SmartSPIN

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

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D7.4 – BUSINESS AND EXPLOITATION PLAN

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List of Abbreviations

Abbreviations	Description
API	Application Programming Interface
EEaaS	Energy Efficiency-as-a-Service
EPC	Energy Performance Contract
ESCO	Energy Service Company
GA	General Assembly
KER	Key Exploitable Result
M&V	Measurement & Verification
SES	Smart Energy Services
USP	Unique Selling Point
WP	Work Package

EXECUTIVE SUMMARY

This deliverable outlines the exploitation activities and strategy of the SmartSPIN project. While the full exploitation plan is confidential, this public version excludes parts that contain sensitive or confidential information. The exploitation and innovation assessment methodology is excluded, and the exploitation roadmaps are now light versions excluding sensitive information and results. The KER-owners are also anonymized.

SmartSPIN's exploitation strategy can be divided in six steps:

1. *Development of exploitation framework.* The framework has been developed in order to establish a common understanding of concepts related to innovation, exploitation, dissemination and communication, and to support the planning and implementation of exploitation activities within SmartSPIN.
2. *Development of innovation assessment methodology.* The innovation assessment is based on eight criteria which are key for innovation success. The innovation assessment provides a gap analysis which gives clear insights in the actions that need to be taken to improve the market readiness and increase the chances of a successful market adoption.
3. *The preliminary exploitation assessment.*
   Preliminary project results were identified at proposal stage. The Key Exploitable Results (KERs) have been identified and selected during the 1st exploitation workshop in the General Assembly (GA) meeting in Cork. The exploitation potential was assessed by looking at the degree of innovation, exploitability and impact of the results. This has resulted in a shortlist of five KERs. Other results that have not been selected will be disseminated or communicated through the website or social media channels of the project.
4. *Innovation assessment.*
   An innovation assessment has been conducted for each KER. The innovation assessment consists of a gap analysis for the exploitation of individual KERs, providing clear insights in relevant business aspects that are still lacking. The innovation assessment has been conducted by means of an interview with representatives of the involved project partners.
5. *Exploitation roadmap.*
   The innovation assessment resulted in exploitation roadmaps that are tailored to the needs of individual KERs. Exploitation actions are defined to cover identified gaps in exploitation of project results. The implementation of these actions helps the SmartSPIN partners to improve the market readiness of their project result.
6. *Exploitation actions.*
   After the lifetime of the project SmartSPIN partners are provided with a roadmap to realize the implementation of their exploitation actions, which serve as a starting point for commercial exploitation of project results when the project has ended. Due to the limited timeframe not all identified exploitation actions could be implemented during the project. As such, the exploitation roadmaps can serve as a starting point for commercial exploitation of project results when the project has ended.

The following KERs have been selected:

- Interactive assessment tool
- Performance-based contractual template for Energy Service Companies (ESCOs)

- Platform-agnostic SmartSPIN models
- Mobile app for gamification
- Measurement and verification framework

For each KER, an exploitation roadmap has been drafted. In cooperation with the respective development partners, exploitation roadmaps have been drafted describing exploitation strategies which are tailored to the needs of individual innovations. These strategies are constructed from a variety of actions that address both the technological and business aspects of the SmartSPIN innovation, ultimately resulting in an enhanced market readiness.

1 INTRODUCTION

1.1 SMARTSPIN CONCEPT

One of the major barriers to smarter and more energy efficient building renovations in commercially rented buildings is the split incentive problem – i.e., the problem that arises when the benefits of a transaction do not accrue to the person who pays for it. Performance based contracts such as Energy Performance Contracts (EPCs) have been available for a number of years and have proven highly successful in the public sector. However, in most Member States EPCs have not yet penetrated the commercial rented sector due largely to two interrelated barriers: (a) the long contract duration of EPCs (8-15 years is common) which in many cases can be longer than the tenancy contract, and (b) the split incentive problem. Despite the size of the commercial rented sector and the potential for energy savings, no business model for performance-based energy efficiency has yet been able to penetrate the market in any significant way, leaving this market largely untapped.

The first step in the SmartSPIN business model is to implement low-cost actions to reduce building's energy consumption such as adding sensors to improve state estimation capabilities, fine tuning the operation control of the systems and unifying it under a common goal of improved energy efficiency. Such measures have a short payback time, which mitigates one of the barriers to energy performance contracting in the private sector: the long contract duration. To overcome the second major barrier, the split incentive problem, SmartSPIN advances the Energy Efficiency-as-a-Service (EEaaS) model. EEaaS is based on the concept of an energy efficiency service provider offering solutions that: (a) combine demand management services and energy efficiency interventions, (b) facilitate the adoption of renewables, and (c) optimize the balance between demand and supply, while the customer pays for the service through a monthly, quarterly or annual fee that is linked, directly or indirectly, to the energy savings realized on utility bills.

1.2 DOCUMENT STRUCTURE

Deliverable D7.4 is the business and exploitation plan and provides the exploitation methodology that has been followed during the project, the outcomes of SmartSPIN's exploitation strategy and the societal impact that is created with project activities. Following this introductory Chapter, Chapter 2 provides general information on the SmartSPIN project, its objectives, expected results and foreseen impact. Chapter 3 addresses the exploitation methodology that has been applied for the exploitation of project results. While the following chapters describe each phase of the methodology in more detail:

➢ Chapter 4 describes the preliminary exploitation assessment (identification and selection KERs);
➢ Chapter 5 gives more insight in the individual exploitation roadmaps that have been developed for selected KERs;
➢ Chapter 6 describes the external exploitation workshops that have been and will be organized.

Finally, chapter 7 concludes this business and exploitation plan.

While the full exploitation plan is confidential, this public version excludes parts that contain sensitive or confidential information. The innovation assessment methodology is excluded, and the

exploitation roadmaps are now light versions excluding sensitive information and results. The KER-owners are also anonymized.

2 SMARTSPIN: OBJECTIVES, EXPECTED RESULTS, AND IMPACT

The aim of this section is to provide an overview of the SmartSPIN project objectives, outcomes and expected impacts.

