Smart energy services to solve the **SP**lit **IN**centive problem in the commercial rented sector

Call topic: H2020-LC-SC3-2018-2019-2020
Start date of the project: 01/09/2021
Duration: 36 months

D1.1 - FIRST INTERIM REPORT ON THE ACTIVITIES OF THE PROJECT

Due date	**30 May 2022**	**Delivery date**	**1 June 2022**
Work package	1		
Responsible Author(s)	Ruchi Agrawal, Luciano De Tommasi		
Contributor(s)	SmartSPIN Consortium Members		
Dissemination level	CO		

Version and amendments history

Version	Date (DD/MM/YYYY)	Created/Amended by	Changes
V0.1	11/04/2022	Ruchi Agrawal	First draft
V0.2	20/05/2022	All the partners	Added respective contribution
V0.3	25/05/2022	Luciano De Tommasi, Ruchi Agrawal	First version of report
V0.4	31/05/2022	Stergios Kokorotsikos, Nikolaos Skordoulias	Final Quality Review
V1.0	01/06/2022	Luciano De Tommasi	Final review and submission

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

TABLE OF CONTENTS

List of tables

List of figures

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

LIST OF ABBREVIATIONS

Abbreviation	Meaning
EAB	External Advisory Board
ESCO	Energy Service Company
SES	Smart Energy Service
DMP	Data Management Plan
HVAC	Heating Ventilation and Air Conditioning
IPR	Intellectual Property Rights
PO	Project Officer
EED	Energy Efficiency Directive
EPBD	Energy Performance of Building Directive
SREC	Social Research Ethics Committee
GDPR	General Data Protection Regulation
IPMVP	International Performance Measurement and Verification Protocol
O&M	Operation and Maintenance
M&V	Measurements and Verification
RES	Renewable Energy Sources
UCC	University College Cork
WP	Work Package

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

1 PROGRESS SUMMARY

The first progress report on the activities of the project describes the summary of the progress to date against each task of each work package during the period of M1 (September 2021) to M9 (May 2022). In summary the key achievements of the project to date are as follows:

- Working relationships within the consortium are positive and supportive.
- A kick off meeting was held online via MS Teams on 14-15 September 2021 and the second consortium meeting (General Assembly) was held online via MS Teams on 8-9 March 2022.
- A risk register is being maintained by SmartSPIN consortium.
- In **work package 2** the project team has:
    - Reviewed existing business models for smart energy and energy efficiency services. Also, previous projects mentioned in the grant agreement have been reviewed.
    - Six interviews with the External Advisory Board Members and other stakeholders have been conducted to collect stakeholder perspectives on best practices for setting up contractual agreements for energy efficiency retrofits, challenges that are specific or amplified in the commercial building sector, and innovations that are needed for boosting investment in energy efficiency.
    - Maturity of SES and ESCO markets was reviewed in Greece, Ireland, Netherland, and Spain along with barriers and drivers for ESCOs market.
    - Potential of different types of energy efficiency interventions in different types of buildings was also studied.
    - Policies and regulations supporting innovative energy efficiency implementations were reviewed for Greece, Ireland, Netherland, and Spain.
    - To cater the best practice examples, policies from countries with matured ESCO markets were also reviewed.
- In **work package 3** the project team has:
    - Conducted research and review of legal aspects under Task 3.1, especially affecting the proposed SmartSPIN model, with the existing and developing market mechanisms around this topic. Existing legal aspects has been studied and reported under Deliverable D3.1, addressing the impact of existing and developing situations across Europe, especially in Ireland, Spain, and Greece.
    - Under Task 3.2, which focuses on smart contract design and led by HEBES, examples of automating the transactions between all the parties involved in different business models for energy efficiency have been developed. Since the SmartSPIN model is not formalized yet, the examples are based on the business models reviewed in D2.1. A similar analysis will be included in D3.4 that will provide details on the main aspects of the SmartSPIN model.
    - Several online interview sessions have been held with the advisory board members and a broader prospect of external stakeholders across Europe, representing the active ecosystem from different countries.
    - A dedicated discussion workshop session has been held in Month 9 within the consortium, led by Lawler Sustainability to address the scope, perspective, and model of the SmartSPIN, stakeholders, contractual service definition and more.
- In **work package 4** the project team has:
    - Delivered the structure of the web-app and initiated the assessment of the most suitable “target” market for the SmartSPIN split-incentives business model within Task 4.1
    - Started to analyse the data from the Spanish demo sites within Task 4.2 and 4.4.
    - Proposed the first developments within Task 4.3.
- In **work package 5** the project team has:

