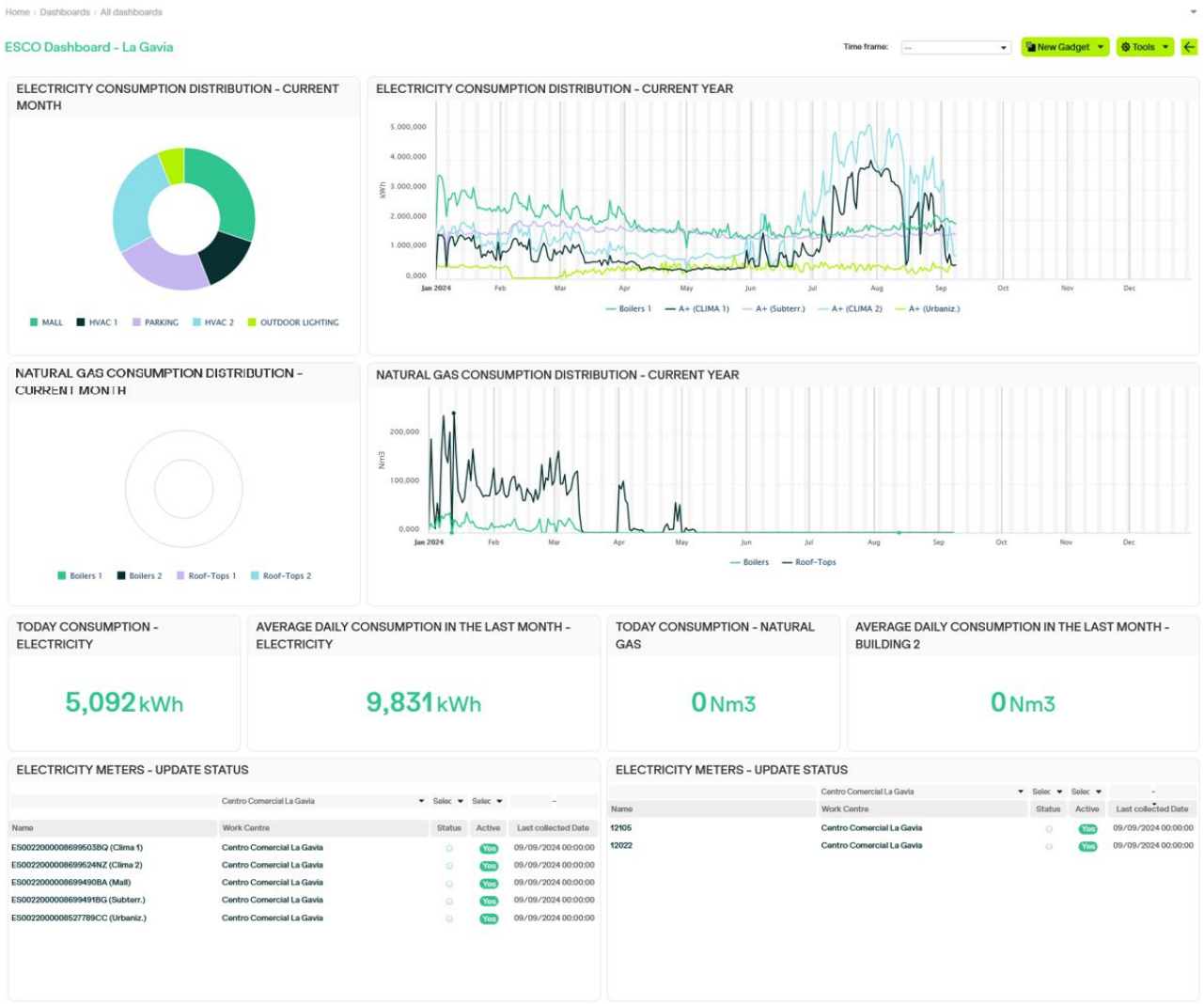
Tailored Dashboards for Each Role

ESCOs: Optimize energy use for various systems, manage energy contracts.



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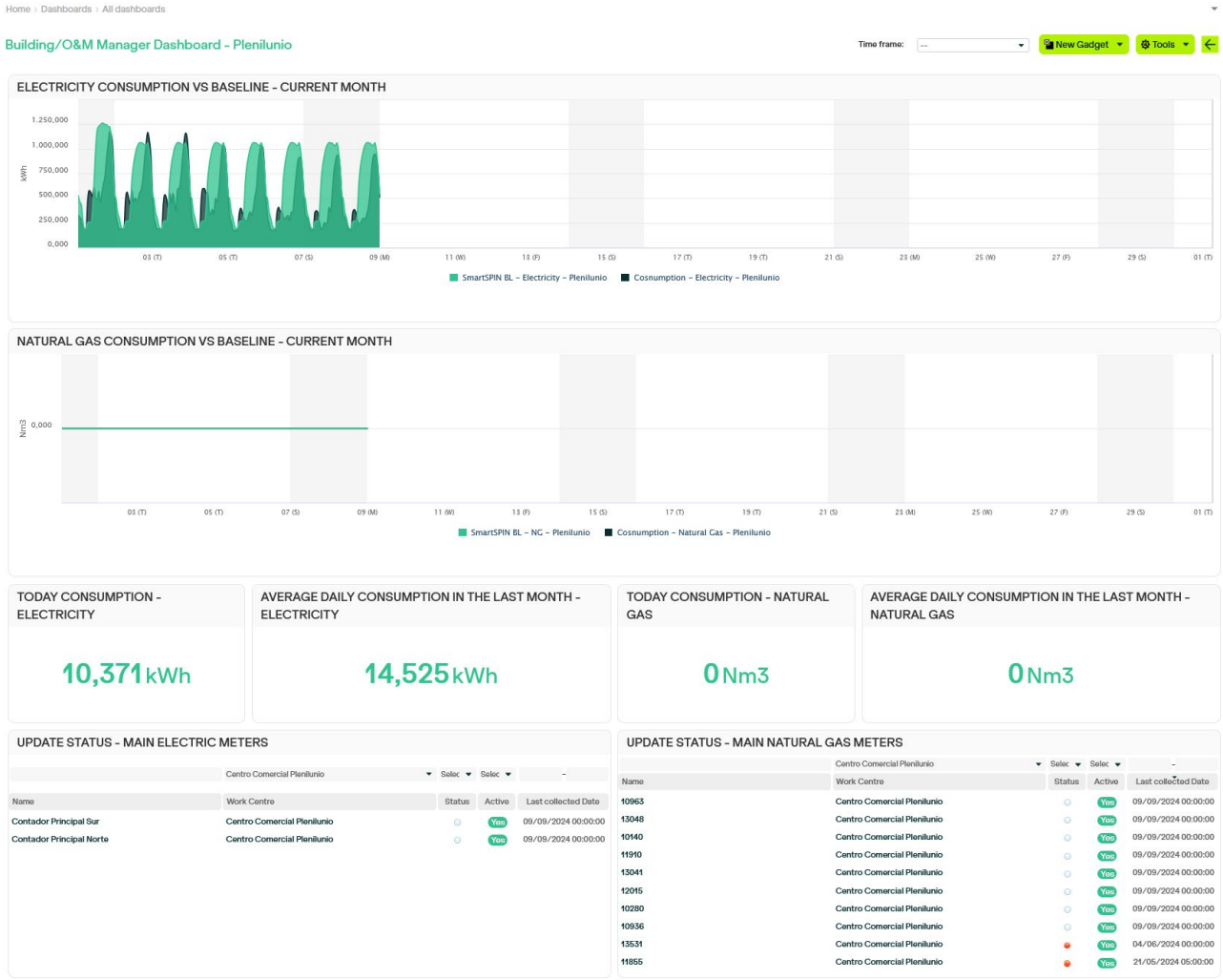
Tailored Dashboards for Each Role

Facility Managers: Operational insights, utility usage tracking.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Results and impact

Outcomes:

- Energy savings
- CO2 emissions reductions
- Increased stakeholder engagement

Smarkia’s dashboards empower stakeholders with data-driven insights, improving collaboration and enhancing energy efficiency in rented commercial spaces.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 10133744.

Alvaro Diez (Smarkia)

Thank you!

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

SmartSPIN

Measurement & Verification of Energy Savings

Final Event, 25th September 2024
Sustainable Places 2024, European Convention Centre, Luxembourg

Sotiris Papadelis
HEBES Intelligence, Greece

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

About HEBES

Based in Athens, Greece.

Applications in the intersection of energy efficiency and data analytics.