2.1 OBJECTIVES

SmartSPIN is a coordination and support action funded by the European Union's Horizon 2020 programme and coordinated by the International Energy Research Centre (IERC). SmartSPIN aims to develop, test, validate and exploit a new business model for Energy Service Companies (ESCOs) that leads to greater uptake of Smart Energy Services (SES) deployed via performance-based contracting in the commercial rented sector, hence driving up building renovation rates in Europe. More specifically, SmartSPIN's objectives are as follows:

- ➢ 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.
- ➢ To address the barriers that prevent the commercial rented sector from engaging in energy services, energy efficiency projects and performance based contracting.
- ➢ To demonstrate how big data generated from smart equipment can be used to better control energy consumption in buildings and more accurately measure and verify energy savings and flexible energy consumption.
- ➢ To develop an innovative business model and new contractual templates that allow the proposed SES to be deployed in the commercial rented sector.
- ➢ To engage and train key market stakeholders (ESCOs, landlords, tenants, industry bodies, Measurement & Verification (M&V) practitioners, smart technology manufacturers) in the deployment of the SmartSPIN business model.

2.2 EXPLOITABLE RESULTS

During the project's lifetime SmartSPIN is expected to generate the following key exploitable results:

- ➢ SmartSPIN Business Model Toolkit (from WP6)
- ➢ Interactive assessment tool to identify & quantify the potential for energy management in performance based contracting (from WP4)
- ➢ The SmartSPIN M&V methodology and implementation (from WP4)
- ➢ Performance-based contractual template for ESCOs, Landlords, and Tenants relationship
- ➢ Platform-agnostic SmartSPIN models and algorithms with data visualisation dashboard (from WP4)
- ➢ Mobile app for gamification of energy efficiency results between tenants/landlords (from WP5)

2.3 EXPECTED IMPACT

The SmartSPIN project will expectedly lead to the following key impacts:

- ➢ Impact 1: Primary energy savings of 4.72 GWh per year triggered by the project.
- ➢ Impact 2: Reduction of greenhouse gas emissions by 812 tCO_2eq/year triggered by the project.
- ➢ Impact 3: €7.38 million in investments in sustainable energy triggered by the project.

> ➢ Impact 4: Improved viability of innovative energy services.
> ➢ Impact 5: A growing offer and up-take of services that combine energy efficiency with other energy services, technologies and non-energy benefits.
> ➢ Impact 6: A growing up-take of innovative data gathering and processing methods in the monitoring and verification of energy savings and flexibility.
> ➢ Impact 7: The application of methods and concepts to ensure that: (i) innovative energy services are reliable and verifiable, (ii) service providers are trustworthy and accessible.
> ➢ Impact 8: Increase of flexibility in the energy system.
> ➢ Impact 9: SmartSPIN will trigger the creation of up to 126 jobs in the energy sector.

3   EXPLOITATION METHODOLOGY

This chapter provides a description of the exploitation approach that is applied within SmartSPIN.

Research and innovation projects typically deliver many valuable new insights, findings and results. The Horizon 2020 programme defines a result as "*any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including intellectual property rights*". In addition, exploitation is defined as *"the act of making use of and benefiting from resources or project results"*. This term is predominantly related to the development or commercialization of a product or a service. Whereas dissemination is the sharing of results with potential stakeholders, exploitation is, so to say, the next step in the route-to-market to ensure that project results will be used beyond the lifetime of the project.

SmartSPIN has delivered many impactful results which all have an impact on external stakeholders. However, some project results are more suitable for communication and dissemination activities, while other results have the potential to be exploited during or after the project. As such, an important component in the exploitation methodology is to define KERs and distinguish them from results that are relevant for communication and/or dissemination activities. A key exploitable result is a novel, innovative output of the project (product, service, platform, process, solution etc.) that has been selected and prioritised to be exploited. These results are developed from a technological perspective in the project. The business and exploitation plan mainly focusses on other aspects needed for a successful introduction in the market or society, such as business development, user-involvement or target markets.

After definition of KERs, exploitation roadmaps are developed for individual project results in order to establish suitable go-to-market strategies for these results. These roadmaps are developed based on an innovation assessment, identifying the main gaps in successful exploitation of project results.

4 PRELIMINARY EXPLOITATION ASSESSMENT

This section describes which activities have been conducted to identify and select the KERs. As outlined in the exploitation methodology, the first step is the preliminary exploitation assessment.

The 1st exploitation workshop has been designed and organized by EGEN for this purpose. The goal of this workshop was twofold: identification and selection of KERs. Furthermore, the exploitation methodology and important definitions in the context of exploitation have been presented to the partners. The workshop took place during the GA meeting in Cork in September 2022. All SmartSPIN partners were present at the workshop. In the proposal phase preliminary exploitable results have been identified by all partners. During the workshop, the development status of these preliminary results was discussed. Additionally, there was room to discuss potential new KERs that have not been identified earlier.

The exploitation potential was assessed by looking at the degree of innovation, exploitability and impact of the results. SmartSPIN's main goal is to develop, test, validate and exploit a new business model for ESCOs that leads to greater uptake of SES deployed via performance-based contracting in the commercial rented sector. The main focus is the higher uptake of SES, and the results developed do not necessarily have the aim to be commercially exploited. Therefore, results with exploitation potential can be either commercial or non-commercial (e.g. results that will be made publicly available). At the end of the workshop, the list of KERs has been selected and agreed upon by the consortium. This resulted in the following KERs (see Table 1), for which an exploitation roadmap and strategy will be developed. Compared to the preliminary list, the measurement and verification framework is added as KER, and the business model toolkit is not included as KER. The five results/KERs will eventually feed into the SmartSPIN business model toolkit. As the toolkit integrates these results, all important developed innovations/results are already covered within this KER list. Therefore, the partners agreed that the business model toolkit is not included as a separate KER.

Table 1: Selected Key Exploitable Results

Key Exploitable Result (KER)
Interactive assessment tool
Performance-based contractual template for ESCOs
Platform-agnostic SmartSPIN models
Mobile app for gamification
Measurement and verification framework

In the table below the target groups and joint exploitation strategy are summarized for each KER. The KERs will be explained in further detail in chapter 6.