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

- Worked on to analyse and finalise the demonstration buildings for pilot implementation of SmartSPIN solution.
- Completed the auditing procedures necessary for the preparation of the pilot implementation and subsequent assessment of the SmartSPIN solution. The auditing was performed in parallel for all three demo sites on an energy consumption and smart equipment (already, or not yet installed) level with a view to define the requirements for the pilot sites to reach a ready-to-operate state.
- Successfully undertook mitigation actions related to the optimal demo site identification (Greece, Ireland) following the incomplete information available in terms of smart energy solutions advancements and interventions potential in the initially selected demo sites. Findings related to these final demo sites, are included within Deliverable D5.1.
- Completed the installation process of all smart equipment within the premises of the demo sites in Spain and Greece, necessary for the demonstration and validation phase of the SmartSPIN solution.

- In **work package 6** the project team has:
  - Not performed any activities yet related to WP6, as this WP6 is planned to begin in M13 of the Project
- In **work package 7** the project team has
  - Completed a first online survey identifying challenges and barriers that prevent the uptake of energy efficiency and flexibility measures in M7.
  - Completed the value chain analysis as part of the value chain and stakeholder analysis that will be completed in M12.
  - Established a structured collaboration with sister projects NEON and V2Market, as per indication by CINEA in M4.
  - Developed a dissemination & communication strategy aiming to maximise impact during and after the project.
  - Raise awareness among the target audience about the objective of the project, the consortium, results and potential of the business model.
  - Held an introductory meeting with the Advisory Board and set up a communication channel with them.
  - First SmartSPIN introduction video is ready and will promotion of video will start from June 2022.

Full details for all activities are given in Section 2 of this report.

2 PROGRESS OF WORK PACKAGES

The SmartSPIN project consists of seven separate work packages. The leader of each work package is listed in The participants in each work package will support and assist the work package leaders to deliver the project.

Table 1 and is responsible for the completion of all the tasks and deliverables of their respective WPs. The participants in each work package will support and assist the work package leaders to deliver the project.

Table 1: SmartSPIN WP and Leaders

WP No.	Work Package Title	WP Leader
1	Project Management	IERC
2	Review of smart energy services market for commercial rented sector	IERC
3	Contractual service definition	LS
4	Data analytics for energy management	TEC
5	Demonstration and validation of the proposed service	SMARKIA

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

6	Business model definition and development of SmartSPIN toolkit	EUNICE
7	Communication, Dissemination, Engagement & Exploitation	EGEN

2.1 WORK PACKAGE 1: PROJECT MANAGEMENT

WP1 relates to project management and, as the Project Coordinator, IERC is the leader of this work package. All partners have some time allocated against this work package to assist with the smooth running of the project. Objectives of WP1 are –

- To ensure smooth project implementation through proactive overall management of the project.
- To ensure high quality of project deliverables.
- To determine the mitigation and contingency plans for each risk.
- To develop and maintain a plan for data sharing and IP management to ensure that information is well protected according to ethical practices and any personal data collected is handled in compliance with GDPR.

T1.1 Overall project management

A kick off meeting was held online via MS Teams on 14-15 September 2021 and the second general assembly meeting was held online via MS Teams on 8-9 March 2022. First meeting with PO was held on 1 December 2021 and PO was also present in second general assembly meeting. It was agreed to organise quarterly project review meeting between PO and project coordinator (IERC). Fluent communication between consortium members, and between the Coordinator and the Project Officer, has been established and maintained during the first nine months of the project. The consortium has been working well together during the first nine months of the project, supporting each other, and assisting with all tasks undertaken to date.

The consortium has monthly meetings by teleconference to discuss project progress and to ensure that the project is on track for delivering on its targets. The meetings are chaired by IERC and attended by a representative from each consortium member. Actions, decisions, and key discussions are recorded in the minutes of the meeting which are then shared with the attendees and stored on the Microsoft Team drive. In addition to the regular monthly teleconferences held by the consortium, work package leaders also organise and facilitate further conference calls or online meetings when necessary to discuss progress with specific tasks. Below Table 2 represents list of submitted deliverables and Table 3 represents list of achieved milestones.