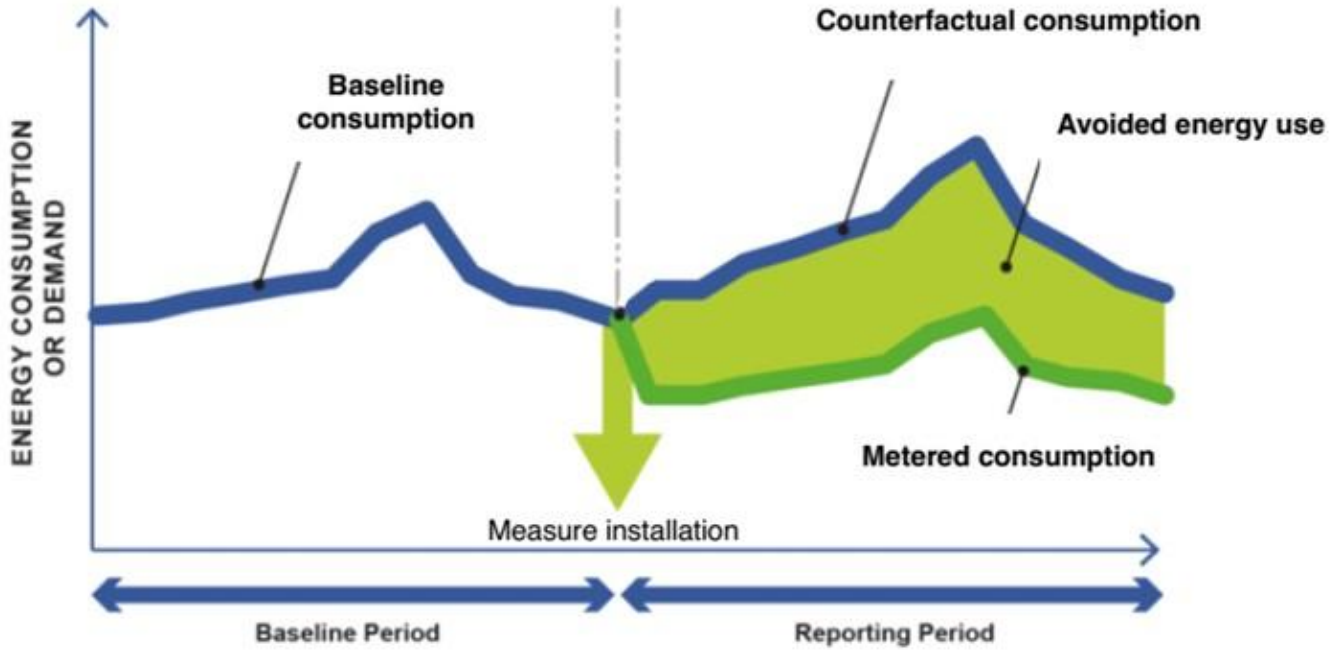
Applications for measurement and verification (M&V) of energy savings.

Maintains open-source repository: https://github.com/hebes-io

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The starting point

M&V as a prediction task: Estimation of the energy savings by comparing the energy consumption after the intervention (i.e. during the reporting period) to a baseline that represents what the consumption would have been without this measure (counterfactual).

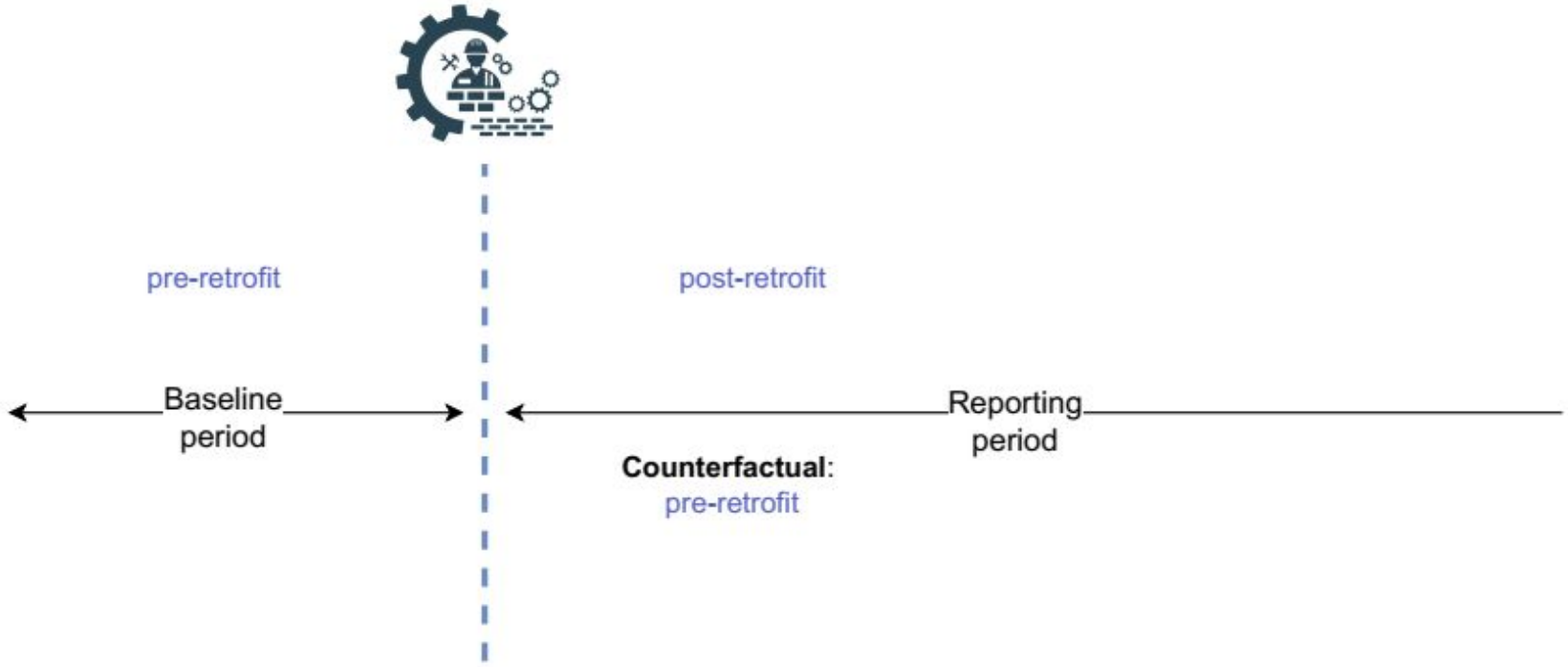


Adapted from IPMVP Generally Accepted M&V Principles, 2018

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The starting point

Limitation: It is difficult to adapt to events that affect energy consumption independently of the energy retrofit (as an example, a change in the maximum number of people in the building)



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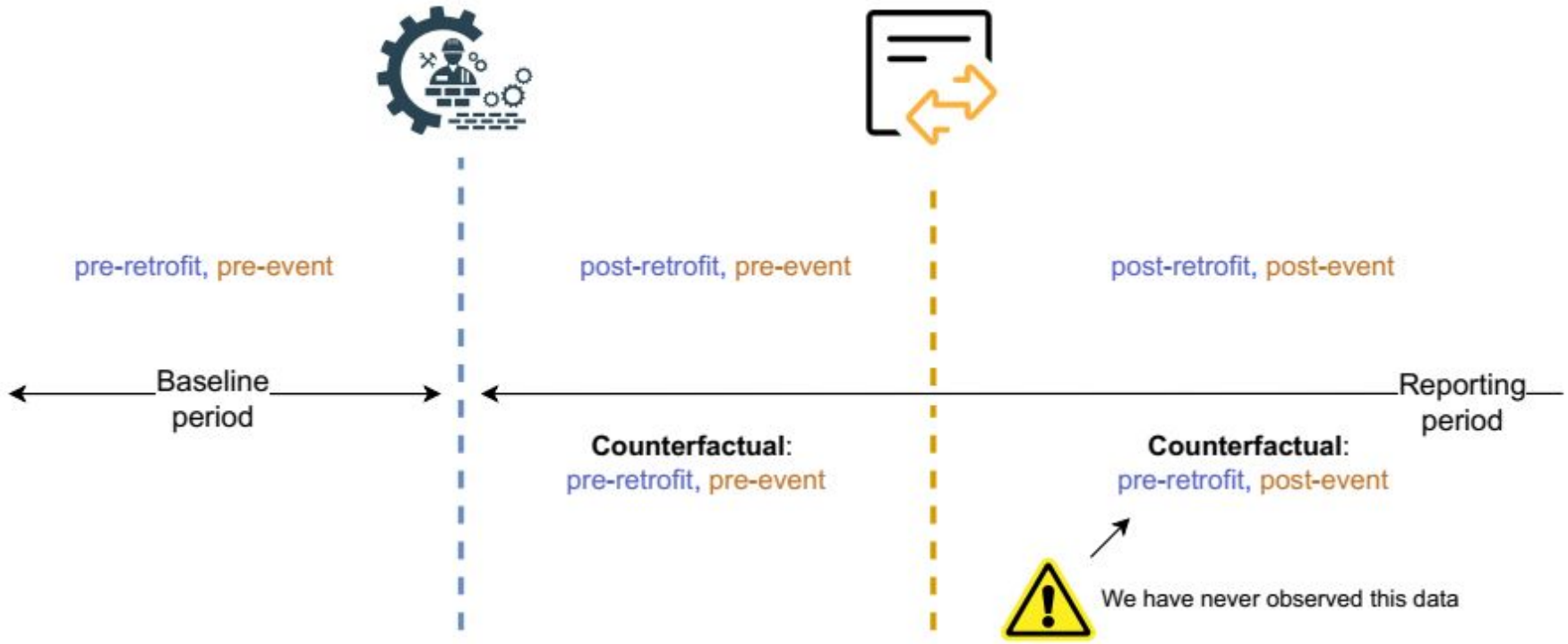
The starting point