Table 2: KER - Interactive assessment tool

Target group	Joint exploitation strategy
ESCOs Facility Managers	• Make web app available for use in further research projects and promote its use by stakeholders.

	• Qualitative and quantitative assessment to identify SmartSPIN model potential and target market

Table 3: KER - Performance-based contractual template for ESCOs

Target group	Joint exploitation strategy
ESCOs Landlords Tenants Industry bodies Policy makers	• Promote use of contractual templates in other projects and advocate for policy/regulatory change to facilitate uptake. • Use the contractual templates and promote how third-party M&V services enable their implementation. • Use of the templates as an aggregator and energy services provider and also advocate for regulatory change. • Use of templates in consultancy projects with local partners (ESCO) and/or SMARTPSIN partners • Make use of the template to engage clients in a split incentive situation.

Table 4: KER - Platform-agnostic SmartSPIN models

Target group	Joint exploitation strategy
ESCOs Facility Managers Industry Bodies	• Implement conclusions in the platform to improve software-as-a-service. • Implement and commercialize the models, data-driven algorithms and data visualisation dashboard.

Table 5: KER - Mobile app for gamification

Target group	Joint exploitation strategy
Landlords Tenants ESCOs	• Implement conclusions in the platform to improve software-as-a-service.

Table 6: KER - Measurement and verification framework

Target group	Joint exploitation strategy
Landlords Facility Managers	• Use of the framework to offer third party performance verification services to building owners and facility managers

5 EXPLOITATION ROADMAPS

5.1 EXPLOITATION ROADMAP DEVELOPMENT

In this section, the exploitation roadmaps for each KER are presented. The exploitation roadmap is based on the results of the innovation assessment. The innovation assessment is based on eight criteria which are key for innovation success. These criteria are based on a scientific consensus from more than 200 articles in innovation literature. These eight criteria are assessed via structured interviews. The innovation assessment provides a gap analysis which gives clear insights in the actions that need to be taken to improve the market readiness and increase the chances of a successful market adoption. The innovation assessment score is visualized via a spider diagram. The innovation assessment results form the basis for the exploitation roadmap. After the interviews, a quantitative and a qualitative analysis is performed by EGEN. The quantitative analysis results in the innovation assessment spider diagram. The interview results are also assessed qualitatively providing additional insights and a qualitative interpretation on the performance of each criterium. The exploitation roadmap provides a go-to-market strategy with clear actions that can be performed to increase the score for the criteria that need to be improved. These actions are presented via a roadmap, including actions that can be performed during and after the SmartSPIN project ends. After the roadmapping phase, the implementation phase starts with actions that will increase the market-readiness and chances of successful market adoption and the uptake of results. The advised actions are to be executed by the development partners in the SmartSPIN consortium. The exploitation actions which are facilitated by EGEN but owned and performed by the respective partners can be found in the next chapter. Each exploitation roadmap consists of the following building blocks:

1. Introduction on the KER
2. Quantitative innovation assessment results
3. Qualitative analysis of each criterium + exploitation actions
4. Conclusion and timeline with actions

In this public version of the deliverable, only blocks 1 and 4 are shown as step 2 and 3 include confidential and sensitive information.

5.2 INTERACTIVE ASSESSMENT TOOL TO IDENTIFY & QUANTIFY THE POTENTIAL FOR ENERGY MANAGEMENT IN PERFORMANCE-BASED CONTRACTING

5.2.1 Introduction

One of the activities of the SmartSPIN project is the development of an interactive web-app showing the potential for energy management in energy performance contracts. This web-app is being developed as part of SmartSPIN and presents the most suitable "target" market across Europe for the SmartSPIN split business model based on EPC. It focusses on different types of commercial buildings and facilities and summarizes their potential for EPC under various boundary conditions such as climate, demand response market maturity, and dynamic electricity tariffs. The web app can be accessed from this link.

The KER-owner has developed the web-app in cooperation with the consortium partners of the SmartSPIN project. According to the KER-owner, it could be interesting for ESCOs and Facility

managers. At this moment, the KER-owner is not aiming to commercialize the web-app themselves. Instead, their focus is to disseminate the project results to maximize the potential for external adoption of the innovation.

An innovation assessment has been conducted to assess the market readiness and potential of the interactive web-app. The assessment is based on eight criteria which are key for innovation success. The sections below provide an overview of the most important results of the assessment. Furthermore, various follow-up actions are suggested. As the KER-owner does not aim to commercialize this innovation, these actions are focussed on dissemination and maximizing the potential for external exploitation of the innovation. The figure below shows the innovation assessment results for each criterion in a spider diagram.
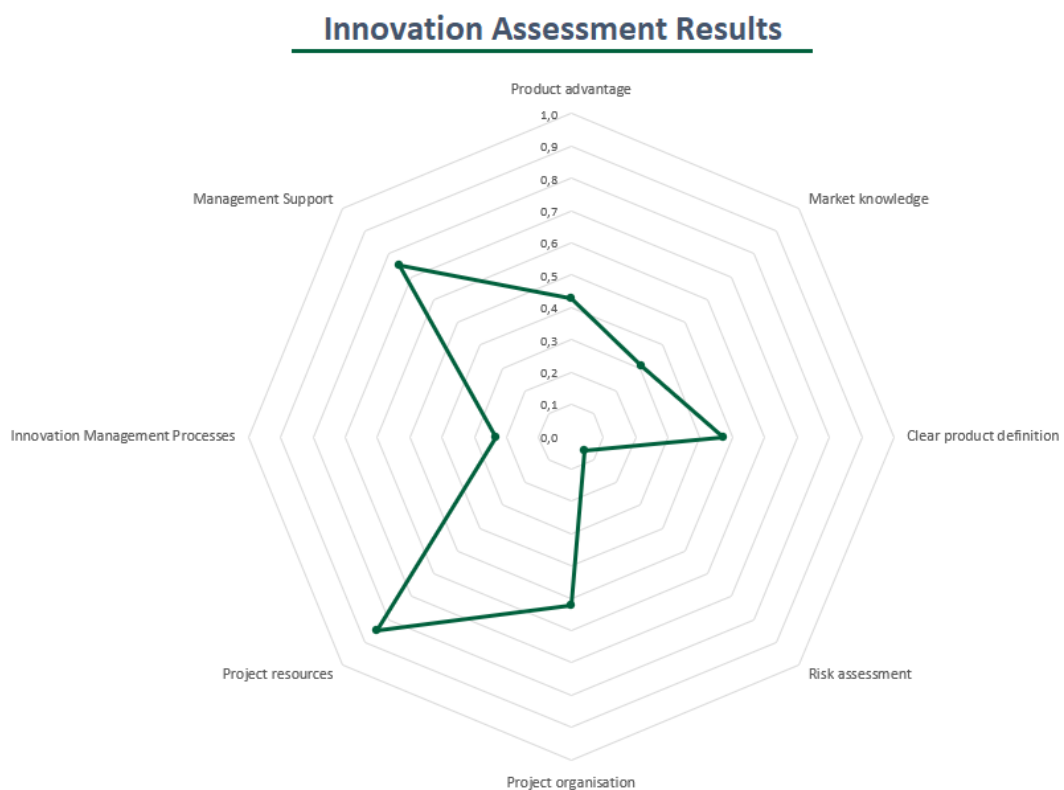
Figure 1: Spider diagram of innovation assessment results – interactive assessment tool.