Table 2 Update on deliverable status

S No.	Deliverable No.	Deliverable Name	Due Date	Submission Date
1	D7.1	Dissemination & Communication Plans	30 Nov 2021	17 Dec 2021
2	D1.4	Ethics compliance report	28 Feb 2022	16 Feb 2022
3	D3.1	Review on legal aspects	28 Feb 2022	3 May 2022
4	D2.1	Review of existing business models for SES	30 Apr 2022	31 May 2022
5	D2.2	Report on market status and revenue stream mapping	31 May 2022	27 May 2022
6	D2.3	Review of policies on SES	31 May 2022	31 May 2022
7	D1.1	First interim report on the activities of the project	31 May 2022	1 June 2022
8	D3.2	Report on smart contract design	31 May 2022	Planned for mid-June 2022

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

9	D3.3	Recommendations to address the split incentive Issue	31 May 2022	Planned for mid-June 2022
10	D5.1	Installation and commissioning documentation	30 Nov 2021	Planned for mid-June 2022

Table 3 Update on Milestone status

S No.	Milestone No.	WP No.	Milestone Name	Due Date	Submission Date
1	MS1	1	Kick off Meeting held	Sep 2021	Sep 2021
2	MS3	1	Ethics approval obtained for surveys	Nov 2021	Sep 2021
3	MS4	2	Interviews with key stakeholders complete	Apr 2022	6 complete, 4 more Planned for June 2022
4	MS5	3	Performance-based contract templates available for use	May 2022	Template preparation continues under T3.3. The template will be published following the upcoming workshops. Planned for August'22
4	MS10	5	Data collection from pilot sites starts	Nov 2021	Nov 2021
5	MS14	7	SmartSPIN website is online	Nov 2021	Nov 2021
6	MS15	7	First online stakeholders survey complete	Feb 2022	April 2022

T1.2 Quality Management

The consortium is using Microsoft Teams with a SharePoint site as a means for collaborative working. This assists with version control and avoids the need to send emails with large attachments. Contact details of the technical, legal and financial leader within each partner organisation has been uploaded in Microsoft Team drive for easy communication within the consortium.

To maintain the quality of the deliverables, a dedicated quality reviewer has been assigned and agreed for each deliverable. Deliverables are reviewed by work package leaders before submitting a final draft to the assigned quality reviewer. The coordinator then carries out the final review of each deliverable before submitting it to the European Commission.

T1.3 Risk management

A risk register for the project has been created for logging the potential risk and encountered risk during the project execution period. The risk register is stored on the Microsoft Team drive so that all partners can review and update them regularly. Work package leaders or task leaders can update the register with any newly identified risks and mitigation measures on an ongoing basis and IERC (Coordinator) review the register to ensure that all risks are identified early and managed appropriately.

Each risk is assessed according to its severity, likelihood of occurrence and potential impact to determine the risk level (high, medium or low). Any required actions or risk mitigation measures are discussed at the monthly teleconferences and whenever required.

Two risks were identified by the consortium:

- Survey not reaching 30 answers
- Irish pilot-sites not prioritising energy efficiency

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

The entries added to the risk register are illustrated in Figure 1 and Figure 2. Both risks have been well managed by the consortium. The mitigation measures have proven to be effective. The survey eventually achieved the target number of responses. Furthermore, two new Irish pilot sites have been selected and the Irish pilot leader is currently liaising with the building owners and the tenants to put in place the agreements required to join the project and begin the preparation of the sites required for the demonstrations. More details about progress is available in section 2.5 of this report.

Risk log number: 001			
Date: 28/02/2022			
Name:	Luciano De Tommasi on behalf of Thomas Maidonis	Organization:	IERC (International Energy Research Centre) and EGEN
Description:		Not reaching the responses target through the survey	
Risk severity:		Low	
Likelihood of occurrence:		Medium	
Overall risk score:		Low to medium	
Work packages and tasks impacted:		WP7 • Hebes' task (interviews): Less content provided from the survey to their process (minimal impact) • Stakeholders' analysis: Planned for August, so no impacts from this small delay in closing the survey, but the quality could be compromised if the sample is not large enough for a statistical analysis to make sense	
Risk mitigation measures:		Have it open for a bit longer while running an additional dissemination campaign	

Figure 1: Risk 1- Survey not reaching 30 answers

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

Risk log number: 002			
Date: 03/03/2022			
Name:	Luciano De Tommasi	Organization:	IERC
Description:		Managers of Irish pilot-sites (Charlestown Shopping Centre and Lidl) lowered the priority given to energy efficiency upgrades because of strategy and organisational changes due to the impact of COVID-19 pandemic.	
Risk severity:		Medium-High	
Likelihood of occurrence:		High	
Overall risk score:		Medium-High	
Work packages and tasks impacted:		WP5	
Risk mitigation measures:		Alternative demo-sites are being investigated in Ireland (an office building and a shopping centre) to replace if necessary Charlestown and Lidl.	