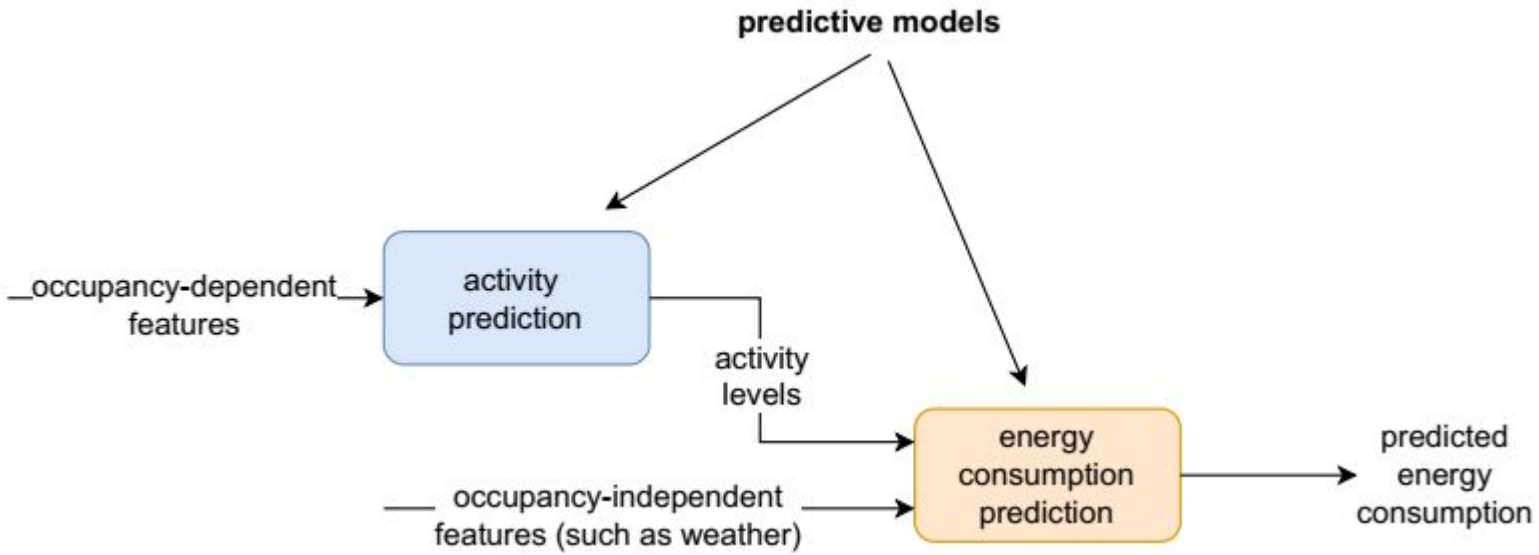
Limitation: It is difficult to adapt to events that affect energy consumption independently of the energy retrofit (as an example, a change in the maximum number of people in the building)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

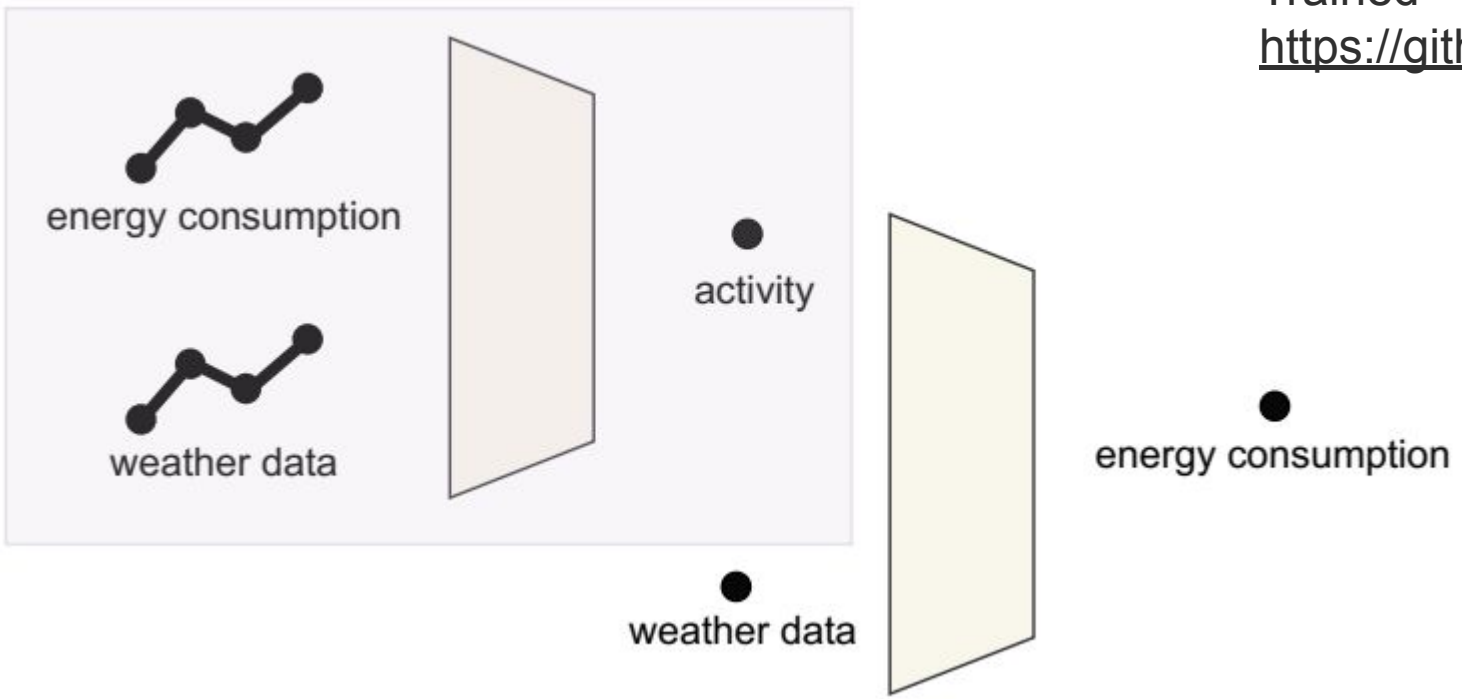
The starting point

First step to solution: Split the energy consumption prediction model in two parts:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The contribution of SmartSPIN



Trained on 1,300 buildings from https://github.com/NREL/BuildingsBench

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The contribution of SmartSPIN

SmartSPIN replaced the model for energy consumption prediction with a mechanistic model.

A mechanistic or first-principles model uses **physics-based formulations** to describe the relationships that govern an underlying system or process.

A mechanistic model for a building envelope would include parameters for its U-value, its geometry, its thermal mass, and so on.

A mechanistic model for the HVAC system would include parameters for its efficiency, the temperature setpoints, as well as the settings of the temperature control (such as the proportional gain of the controller).

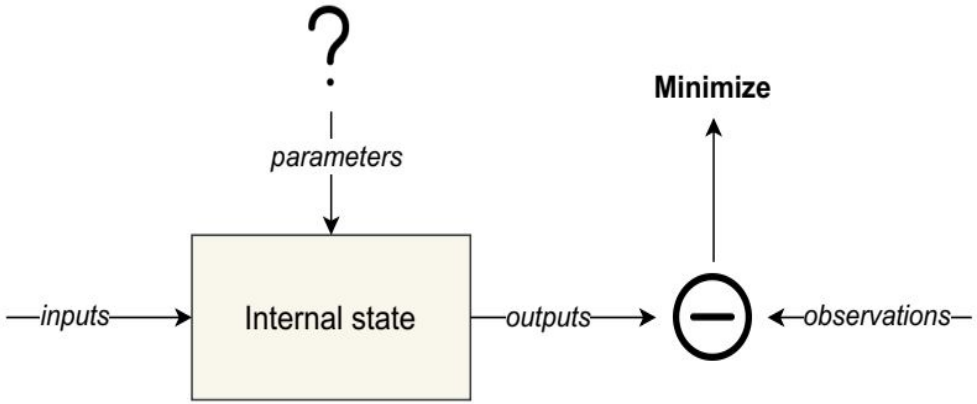
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The contribution of SmartSPIN

Mechanistic models are also referred to as forward models, because they are able to perform a forward simulation: produce outputs given inputs and parameters.