5.2.2   Timeline

The innovation assessment has identified next steps which can help to increase the chances of external exploitation of the innovation. The implementation of these next steps will improve various aspects of the interactive web-app.

During the SmartSPIN project, various actions will be performed to increase the potential for external exploitation. Further development of the web-app and populating it with more cities, countries and building typologies will enhance the potential for external exploitation. In addition, by conducting an

exploitation workshop, external feedback from potential end-users can contribute to the validation of the value proposition of the interactive web-app. By tailoring the innovation to the requirements of potential end-users, the potential for external exploitation can be increased.

All of the actions focussed on increasing the chances of external exploitation of the innovation are deemed important and should get an equal amount of focus and effort. Nevertheless, some of the proposed actions are suggested to be conducted after the SmartSPIN project. After the SmartSPIN project, the KER-owner could increase the chances of external exploitation by conducting a market analysis and a user-needs-wants analysis. These analyses can provide valuable insights in the market and the needs of the potential end-users which subsequently can be integrated in the web-app. The value proposition canvas can be used to connect the benefits of the innovation with the problems faced by the customers. Using the value proposition canvas will help the KER-owner to develop a clear value proposition which, once disseminated, increases chances of external adoption of the innovation. Finally, it is advised to conduct a SWOT analysis to evaluate the KER-owner Strengths, Weakness, Opportunities and Threats. This will help the KER-owner to identify risks and blind spots in the organisation. Based on the identification of these risks, risk assessment mitigation strategies can be developed which are designed to manage, eliminate, or reduce risk to an acceptable level.

At this point in time, the KER-owner does not aim to commercialize this innovation. However, in case the KER-owner decides on commercializing their innovation in the future it is advised to develop a business plan and a marketing plan. These actions are depicted in light blue in the exploitation roadmap in the figure below.

KER 1 Exploitation Roadmap														
	Areas of activity	Score	Actions	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025
1	Product advantage	0,43	Further develop tool											
			Conduct an exploitation workshop											
2	Market knowledge	0,31	Conduct a market analysis											
			Conduct a user-needs-wants analysis											
			Develop a business plan (optional)											
			Develop a Marketing plan (optional											
3	Clear product definition	0,45	Use value proposition canvas											
4	Risk assessment	0,06	Conduct a SWOT analysis											
5	Project organisation	0,76												
6	Project resources	0,75												
7	Innovation Management Processes	0,7												
8	Management Support	0,81												

Figure 2: Exploitation roadmap for the interactive assessment tool to identify & quantify the potential for energy management in performance based contracting.

5.3 EXPLOITATION ROADMAP: PERFORMANCE-BASED CONTRACTUAL TEMPLATE FOR ESCOS, LANDLORDS, AND TENANTS RELATIONSHIP

5.3.1 Introduction

One of the key activities of the SmartSPIN project is the development of a performance-based contractual template for ESCOs, landlords, and tenants relationship. This contractual template is being developed as part of SmartSPIN and addresses the split incentive issues. The contract template would preferably be a tri-partite model including Landlord/Tenant/ESCO. Compared to the existing models of energy performance contractual agreements between energy service companies and their clients, landlord-tenant landscape requires a case specific approach when it comes to the building energy services and investments around it.

This KER is assessed by means of an innovation assessment. This tool assesses the performance concerning 8 indicators. These indicators have been established as key criteria for successful implementation of the innovation in market and society by well-known scientific innovation literature. According to the KER-owner, commercialisation of this service is highly dependent on the fact if there is financial support to develop this after the SmartSPIN project. Hence, this assessment has been performed with the assumption that this is the case. The sections below discuss the most important results and provide follow-up actions in order to enhance the market readiness of the contractual template. The figure below shows the innovation assessment results for each criterion in a spider diagram.
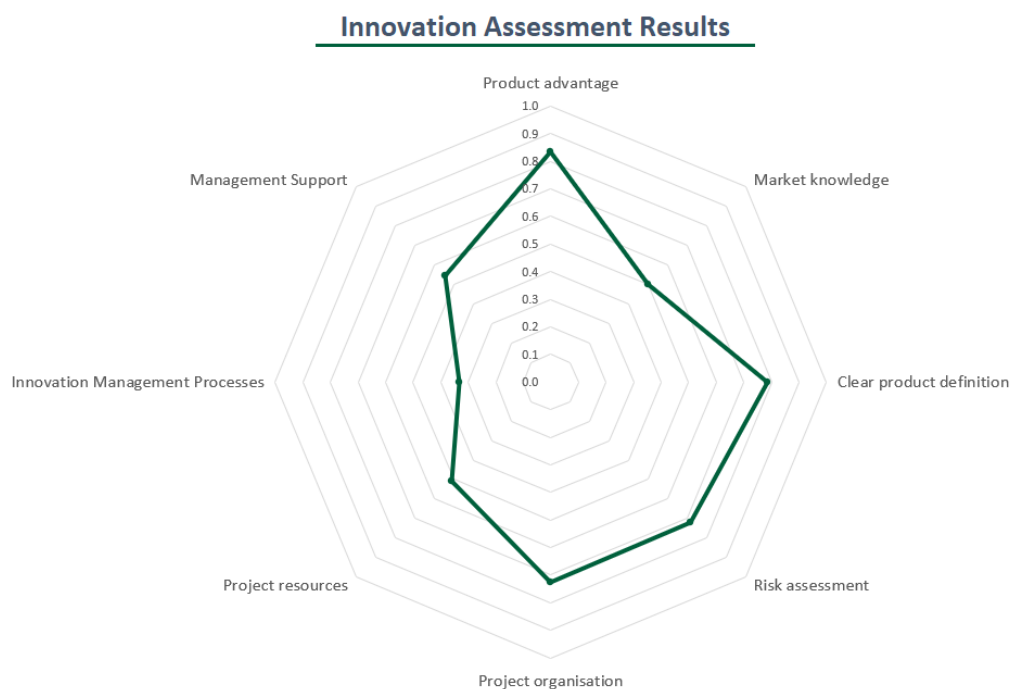
Figure 3: Spider diagram of innovation assessment results – performance-based contractual template.