Figure 2: Risk 2 - Irish pilot sites not prioritising energy efficiency

T1.4 Task Data Management Plan (DMP) and Intellectual Property (IP) Management

This task will be undertaken by TEC who will create the Data Management Plan (DMP) based on template of H2020 manual. The deliverable, associated with this task (D1.3) is due on M12. The DMP will evolve as required during the project's lifetime to reflect the data gathered and any IP that is developed as a result of the consortium's activities. An initial plan has been laid out by TEC and will undertake detailed work in coming months.

IERC will lead the IPR management. The IP rights will start from mapping the existing patents and identify potential overlapping IPR. The findings and recommendations for IPR protections will be included in the final exploitation plan.

T1.5 Ethics compliance for personal information

IERC is responsible for the ethical handling of all the data that is collected and generated during the delivery of the SmartSPIN project. SmartSPIN research will include surveys and interviews with stakeholders of the commercial rented sector across multiple European countries (Spain, Ireland, Greece and others). The project has received approval from the University College Cork (UCC) Social Research Ethics Committee (SREC) for conducting online surveys and individual interviews with stakeholders in Ireland.

The consortium has also set up processes for ensuring that the SmartSPIN project is compliant with the General Data Protection Regulation (GDPR). These processes are contained in D1.4 Ethics compliance report, which was submitted in M6, and all partners are required to adhere to these principles for the duration of the project. If necessary, this report will be updated to reflect any additional data handling actions that become apparent as the project progresses.

T1.6 Evaluation and monitoring of the performance indicators

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

An Impact analysis methodology approach will be developed to measures the SmartSPIN performance and impacts against the set objectives and impact indicators. IERC have identified IPMVP methods and their possible application in the SmartSPIN project. This methodology will be developed further over the course of the project. Feedback and remarks from pilot leaders will be collected to develop the detailed methodology.

T1.7 Contribute to common information and dissemination activities

Partners are contributing to common project information and dissemination activities to increase synergies between, and the visibility of H2020 supported actions via social media account of SmartSPIN project in LinkedIn and twitter.

2.2 Work Package 2: Review of smart energy services market for commercial rented sector

IERC is leading WP2. The objectives of WP2 are:

- To evaluate the current state of the smart energy services market with a focus on commercial rented sector.
- To understand the key challenges and drivers to deployment and uptake of smart energy services in this sector.
- To understand the attitudes and perceptions of stakeholders throughout the value chain.
- To provide recommendations for the optimal design of the SmartSPIN Service.

T2.1 Review of existing business models for smart energy services

The task has reviewed existing and emerging business models for smart energy and energy efficiency services. The goal of the review was to identify commonalities between the different models, as well as to generalize how successful models for the deployment of distributed energy generation could be applied to the case of energy efficiency upgrades. In addition, a series of interview was organised with key stakeholders, including members of the Advisory Board of the SmartSPIN project and companies in the SmartSPIN partners' networks to supplement and further evaluate the identified business models.

T2.2 Market & revenue stream mapping

Under this task a mapping exercise was carried out to determine the existing maturity of the market for ESCO services, flexibility services and smart energy services in each of the countries represented in the consortium i.e., Greece, Ireland, Netherland, and Spain. This mapping exercise has been based on desktop research and involved the collaboration of IERC, HEBES and LAWLER. Apart from mapping exercise a series of online interviews were organised with the key stakeholders of SmartSPIN project including EAB members to assess the energy service market maturity in their respective countries.

Further, mapping of the potential revenue streams and value creators that could be included in a smart energy services contract of the future across different building typologies was conducted. Additionally, potential energy efficiency opportunities were evaluated for different types of buildings along with likely impact of future market developments such as dynamic tariff structures and peer-to-peer trading. The outcome of this task will be fed to T2.4.

T2.3 Review of policies supporting smart energy services

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

Under T2.3 review was conducted regarding policies and regulations of consortium countries (Greece, Ireland, The Netherlands and Spain) affecting the deployment of innovative energy services models in tenanted commercial buildings at European and country level (for example policies related to driving uptake of energy efficient building renovation, encouraging uptake of performance based contracts, expanding the demand response and flexibility markets, smart meter roll out, access to energy data and indoor climate conditions & comfort; health and safety). Apart from this, Energy Efficiency Directive (EED) and Energy Performance of Building Directive (EPBD) were reviewed at European level. Also, the best practice policies from the countries having mature energy service market (Germany, UK, and France) were reviewed. The outcome of this task provided useful insights about the existing schemes which support the ESCO market development and show that the potential contribution of the SmartSPIN SES and business model on their maturation in Spain, Ireland, Greece, The Netherlands, and other EU (European Union) countries is significant. The task was based on desktop research and an effective collaboration between IERC, HEBES, LAWLER and TECNALIA. The outcome of this task will be fed to T2.4.