The calibration of a forward model solves the inverse problem: given the inputs and the outputs, the goal is to find a good estimation of the parameters.

Calibration is needed because while inputs (such as outdoor temperature) and outputs (such as energy consumption and thermal zone air temperatures) can be observed, the values of many parameters are unknown.



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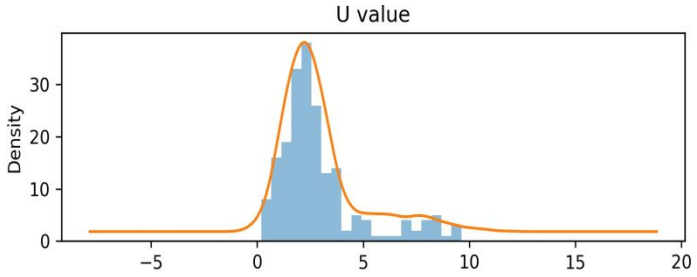
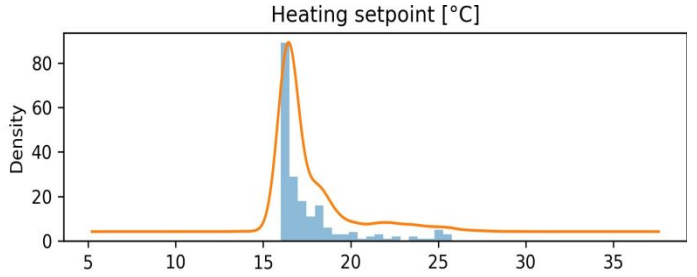
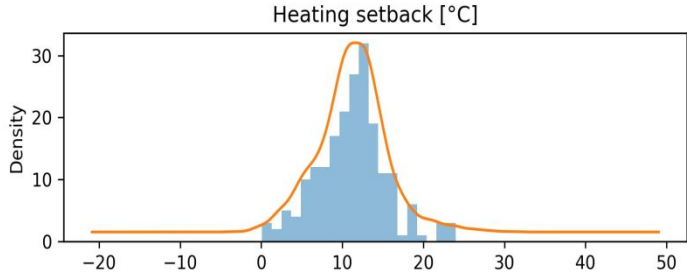
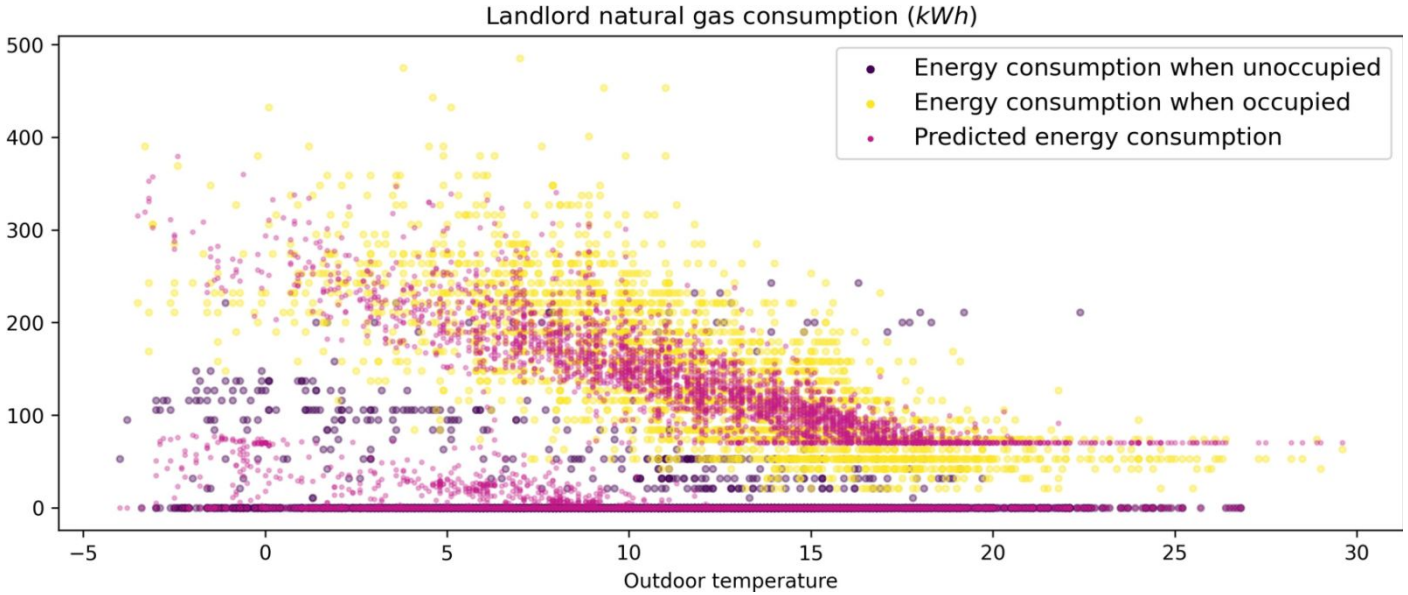
The contribution of SmartSPIN









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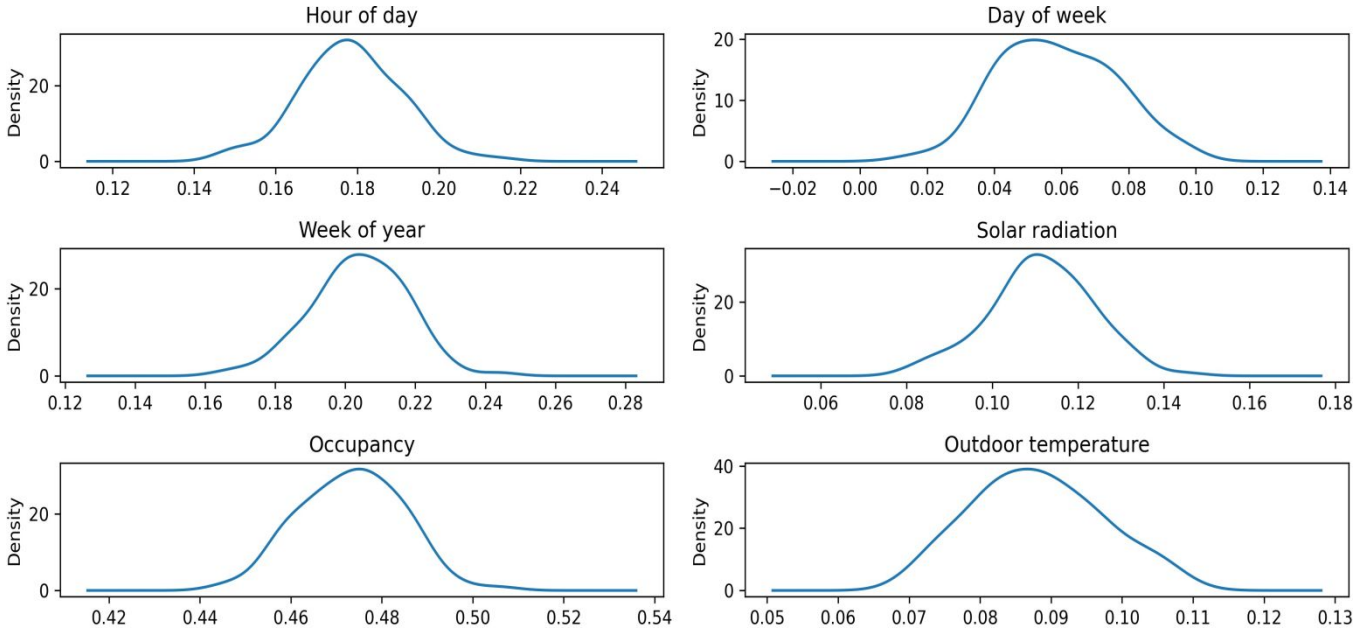
The contribution of SmartSPIN

Things to be aware about calibration:

1. Simulation models are generally incomplete models;



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The contribution of SmartSPIN

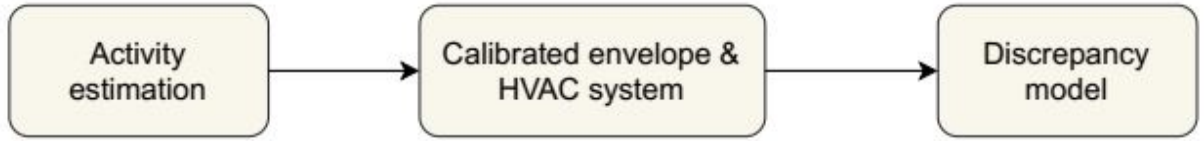
Things to be aware about calibration:

1. Simulation models are generally incomplete models;
2. Discrepancy models must be constrained because they can render the mechanistic models irrelevant

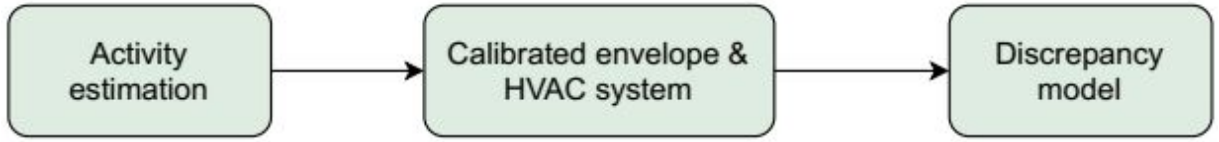
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The contribution of SmartSPIN – Impact estimation

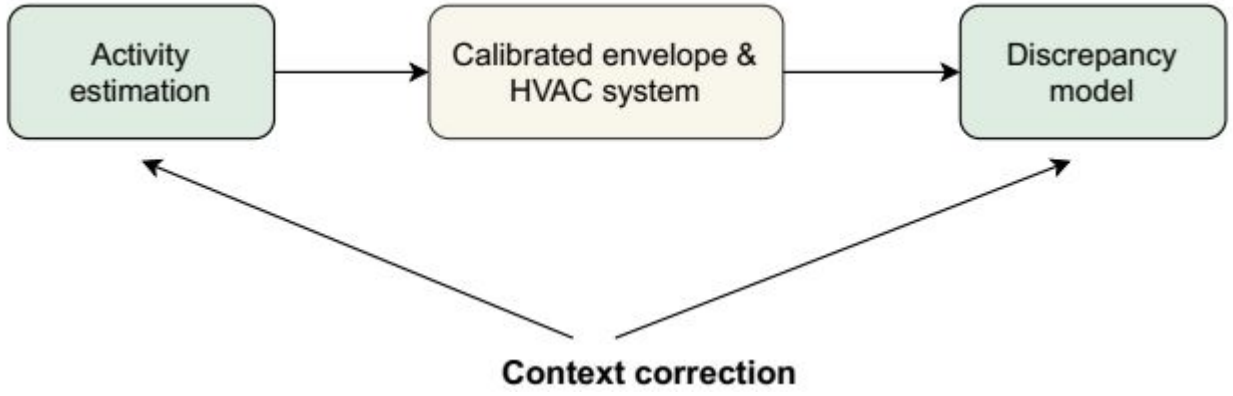
Before the intervention (Baseline period):



After the intervention (Reporting period):



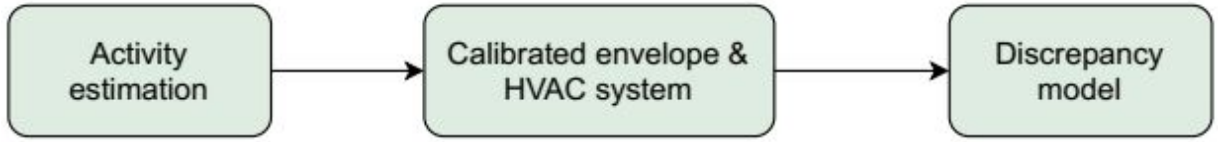
Counterfactual:



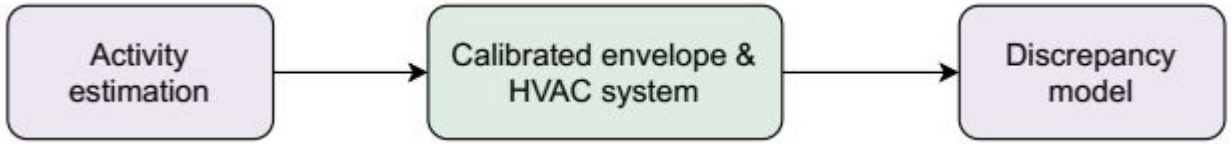
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The contribution of SmartSPIN – Event correction

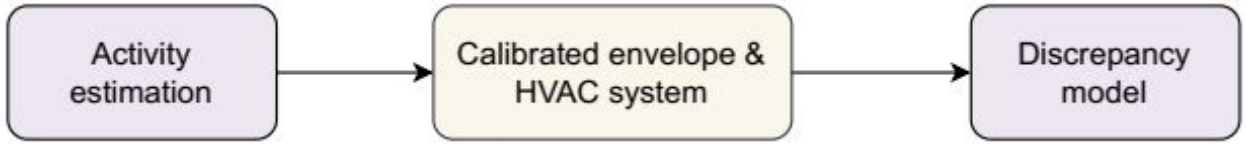
Before the event (Reporting period):



After the event (Reporting period):