5.3.2   Timeline

The innovation assessment has identified next steps which can help to further develop the market readiness of the contractual template. The implementation of these next steps will improve various aspects of the contractual template.

A user-needs-wants and SWOT analysis will provide important market knowledge and can be useful tools to assess and mitigate project risks. Furthermore, actions have been defined for after the SmartSPIN project to ensure the further financing of this project. A grant scan could identify possibilities for public financing, together with partnering with a financier and possibly already signed contracts can assure revenues.

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In order to structure the exploitation process for the contractual template platform, a comprehensive timeline is provided concerning the identified actions. As one can see, only the user visit teams, the exploitation roadmap and prototyping will fall within the SmartSPIN project. This however impacts, among others, the lowest scoring criteria, namely innovation management support. In addition, certain actions that we advise can be important for the further development of the innovation but are not within the SmartSPIN scope as they focus on the development of the contractual template first. However, certain steps have more priority than others. Literature indicates that especially product advantage, market knowledge and clear product definition are key for innovation success. User-needs-wants analysis, marketing plan, and prototyping should have a high priority. EGEN/PNO can support the contractual template consortium with the implementation of these actions. Nevertheless, for the implementation of these actions additional knowledge and resources from the development partners or (external) third parties is probably required.

	KER2 Exploitation Roadmap				Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025
	Areas of activity	Overall score		Actions											
1	Product advantage	0,83		Exploitation workshop			▮								
				Prototyping			▮	▮	▮						
2	Market knowledge	0,50		User-needs-wants analysis								▮	▮		
				Marketing plan								▮	▮		
3	Clear product definition	0,79													
4	Risk assessment	0,72		SWOT analysis								▮			
5	Project organisation	0,73		Exploitation roadmap											
				Obtain operational, sales, marketing expersie									▮	▮	▮
6	Project resources	0,51		Grant scan								▮	▮	▮	▮
				Partnership with financier								▮	▮	▮	▮
				Business development and signed contracts needed								▮	▮	▮	▮
7	Innovation Management Process	0,33		User visit teams (at demo site)			▮	▮	▮	▮					
				Focus group								▮	▮		
8	Management Support	0,54													

Figure 4 - Exploitation roadmap for the contractual template.

5.4 EXPLOITATION ROADMAP: PLATFORM-AGNOSTIC SMARTSPIN MODELS AND ALGORITHMS WITH DATA VISUALISATION DASHBOARD

5.4.1 Introduction

One of the key activities of the SmartSPIN project is the development of platform-agnostic SmartSPIN models and algorithms with a data visualisation dashboard. The platform-agnostic SmartSPIN models and algorithms are developed as part of the SmartSPIN project and aim to identify the most significant energy and cost streams in buildings using a minimal dataset of information. The algorithms utilize general information about the buildings such as location (i.e., climate), characteristics (i.e. size), usage (opening hours, schedules, etc.) and general HVAC characteristics, as well as overall facility energy consumption. In addition, a user-friendly web-dashboard is being developed that allows users to upload specific building information and datasets to obtain early building energy diagnostics, through an application program interface (API) that accesses the developed algorithms. The API and web-dashboard can be accessed via this link.

The KER-owner is developing these models, algorithms, and data visualisation dashboard in cooperation with the consortium partners of the project. The innovation could be interesting for ESCOs, facility managers and industry bodies. The KER-owner aims to commercialize this innovation.

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

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To assess the market readiness and commercialization potential of the platform-agnostic SmartSPIN models, algorithms and data visualisation dashboard, an innovation assessment has been conducted. The assessment is based on eight criteria which are key for innovation success. The sections below provide an overview of the most important results of the assessment and suggests follow-up actions which can enhance the innovation's market readiness. The figure below shows the innovation assessment results for each criterion in a spider diagram.

Figure 5: Spider diagram of innovation assessment results – Platform-agnostic SmartSPIN models and algorithms with data visualisation dashboard.

5.4.2 Timeline

The innovation assessment has identified next steps which can help to further develop the market readiness of the platform-agnostic SmartSPIN models, algorithms and data visualisation dashboard.

To structure the exploitation process for the platform-agnostic SmartSPIN models, a comprehensive timeline is provided concerning the identified actions (see Figure 8). During the project, The KER-owner will focus on developing, testing, and validating the SmartSPIN models, algorithms, and visualization dashboard. The KER-owner should determine the route for exploitation, which will help

narrow down the scope and increase the chances of commercialization success. In addition, during the SmartSPIN project, an exploitation workshop should be conducted to gather feedback from end-users. This can contribute to the validation of the value proposition of platform-agnostic SmartSPIN models and the data visualization dashboard. Furthermore, the exploitation workshop could be used to test and validate different formats and input data from various smart meters.