T2.4 Recommendations for the SmartSPIN Service

T2.4 will start from June 2022 to August 2022 and will draw together the results from T2.1, T2.2 and T2.3. This task will identify gap between the requirements of key stakeholders in the energy efficiency value chain, the existing energy services, and performance-based offerings currently in the market and the proposed market offering developed in WP3. The aim of this task is to draw recommendations to improve SmartSPIN service offering.

2.3 WORK PACKAGE 3: CONTRACTUAL SERVICE DEFINITION

LS is the leading WP3. The objectives of WP3 are –

- To issue a set of guidelines of best practice to address the split incentives issue
- To define the exact services that the SmartSPIN model will include.
- To define the landlord/tenant/ESCO transactions (data and value exchanges, risk sharing).
- To design a contractual template of the service.

T3.1 Review of legal aspects

Task 3.1 focuses on a research and review of legal aspects, especially affecting the proposed SmartSPIN model, with the existing and developing market mechanisms around this topic. IERC and HEBES contributed to the task studies and deliverable reporting, especially addressing and focusing the local existing situations in Spain and Greece. So then, an overall review could have been presented accordingly.

Throughout this task, while addressing the split incentive issue, energy efficiency measures and legal aspects, the impact of the existing O&M contracts, pre-existing tenancy agreements, equipment warranties and GDPR and data protection on smart metering were analysed. Further technical requirements for demand response, the situation and plans on energy communities and P2P trading and the situation and national and international plans on sub-metering of the tenants were assessed. The deliverable D3.1 Review on legal aspects has been submitted with a two-months delay according to the initial plan, because LS being a pilot leader for Irish demo site, need to spend more time to mitigate the risk and finalise the Irish pilot building. This risk has been discussed in detailed in section 2.1 and section 2.5 of this report.

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

T3.2 Smart Contract Design

The task has developed examples of automating the transactions between all the parties involved in different business models for energy efficiency. The main rationale behind automating transactions is that it enhances transparency and trust among the involved parties. Since the SmartSPIN model has not yet been defined in detail, the deliverable uses the models presented in D2.1 to showcase opportunities for business model digitalization.

The framework of D3.2 will also be utilized in D3.4 where the details of the SmartSPIN model will be elaborated. The deliverable 3.2 Report on smart contract design has been drafted and planned to be submitted in mid-June 2022, with two-weeks delay, due to previous SmartSPIN model discussions.

T3.3 Recommendations to address split incentive issue

Task 3.3 focuses on an interactive study with recommendation to address the split incentive issue. LS is the leading this task. LS led an interactive consortium workshop session, with a discussion on the recommendations and the SmartSPIN model. LS and HEBES initiated a draft model, based on the proposed project description and other feedback.

Several online interview sessions have been held with the external advisory board members and a broader prospect of external stakeholders across Europe, representing the active ecosystem from different countries. The insights and recommendations gathered from the interviewees have been very essential inputs to the ongoing and upcoming tasks.

Alternative solution propositions active in some European and global markets such as green leasing and on-bill financing have been examined and evaluated for its applicability within the SmartSPIN use cases. IERC and EUNICE contributed to the task and the report, especially with research and impact assessment of green leasing and on-bill financing in the relative markets.

The deliverable 3.3 Recommendations to address the split incentive issue has been drafted and planned to be submitted in mid-June 2022, with two weeks delay, due to previous SmartSPIN model discussions.

T3.4 SmartSPIN Service definition

Task 3.4 aims to clearly define the SmartSPIN service that will be offered to the commercial rented sector in each of the pilot countries and to define the role of the ESCO, landlord and tenant.

This task will incorporate the recommendations and the findings from previous tasks of WP2 and WP3. The service defined based on the pilots, stakeholder requirements, market maturity and regulations.

The interview sessions with advisory board and external stakeholders, as well as the consortium workshop sessions and the discussions with the actual pilot providers have been important inputs for the SmartSPIN service definition, and this task will be further developed in the upcoming months.

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

2.4 WORK PACKAGE 4: DATA ANALYTICS FOR ENERGY MANAGEMENT

TEC is leading WP4. The objectives of WP4 are –

- To capture, process and valorise data streams arising from continuous building monitoring to support SES.
- To define an automated M&V approach and associated tools for the SmartSPIN business model.
- To develop platform-agnostic models and algorithms for (i) building performance diagnosis, (ii) automating baseline establishment, (iii) predicting short and long term energy-efficiency and flexibility opportunities.
- To enable a platform-agnostic modular implementation, allowing the independent or combined use of algorithms developed as back-end, communicating over the cloud with any data-platform in the market.
- To integrate the processes and smart-contract characteristics developed within WP3 with the visualization and presentation of outcomes generated by the data-driven algorithms developed.