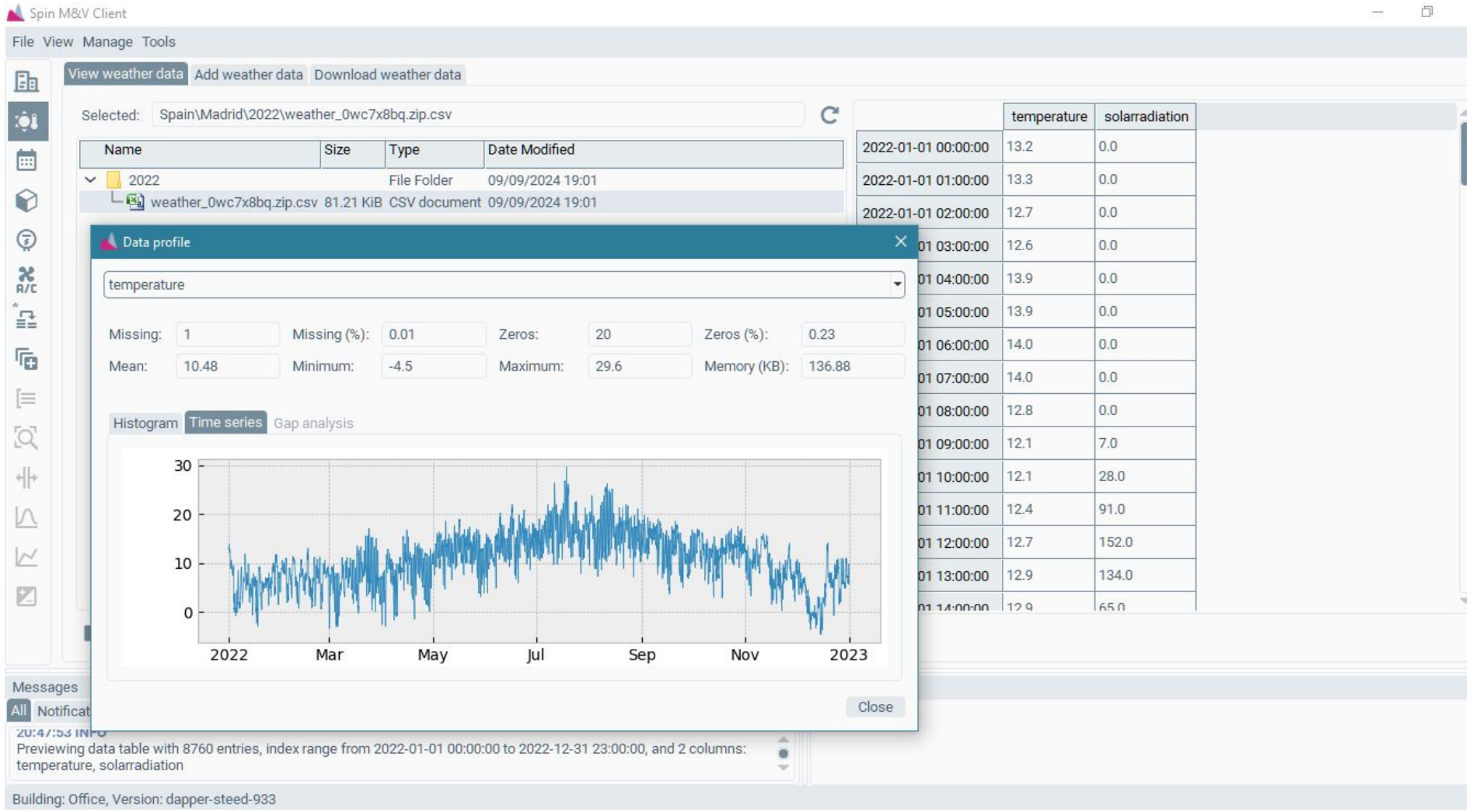


Counterfactual:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

The contribution of SmartSPIN – M&V App



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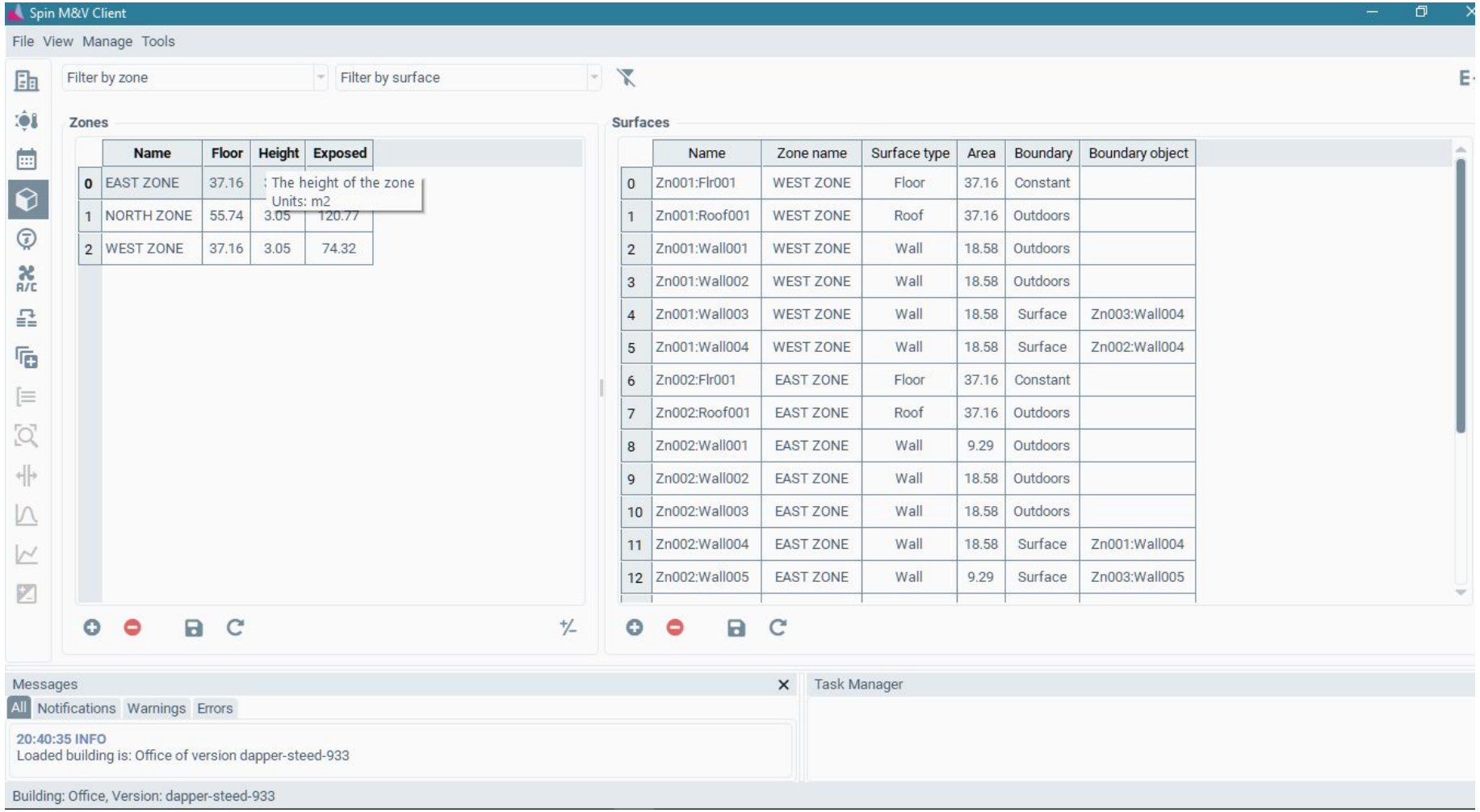
The contribution of SmartSPIN



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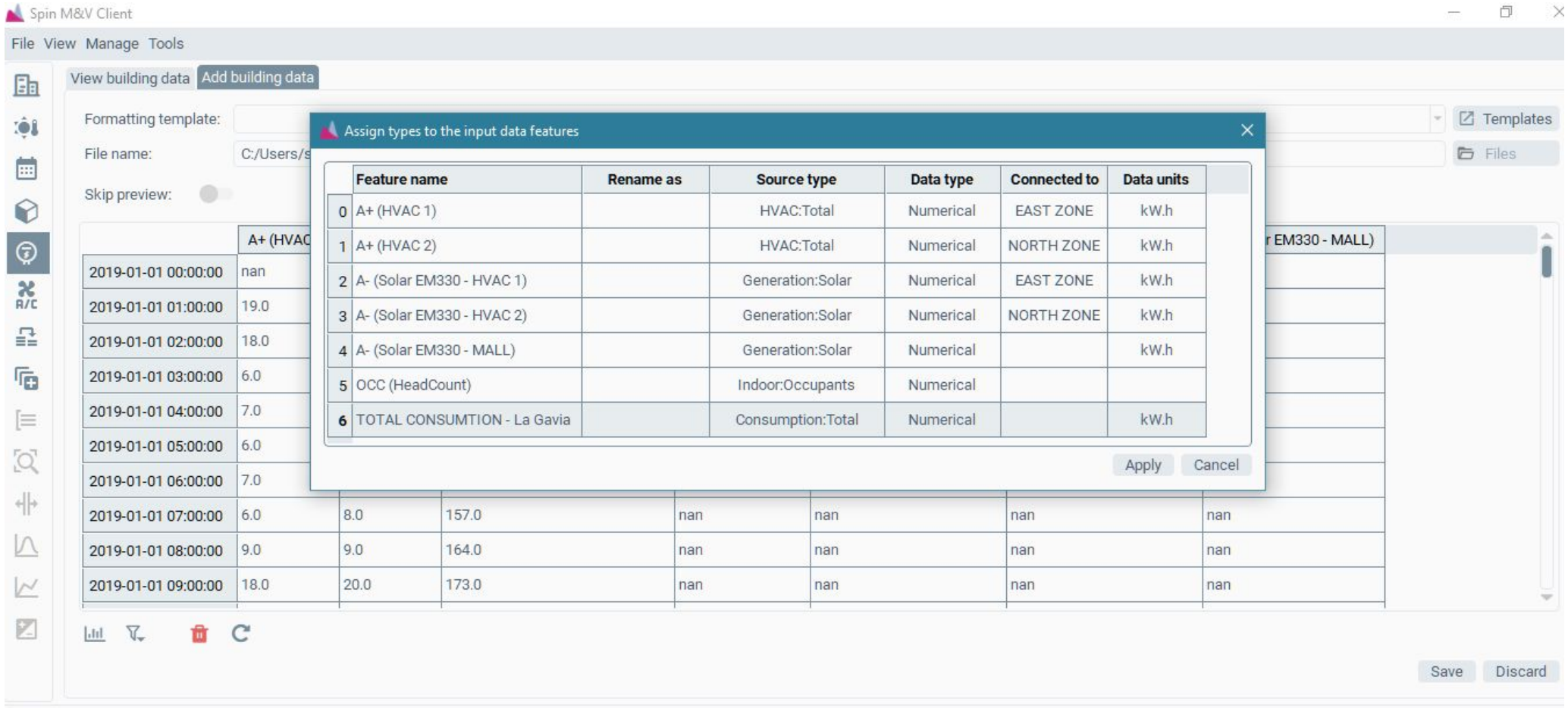
The contribution of SmartSPIN



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

HEBES

Thank you!

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

SmartSPIN

EU funding opportunities for new collaborative projects

Jasper van den Berg
Innovation consultant
PNO Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

Outline

- Introduction
- Funding schemes
- Upcoming calls: Identifying opportunities together (interactive)
- Future topics

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Jasper van den Berg, innovation consultant

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PNO Innovation Belgium

Focuses on EU funding opportunities for new collaborative projects

35+	9	2K+	10K+	€1Bn
years of experience	countries with offices	organisations supported	parties in network	total project value

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

EU funding: EU Horizon Programme

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- Horizon Europe Programme
  - EU's key funding programme for research and innovation, running from 2021 to 2027 with a budget of €95.5 billion
  - Collaboration and strengthening impact of research and innovation
  - Driven by EU policies addressing global challenges
    - RIA (Research and Innovation Actions) – *100% funding rate (+25% indirect costs)*
    - IA (Innovation Actions) – *100 or 70% funding rate (+25% indirect costs)*
    - CSA (Coordination and Support Actions) – *100% funding rate (+25% indirect costs)*
- Today's presentation:
  - Two relevant 2024 calls (deadline 4 Feb 2025):
    - **HORIZON-CL5-2024-D4-02-05** & **HORIZON-CL5-2024-D4-02-05**
  - Future topics

Horizon Europe

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

EU funding: other programmes

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- **LIFE (L'Instrument Financier pour l'Environnement)**
  - Support environmental, nature conservation, and climate action projects.
  - Calls for 2025 expected from April 2025
- **DUT (Driving Urban Transitions), partnership under Horizon Europe**
  - Promote sustainable urban development and energy efficiency
  - Relevant pathway: Positive Energy Districts
  - Stage 1 (Pre-Proposal submission deadline) closing 14 November 2024
- **Innovation funds**
  - Broader funding schemes to support innovative projects.
  - New technologies and solutions to address various societal challenges.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Identifying future funding opportunities

As we go through these slides, think about the following:

- How does your organization's **expertise** fit into the call topic?
- What **role** could your organization have in a potential collaboration?
- What could be key **partners** for you to collaborate with?