In addition to these actions, several actions will be performed outside of the SmartSPIN project. To enhance market knowledge, the KER-owner should conduct a market analysis, develop a business plan, and create a marketing plan. The market analysis will assist the KER-owner in identifying relevant market segments and provide deeper insights into the demands of potential end-users within these individual market segments. The development of the marketing plan will outline a clear strategy for the market launch and a communication strategy in which the KER-owner describes how it intends to market the innovation to its customers. A business model workshop could be organized to formulate a clear value proposition. Furthermore, to assess various risks and develop strategies to mitigate their effects, the KER-owner could conduct a SWOT analysis. Additionally, it should ensure the development of a strategy to overcome market barriers. Finally, in terms of project resources, it is advisable for the KER-owner to establish a connection with an IoT supplier to further develop and scale the tool, thereby increasing the chances of successful commercialization.

KER 3 Exploitation Roadmap													
Areas of activity	Score	Actions	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025
Product advantage	0,56	Conduct an exploitation workshop					▓						
Market knowledge	0,33	Conduct a market analysis								▓			
		Develop a business plan									▓		
		Develop a marketing plan										▓	
Clear product definition	0,61	Conduct a business model workshop							▓				
		Determine exploitation route				▓							
Risk assesment	0,76	Conduct a SWOT analysis								▓			
		Develop a strategy to overcome market barriers											
Project organisation	0,82	Increase internal alignment										▓	
Project resources	0,94	Partner up with an IoT supplier.							▓				
Innovation management processes	0,77												
Management support	0,63												

Figure 6: Exploitation roadmap for the Platform-agnostic SmartSPIN models and algorithms with data visualisation dashboard

5.5 EXPLOITATION ROADMAP: MOBILE APP FOR GAMIFICATION FOR ESCOS, LANDLORDS, AND TENANTS RELATIONSHIP

5.5.1 Introduction

The SmartSPIN project delivers a wide range of project results which have varying potential for exploitation and/or commercialisation. One of the key activities of the SmartSPIN project is the development of a mobile app for gamification for ESCOs, landlords, and tenants relationship. This mobile app is being developed as part of SmartSPIN and enables customers to get insight in their energy consumption compared to relevant others, i.e., other customers in the same sector and/or building facility. The target audience for this app is tenants in the commercial renting sector.

This KER is assessed by means of an innovation assessment. This tool assesses the performance concerning 8 indicators. These indicators have been established as key criteria for successful implementation of the innovation in market and society by well-known scientific innovation literature. The sections below discuss the most important results and provide follow-up action in order to enhance the market readiness of the mobile app. The figure below shows the innovation assessment results for each criterion in a spider diagram.
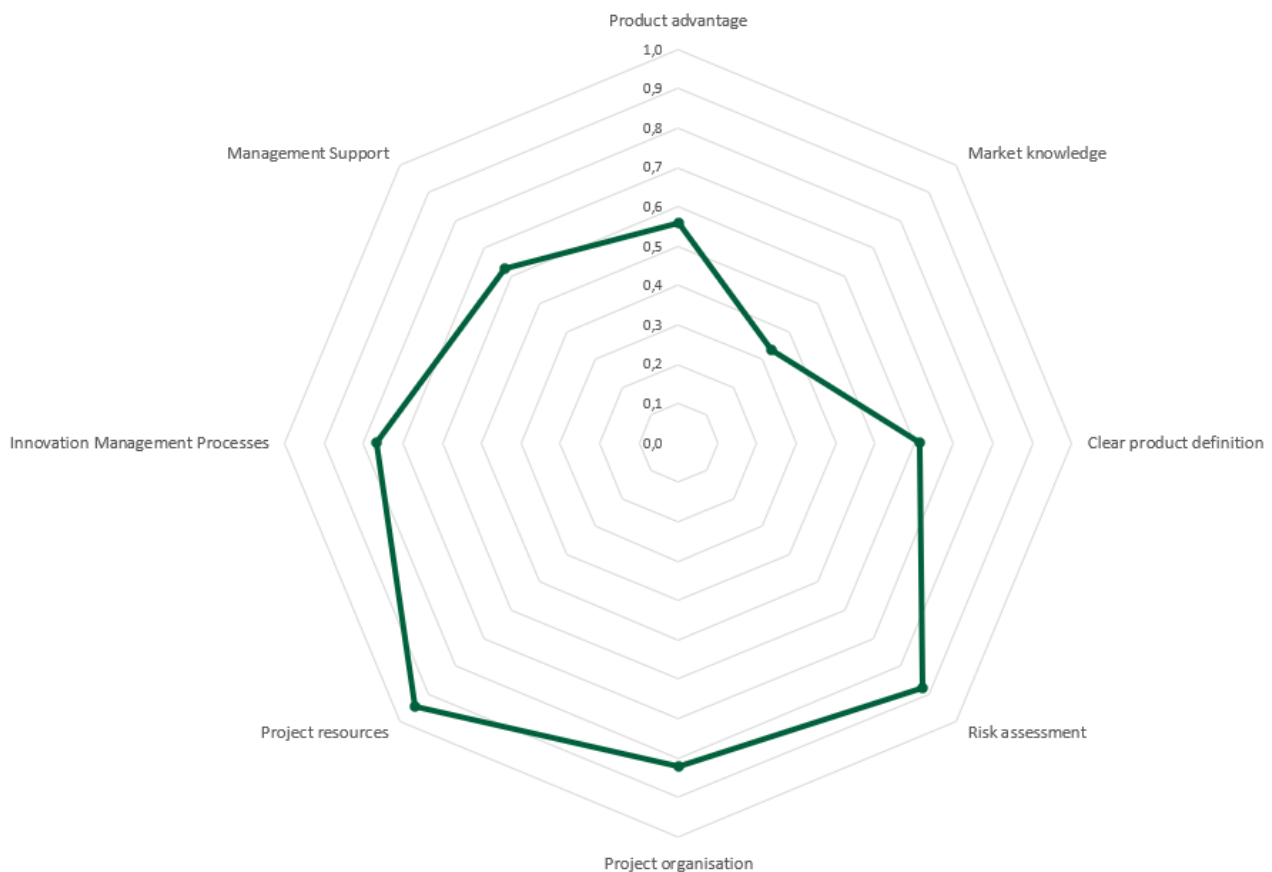
Innovation Assessment Results

Figure 7: Spider diagram of innovation assessment results – Mobile app for gamification.