T4.1 Assessment of the potential for energy management within performance-based contracts

D4.1 has been delayed due to temporal short-staffed issues within TEC. TEC will intensify its resource allocation along 2022 to catch-up with any delay.

The draft structure of the interactive web-app has been developed, put online and shared among the partners, for which feedback will be implemented in the upcoming months.

In parallel, the analysis of the most suitable “target” market for the SmartSPIN split-incentives business model have been initiated based on the work carried out by previous H2020 projects, especially the NOVICE project. The qualitative analysis is done at 50% while the quantitative analysis is yet to be initiated. Both analyses will be finalized and implemented in the web-app by end of June.

T4.2 SmartSPIN early building diagnostics

Based on the data provided by Smarkia on the Spanish demo sites, the foundations of the data-driven energy diagnostics algorithms have been initiated to identify the most significant energy & cost streams in the building.

T4.3 Development of automated M&V approach

Task 4.3 aims to identify best practices, methods and requirements of advanced M&V protocols and outline key technical issues for developing a more comprehensive vision for their application and acceptance in the context of the proposed SmartSPIN model. Up to this point, the task has been focusing on designing the methodologies that will support two aspects of the SmartSPIN M&V solution:

1. The practical implementation of continuously monitoring the relevance of a baseline model and its automated update (for option C of the IPMVP)
2. A digital twin approach for monitoring the dynamics of a piece of equipment / subsystem so that to verify that operational characteristics after the retrofit conform to the expectations before (for options A and B of IPMVP)

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

T4.4 Data-driven prognostics for operation and control

Based on the data provided by Smarkia on the Spanish demo sites, the foundations of the algorithms for short & mid-term energy and cost predictions of building performance have been initiated.

2.5 WORK PACKAGE 5: DEMONSTRATION AND VALIDATION OF THE PROPOSED SERVICE

Smarkia is leading WP5. The objectives of WP5 are -

- Prepare the selected demonstration sites for demonstration activities
- Gather baseline data from metering equipment.
- Implementation of the recommended control and energy efficiency measures.
- Compare actual energy consumption to predicted for each pilot site to confirm successful deployment.
- Develop a strategy to achieve customer engagement & savings through gamification.
- Validate the proposed service model.

Task 5.1 Site preparation and setting the baseline

Focus of Task 5.1 is the overall technical and administrative preparation of the selected demonstration buildings for the testing and validation of the various elements of the SmartSPIN solution to be performed.

EUNICE, being the leader of T5.1, worked collaboratively with all demo site leaders, for the coordination of all activities and actions related to setting up the baseline and requirements of the pilot sites in terms of installed smart equipment, paving the way thus, towards their preparation for the subsequent demonstration and validation of the SmartSPIN solution.

In this regard, within the scope of T5.1 and D5.1 accordingly, a detailed installation and commissioning plan, including an installation documentation has been created, with each pilot site leader, being responsible for the delivery, installation, as well as commissioning of all smart or auxiliary equipment, necessary for the uninterrupted and robust demonstration of SmartSPIN elements. The documentation included within D5.1 addresses the design, installation and commissioning of the SmartSPIN solution with emphasis placed on the on-field activity (sensor-to-local area network) and edge levels (local-to-external area network), both of which will enable robust data collection and uninterrupted communication between local energy data acquisition systems and the Data Brokering Layer (DBL) in SMARKIA's global platform.

Additionally, D5.1 is developed in such a way, including a detailed description of the buildings as the pilot sites, its energy needs and already installed RES production and energy monitoring equipment, as well as its current tenant-owner relation, with a view to providing the reader with the complete and detailed by all governing aspects overview of the pilot cases acting within the framework of SmartSPIN. Moreover, a detailed description and list of all hardware, software as well as data exchange and communication elements already present or planned to be installed within the demo sites is included within Deliverable D5.1, the findings of which, are part of the inspection phase, all pilot site leaders undertook throughout the preliminary phase of WP5.