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Call 1: HORIZON-CL5-2024-D4-02-05

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Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts (Built4People Partnership)

- IA; Budget 2x 5M€; **Deadline date:** 04 February 2025

Scope (one or **both** of the following**):**

- Facilitate **participative design and planning**
- **Analyse and model different scenarios** for future renovations

Outcomes:

- **Engagement** of end users and citizens
- **Acceptability & uptake** of sustainable deep renovation solutions
- **Reduced energy and mobility poverty**
- **Climate change adaptation and resilience**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 1/5

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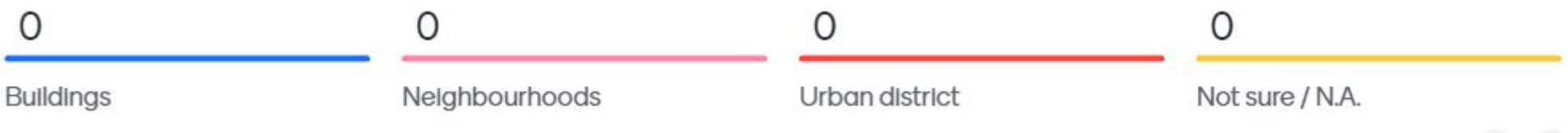
HORIZON-CL5-2024-D4-02-05

Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

Which **'urban context'** mentioned in the call topic best fits your organisation?



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 2/5

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HORIZON-CL5-2024-D4-02-05

Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

What could be promising digital solutions to analyse / model different scenarios for renovating buildings / neighbourhoods / districts?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 3/5

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HORIZON-CL5-2024-D4-02-05

Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

Which unique expertise or solution could your organisation bring to facilitate participative design and planning / engage citizens?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 4/5

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HORIZON-CL5-2024-D4-02-05

Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

What role could your organisation have in a consortium around this call topic?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 5/5

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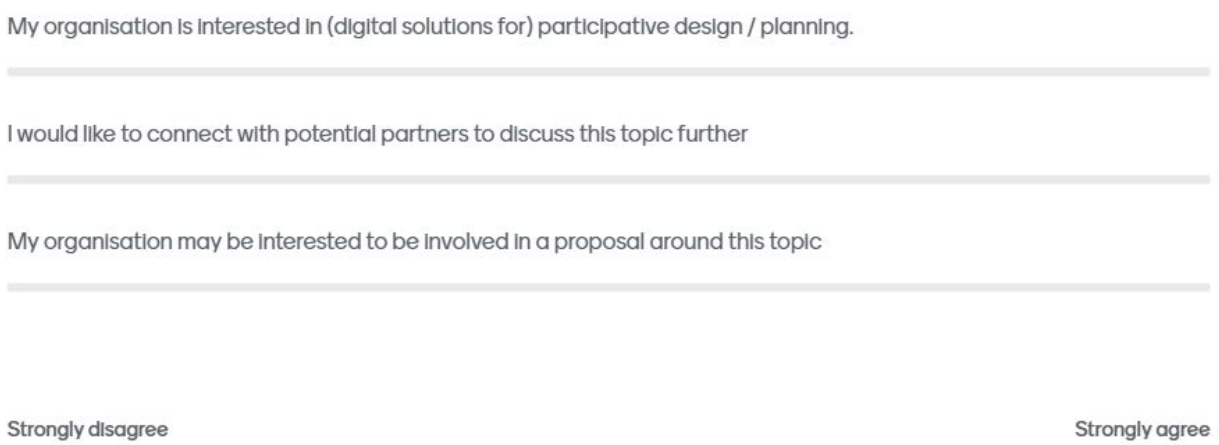
HORIZON-CL5-2024-D4-02-05

Digital solutions to foster participative design, planning and management of buildings, neighbourhoods and urban districts

What is your level of interest into the topic?



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Call 2: HORIZON-CL5-2024-D4-02-05

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BIM (Building Information Modeling)-based processes and digital twins for facilitating and optimising circular energy renovation (Built4People Partnership)

- IA, Budget 2x 4M€, **Deadline date:** 04 February 2025

Scope (all of the points):

Improve BIM/DT over the full life cycle of buildings to be more energy efficient; sustainable; circular; resource efficient.

- Adaptable and reversible **building design**
- Track and reuse/recycle/recover **buildings materials**
- Integrate **buildings monitoring data**
- Assess and track **building performance** over the lifecycle
- Demonstrate in a set (at least 2) of real-life **residential and non-residential** building construction and renovation projects

Outcomes:

- Reduced **buildings construction and renovation time and costs.**
- Increased buildings **material reuse and recycling**.
- Improvement of buildings **performance**
- Improved **buildings information** across the lifecycle
- **Interoperability** with and **broader applications** of BIM/DT solutions

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 1/6

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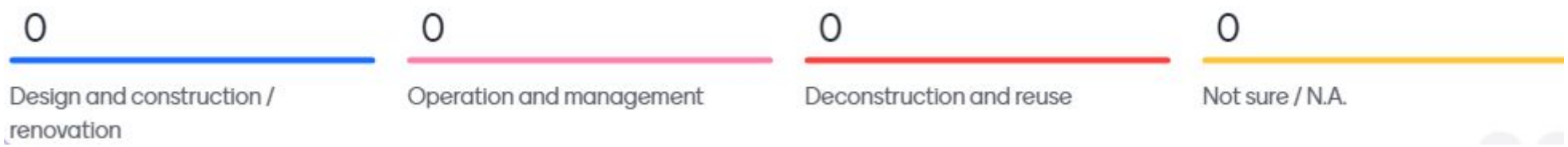
HORIZON-CL5-2024-D4-02-05

BIM (Building Information Modeling)-based processes and digital twins for facilitating and optimising circular energy renovation

Which phase of the building life cycle best fits your organisation?



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 2/6

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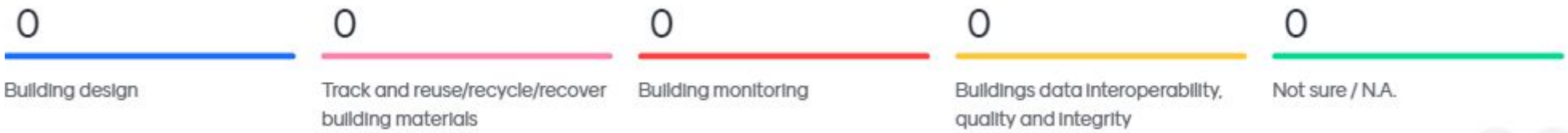
HORIZON-CL5-2024-D4-02-05

BIM (Building Information Modeling)-based processes and digital twins for facilitating and optimising circular energy renovation

Which aspect of BIM / Digital Twins for circular energy renovation could be of interest to your organisation?



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Question 3/6

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HORIZON-CL5-2024-D4-02-05

BIM (Building Information Modeling)-based processes and digital twins for facilitating and optimising circular energy renovation

What could be promising (BIM- or DT-based) solutions to support the whole buildings life cycle?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 4/6

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HORIZON-CL5-2024-D4-02-05

BIM (Building Information Modeling)-based processes and digital twins for facilitating and optimising circular energy renovation

Which unique expertise or solution could your organisation bring to enable BIM/DT for circular energy renovation?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 5/6

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HORIZON-CL5-2024-D4-02-05

BIM (Building Information Modeling)-based processes and digital twins for facilitating and optimising circular energy renovation

What role could your organisation have in a consortium around this call topic?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Question 6/6

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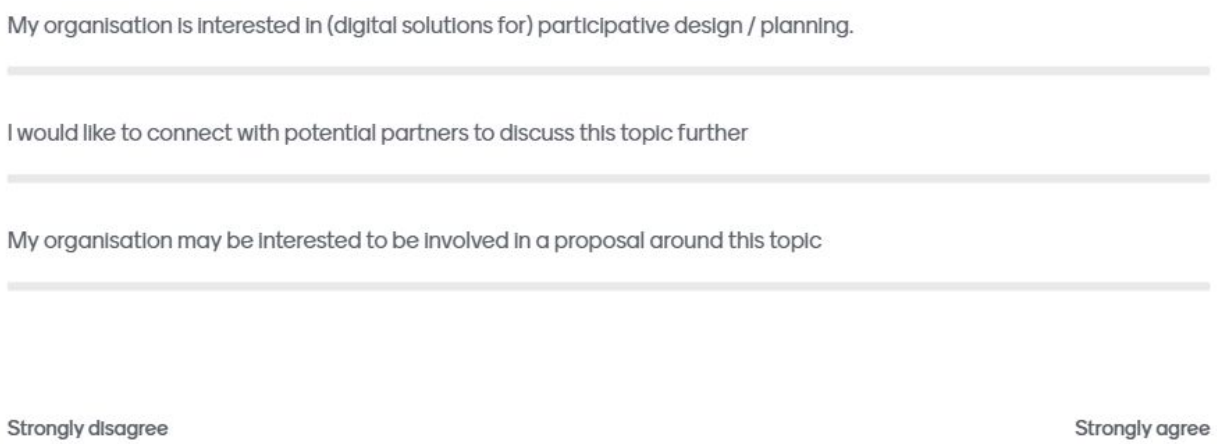
HORIZON-CL5-2024-D4-02-05

BIM (Building Information Modeling)-based processes and digital twins for facilitating and optimising circular energy renovation

What is your level of interest into the topic?