5.5.2 Timeline

The innovation assessment has identified next steps which can help to further develop the market readiness of the mobile app for gamification. The implementation of these next steps will improve various aspects of the mobile app for gamification.

Drafting a business plan can provide valuable insight in unique benefits of the innovation in comparison with competing alternatives, a market analysis will provide important market knowledge and a value proposition canvas can be a useful tool to assess the needs and requirements of potential end-users. Moreover, a SWOT analysis can be a useful tool to assess and mitigate project risks.

In order to structure the exploitation process for the mobile app for gamification platform, a comprehensive timeline is provided concerning the identified actions (Figure 8). Certain actions that are advised are important for the further development of the innovation. During the SmartSPIN project, the KER-owner is focused on the development, testing and validation of the mobile-app. After the SmartSPIN project, the KER-owner will take a decision on the exploitation route. Possible options are integrating it in the app or to also develop it as a separate service. However, certain steps have more priority than others. Literature indicates that especially product advantage, market knowledge and clear product definition are key for innovation success. Hence, all actions defined for after the SmartSPIN project are deemed important and should get an equal amount of focus and

effort. Nevertheless, for the implementation of these actions additional knowledge and resources from the development partners or (external) third parties is probably required.

KER4 Exploitation Roadmap				Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025
	Areas of activity	Overall score	Actions											
1	Product advantage	0,72	Comparison analysis											
			External exploitation workshop	■	■	■	■	■	■					
2	Market knowledge	0,58	Market analysis							■	■			
			Business plan							■	■	■		
			SWOT analysis								■			
3	Clear product definition	0,52	Data security and management analysis								■	■	■	
			Value proposition								■	■		
4	Risk assessment	0,70												
5	Project organisation	0,81	Exploitation roadmap	■	■									
6	Project resources	0,83												
7	Innovation Management Processes	0,70												
8	Management Support	0,81												

Figure 8: Exploitation roadmap Mobile app for gamification for ESCOs, landlords, and tenants relationship

5.6 EXPLOITATION ROADMAP: MEASUREMENT AND VERIFICATION FRAMEWORK

5.6.1 Introduction

One of the key activities of the SmartSPIN project is the development of a measurement and verification framework (M&V Framework). This M&V framework will be developed as part of the SmartSPIN project and will be used for real-time monitoring of the achieved energy efficiency gains.

The KER-owner is developing the M&V framework in cooperation with the consortium partners of the SmartSPIN project. According to the KER-owner, it could be interesting for investors in energy efficiency measures, building owners and facility managers. The KER-owner aims to commercialize this innovation.

To assess the market readiness and commercialization potential of the M&V framework, an innovation assessment has been conducted. The assessment is based on eight criteria which are key for innovation success. The sections below provide an overview of the most important results of the assessment and suggests follow-up actions which can enhance the innovation's market readiness. The figure below shows the innovation assessment results for each criterion in a spider diagram.
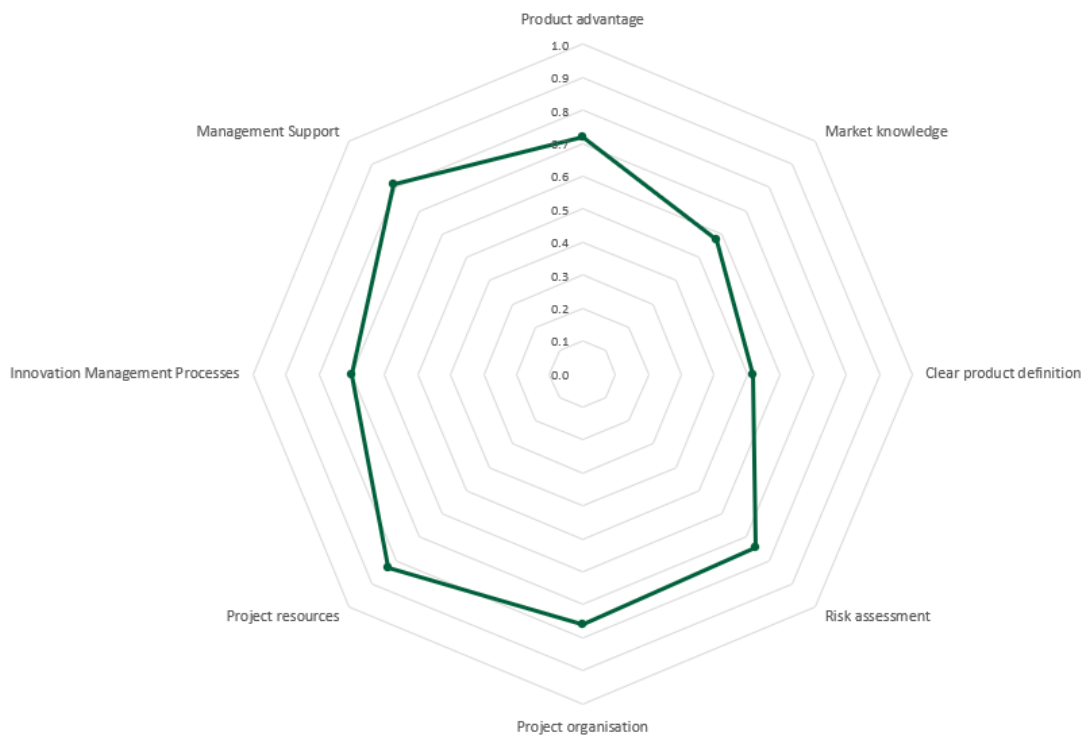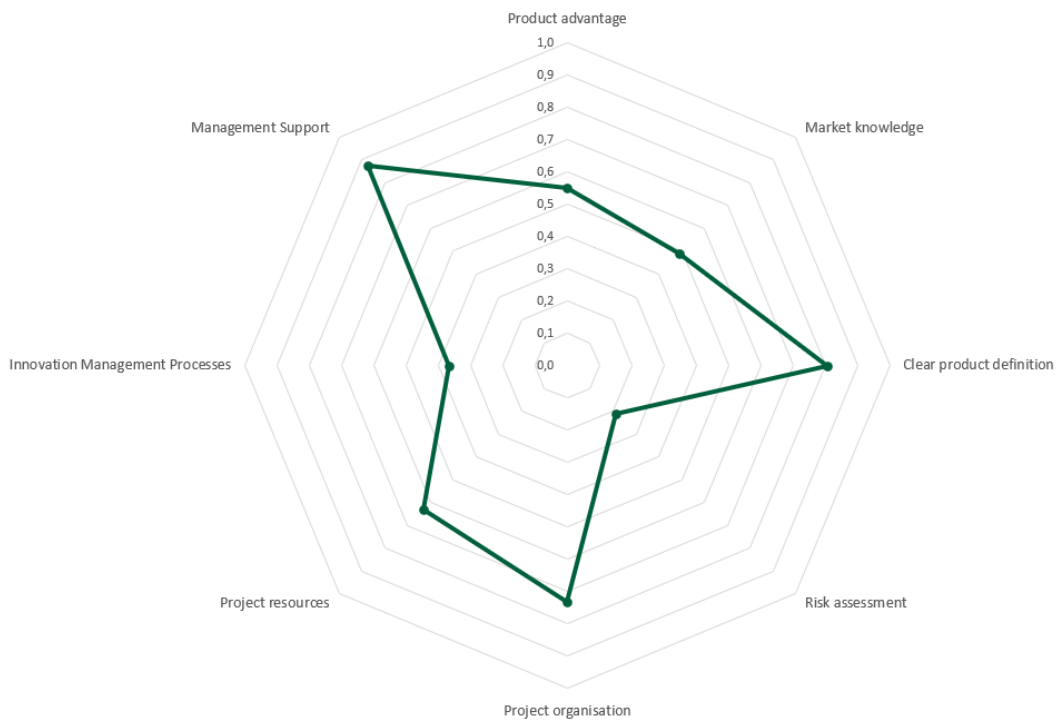
Figure 9: Spider diagram of innovation assessment results – M&V Framework