The Milestones achieved by all pilot site leaders, are described below per pilot country:

1. Spanish pilot

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

- Completion of all pilot inspection and auditing activities for the identification of all currently installed energy related smart and auxiliary equipment of the building

2. Irish pilot
   - Irish pilot proposed during the project proposal period has been re-evaluated and changed to a different demonstration site in Ireland. This decision was based on and after several meetings and discussions among internal and external stakeholders. LS team had meetings with several demo providers to find and include a stronger demo case in Ireland. The sourcing of a new site meant not just establishment of a relationship with JLL the property management company but also with tenants. During this first period of the project, alternative pilot providers has been examined and the SmartSPIN has been presented to them accordingly.
   - As of this reporting date, there is an ongoing collaboration going for the office building in Dublin, Ireland, representing a strong case with multiple commercial rental cases within that. The administrative procedures and as well as the technical site visits has been conducted. Early stage assessment of site opportunity for both rental and landlord premises is ongoing. Moreover, previous engineering and energy related information on building has been collected through several service providers. Site visit with a building analysis and energy audit has been conducted following the agreements. Receiving necessary information, the challenge of mobilisation of parties to an implementation phase will be carried out. 30 Herbert Street case is active in the project and is being adapted to the SmartSPIN service model, testing and demonstrating such proposed models and addressing the challenges and opportunities.
3. Greek pilot
   - Completion of all pilot inspection and auditing activities for the identification of all currently installed energy related smart and auxiliary equipment of the building and consecutive preparation of the commissioning and installation of the new smart and auxiliary equipment
   - Completion of the installation and integration of all new smart and auxiliary equipment into the building pilot, necessary for the demonstration and validation of the SmartSPIN solution.

Task 5.2 Implement energy efficiency & flexibility measures

This task is responsible for the implementation of the energy efficiency and flexibility measures at each pilot site. In Spain and Greece, this task requires the deployment of the improved control of building systems developed in T4.2 at the demonstration sites. Currently T4.2 has been initiated but further work is required to finalise its outcomes and to allow the progress of T5.2.

In Ireland, the demonstration site has been replaced by a new one (this was reported in T5.1) and the package of energy efficiency measures which will be deployed at the new pilot site will be determined upon a sufficient progress of T5.1 and T4.2. It is still envisaged that the adopted measures will be a combination of (a) improved control of building systems as per the measures developed in T4.2 and; (b) other measures requiring investment to upgrade building systems e.g. lighting, HVAC and building fabric upgrades.

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

At each pilot site, all system specifications are being analysed so as to ensure that the to the building systems operate in accordance predefined specifications for SmartSPIN pilot implementation. The information relevant for evaluating energy performance will be drawn to ensure the high quality of data collected, thus the model can be validated correctly.

In order to analyse the performance, the data sources for all relevant systems from each demo site is being integrated on SMARKIA platform. In Spain the majority of data has been integrated, in Greece the data exchange method has been defined and will be developed in the coming dates, in Ireland the level of installed and planned smart equipment is being assessed. The approach and specifics of each demo site are being carefully considered so as to provide general monitoring guidelines/supporting documents and maintain standardisation of SMARKIA platform.

2.6 Work Package 7: Communication, Dissemination, Engagement & Exploitation

EGEN is leading WP7. The objectives of WP7 are:

- Promote and uptake of innovative business models developed in SmartSPIN amongst targeted stakeholders.
- Develop and implement effective dissemination, communication and exploitation plans and strategies to maximize impact during and after the project.
- Engage with stakeholders to understand their challenges and attitudes towards efficiency and flexibility, validate the business models developed in the project and identify potential future collaborations.
- Ensuring a short and smooth go-to-market strategy for the results of SmartSPIN through dedicated exploitation workshops.

T7.1 Value chain, consultation & stakeholder analysis

This task is conducted based on a proven methodology developed by EGEN/PNO that consists of:

- A first version of a value chain analysis creating a basis for all WP7 activities.
- A first online survey identifying challenges and barriers that prevent the uptake of energy efficiency and flexibility measures.
- An EU project analysis identifying innovators in the field and a complementary patent analysis.
- An analysis of business drivers identifying relevant parties that are not necessarily directly involved with the process but are nonetheless relevant to its success.
- A second online survey that measures stakeholders' interest, knowledge and attitude towards the business models developed in the project.

Work on the value chain and stakeholder analysis has already started in the first months of the project (M1-M3) with the value chain analysis that provided a first map of stakeholders and analysed their role, their relevance, and potential ways they could benefit from SmartSPIN. This analysis has set the boundaries for all WP7 activities, it is reported in D7.2 (to be submitted in M12, August 2022) and it has informed the communication and dissemination strategy presented in D7.1 (part of Task 7.2).

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

Following that, a stakeholder's survey was designed over M3-M5, which has consisted of a medium for a first active engagement with the project stakeholders. The survey primarily focussed on the identification of challenges, opportunities, and insights to potential business models. It was launched in M5 and remained open until M8 resulting in the collection of 30 responses from ESCOs, tenants, landlords and other stakeholders. The input collected has been shared with HEBES and has been used as a starting point for some of the interviews in WP2. The analysis of the survey is also provided in D7.2, together with the value chain analysis.