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

Interested in a follow up?

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Please share your details with each other or with us!

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Future topics

Expected content from Work Programme 2025.

Cluster 5 - Climate, Energy and Mobility

- Opening: 15 Apr 2025, Deadline(s): 17 Feb 2026

- "Societal readiness pilot for smart buildings”
- "Generative AI to advance digitalization of the energy system, including for service providers, operators and energy communities"
- “Digital innovations for energy communities, e.g. IOT, electricity trading, data exchange, cross-sectoral synergies (electricity, gas, mobility, etc.)”

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CONSORTIUM

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 10133744.

PNO

EGEN

Thank you!

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SmartSPIN

Competitive energy efficiency

Alvaro Diez (Smarkia)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033744.

Context & Overview

Overview: The SmartSPIN project aims to engage tenants to take actions that will further reduce building energy consumption, by introducing a competitive element.

Context: Using the principles of gamification and introducing a smartphone app that can compare the performance of tenants within the same building, the impact of introducing a competitive element to energy saving opportunities is being examined.

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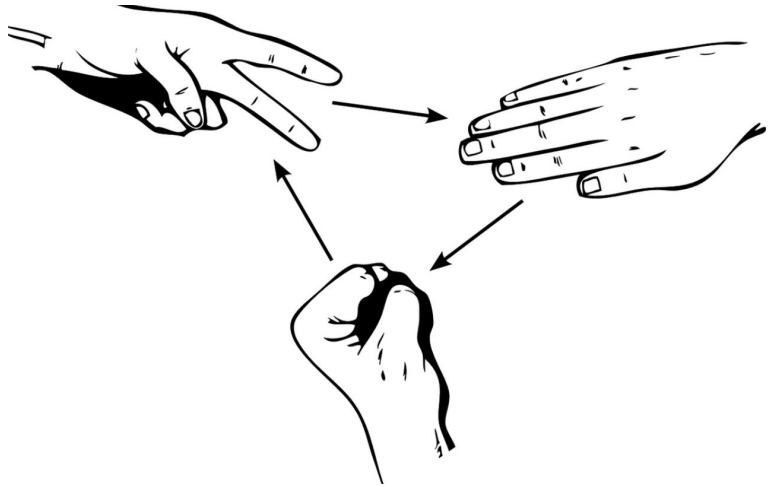
Game Theory

Game Theory: Framework for studying strategic interactions between decision-makers.

Key Concepts:

- Players: Decision-makers involved.
- Strategies: Possible actions players can take.
- Payoffs: Outcomes based on collective strategies.
- Equilibrium: No player can improve their outcome by changing their strategy alone



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SmartSPIN Gamification Strategy

Split Incentive Issue: Misalignment of benefits between landlords, tenants, and ESCOs in energy efficiency investments.

- **Landlords:** Hesitant to invest in energy-efficient systems as savings primarily benefit tenants.
- **Tenants:** Reluctant to upgrade since they don't own the property and lack long-term payoff guarantees.
- **ESCOs:** Struggle to secure funding and cooperation due to misaligned interests among stakeholders.

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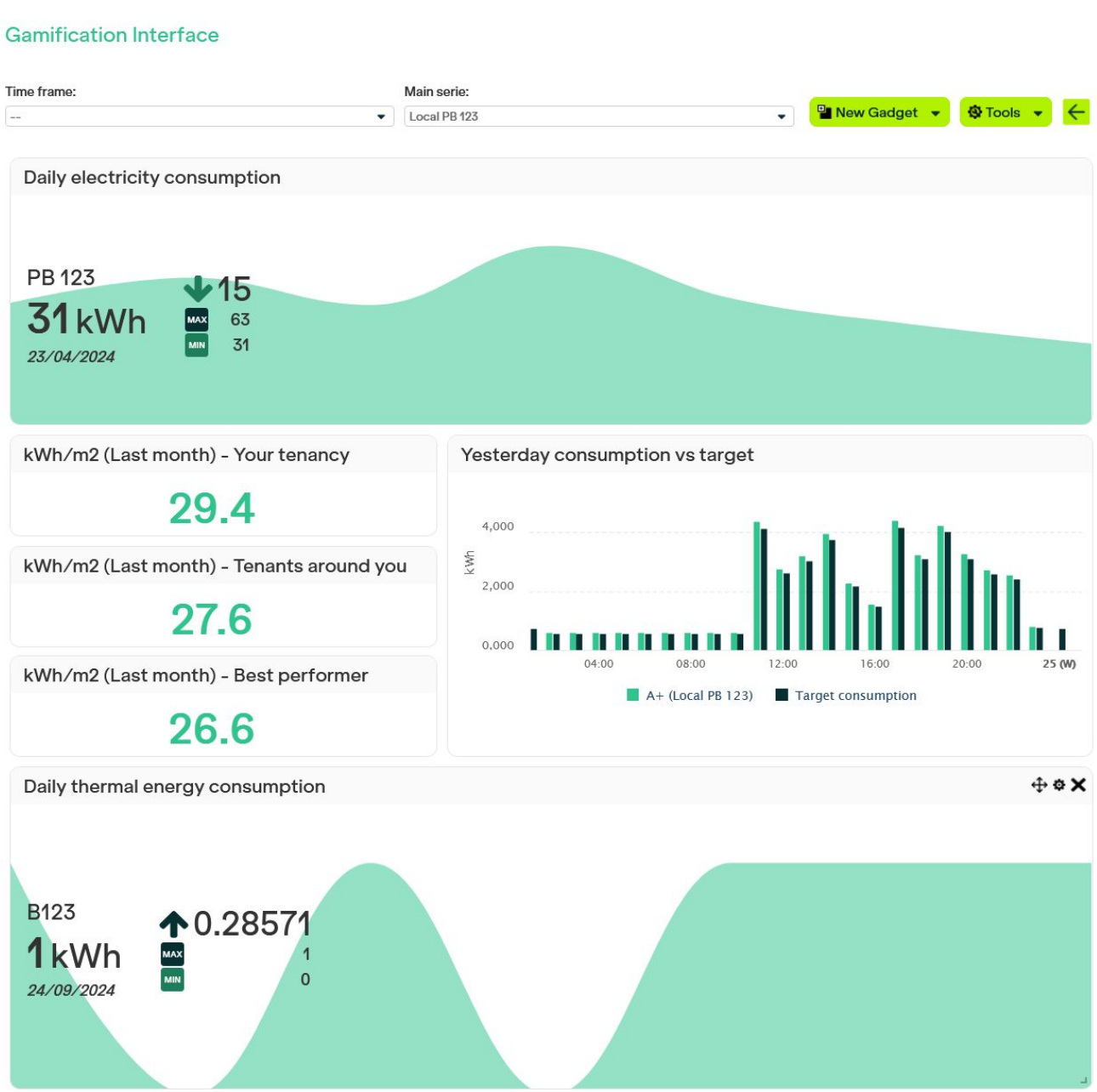
Interface

Metrics Provided:

- Daily consumption breakdown
- Comparison with tenants around and the best performer
- Consumption vs. target performance



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Example scenario

- **Initial Ranking:** A tenant's office ranks third in energy savings for the month.
- **Team Challenge:** The tenant challenges their team to turn off computers and reduce HVAC use over the weekend.
- **Reward:** They earn points and move to first place by the end of the month, receiving a utility discount and the "Green Office of the Month" badge.
- **Collective Impact**: The building achieves a 10% reduction in energy use, leading to a rent discount for all tenants.
- **Engagement:** Gamification makes energy-saving actions engaging and rewarding, encouraging tenants to contribute to reducing building consumption.

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Expected impacts

- Tenants to take actions to improve their energy performance.
- To identify commonalities between the different tenancies.
- To analyze the impact that the gamification app has on the consumption patterns of tenancies.

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Alvaro Diez (Smarkia)

Thank you!

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