Though the EU project analysis has just been started in M9, EGEN have established a structured collaboration with sister projects NEON and V2Market, as per indication by CINEA in M4. A kick-off meeting took place on 09/02/2022, followed up by a communication, dissemination, and exploitation workshop on 24/03/2022 (between partners EGEN, PNO, Ecoserveis, smartEn and comet) and a workshop on the definition of services on 31/03/2022 (between EGEN, IERC, HEBES, engie, Ecoserveis, Institute Pupin, R2M and Eurice). A joint press release on the collaboration between three projects is planned for the coming weeks.

Next steps in Task 7.1 are currently focussing on the EU project analysis and patent analysis mentioned above. All task 7.1 activities over M1-M12 are being reported in D7.2, which is to be submitted in M12, August 2022.

T7.2 Communication & dissemination strategy

The activities relevant to task 7.2 will be ongoing throughout the lifespan of the project. The activities consist of making sure that the relevant stakeholders are kept up to date with the progress of the project, made aware of the achieved results and prepare the ground for adequate exploitation of the project results.

The following activities have been carried out during M1 to M9:

- **Project website**: the website was launched in M2 (November 2021) and has been regularly updated with frequent news and events, newsletters and press-releases. During this reporting period, eight project updates and news items, and one event have been posted on the SmartSPIN website. Bearing in mind the gap (M1-M6), from M6 the website has attracted 280 users and 257 new users. The updates have generated a total of 1,500 page-views and 589 sessions. Overall, a user spends one minute and 41 seconds on the project website pages. Most users visiting the website are from Ireland, Spain, Netherlands, United States followed by Greece, Belgium and China. In addition, partners also promote the project on their respective websites.
- From M2 to M6, due to a technical error, Google Analytics did not gather the stats of the website what means that there is no data available for this period. However, in March 2021, the tool was properly configured, starting at this moment the data-gathering.
- **Project social media channels** were opened on LinkedIn and Twitter in M1. During this period, 19 posts were published on LinkedIn and 20 on Twitter to promote SmartSPIN scope, partners, activities and generated results. By month 9, the LinkedIn project page has gained 55 followers and Twitter respectively 14. The results from M1 to M9 are show in following Table 4:

Table 4: SmartSPIN Social Media response numbers

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

Channels	Impressions	Page views	Clicks
Twitter	3,761	6,712	19
LinkedIn	6,231	438	256

Moreover 11 social media posts were also published by the partners on their corporate social media channels.

- **Press release**: the very first press release was published after M6 with the aim of presenting SmartSPIN, the problem the project is tackling, the objectives and the consortium. It was shared on the project website, social media channels, consortium's channels and journalists.
- **Newsletter**: the very first newsletter was launched after the first General Assembly (8-9 March 2022) and distributed to 22 subscribers in M8. The bulletin was opened in total 13 times with 16.7% click per unique opens. The most read article is about SmartSPIN contractual service and the first demo sites. In addition, the newsletter was also distributed via the partner's social media channels, sister projects (NEON and V2Market) and the PNO Group Innovation Place platform.
- **Video**: SmartSPIN consortium decided to create an animated video (2D) to present the project scope in the early project start. Therefore, a video production company from Spain with wide experience in research and science project was selected for this deliverable. The first SmartSPIN video has been finalized in M9 (May 2022) and will be promoted from M10.
- **Promotional materials**: all marketing materials created in M3 (November 2021), to support the consortium in raising awareness about the project, are publicly available on the project website under Results page.
- **Events**: SmartSPIN has not organized any events and the consortium has not yet participated in external events.

T7.4 Advisory Board set-up & management

On April 13th three new members were invited to join the Board to replace other members who could not keep their commitment because of unforeseen circumstances. The updated list of advisory board members is presented in below in Table 5:

Table 5: List of SmartSPIN External Advisory Board members

S No.	EAB Member	Organisation	Country
1	Michael Dooley	Dunnes Stores	Ireland
2	Anastasia Fetisova	JLL	Ireland
3	Thomas Nowak	EHPA	Belgium
4	Holly Smith	SERCO, Europe	Belgium
5	Carlos Ballesteros Barrado	ANESE	Spain
6	Jorge Díez	Klepierre Management Espana	Spain
7	Joe Hayden	CODEMA	Ireland

The SmartSPIN advisory board members were invited to attend an introductory meeting on February 25, 2022. After the introduction of the participants, the objectives and the methodology of the SmartSPIN project were discussed and the advisory board members provided their first comments to the consortium members.

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

In May 2022, six interviews were organised with EAB members and other key stakeholders to provide some inputs relevant with WP2 and WP3. The interviews were audio-recorded. Four interviews are planned in June 2022 to reach the target number of 10.

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