5.6.2   Timeline

The innovation assessment has identified next steps which can help to further develop the market readiness of the M&V framework.

To structure the exploitation process for the M&V framework, a comprehensive timeline is provided concerning the identified actions (Figure 10). During the project, the KER-owner will focus on developing, testing, and validating the M&V framework. The KER-owner should determine the route for exploitation, which will help narrow down the scope and increase the chances of commercialization success. In addition, during the SmartSPIN project, an exploitation workshop should be conducted to gather feedback from end-users. This can contribute to the validation of the value proposition of platform-agnostic SmartSPIN models and the data visualization dashboard. Furthermore, the exploitation workshop could be used to test and validate different formats and input data from various smart meters.

In addition to these actions, several actions will be performed outside of the SmartSPIN project. To enhance market knowledge, the KER-owner should conduct a market analysis, develop a business plan, and create a marketing plan. The market analysis will assist the KER-owner in identifying relevant market segments and provide deeper insights into the demands of potential end-users within these individual market segments. The development of the marketing plan will outline a clear strategy for the market launch and a communication strategy in which the KER-owner describes how it intends to market the innovation to its customers. A business model workshop could be organized

to formulate a clear value proposition. Furthermore, to assess various risks and develop strategies to mitigate their effects, the KER-owner could conduct a SWOT analysis. Additionally, it is advised to develop a strategy to deal with the existing market barriers such as the perceived complexity of the innovation.

The assessment also stresses the importance of having sufficient financial and material resources and human skills available to design and develop the innovation. The KER-owner could benefit from obtaining sales and marketing expertise in the team to successfully commercialise the innovation. Furthermore, it is advised to look into the possibilities of the grant schemes that are available to fund the development of the M&V framework. Finally, the KER-owner should partner up with a strategic partner in the value chain which can provide them with valuable information on how the value chain operates. This, in turn, can then be used to further develop the M&V framework and increase the chances of successful commercialization.

	Areas of activity	Overal l score	Actions	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025
	KER 5 Exploitation Roadmap													
1	Product advantage	0,55	Conduct an exploitation workshop					▓	▓					
			Conduct a business model workshop								▓			
2	Market knowledge	0,49	Perform a market analysis								▓	▓		
			Develop a business plan									▓	▓	
			Create a marketing plan										▓	▓
3	Clear product definition	0,21	Conduct a business model workshop											
4	Risk assesment	0,73	Develop a strategy to overcome barriers								▓			
			Perform a SWOT analysis								▓			
5	Project organisation	0,73	Obtain sales and marketing expertise								▓			
6	Project resources	0,63	Perform a grant scan							▓				
			Find a strategic partner						▓	▓				
7	Innovation management processes	0,37												
8	Management support	0,88												

Figure 10: Exploitation roadmap M&V framework

6 EXTERNAL EXPLOITATION WORKSHOPS

In terms of external workshops, two series of workshops are foreseen in Greece, Ireland and Spain. The 2nd series of external exploitation workshops will organised in the first half of 2024. Also, the European exploitation workshop/final event will be organised in 2024. Regarding the 1st series of national workshops, two have been performed, up till September 2023, and one is still to be planned. A short description of them is given below:

1. IERC presented the SmartSPIN project during the SEAI Energy Show 2023 event at the RDS in Dublin (29-30 March, Dublin, Ireland). More than 4,000 key stakeholders attended the event and around 30-35 people working on the energy efficiency value chain directly met our IERC colleagues to discuss about the SmartSPIN project. Furthermore, SmartSPIN brochures and poster were used to disseminate the project. This engagement effort was used as an appetiser to further invite stakeholders to the 2nd external exploitation workshop in Ireland that will take place in 2024. More information about the event here.

2. Tecnalia organised the 1st national external workshop at REBUILD 2023 (March, Madrid, Spain). Tecnalia was present at a dedicated booth to organise the First Exploitation Workshop in the framework of this high-level event and reach key stakeholders. More information about the event here. Together with other 544 exhibiting firms, TECNALIA showed at REBUILD the developments of SmartSPIN to more than 22,500 developers, builders, architects, interior designers, engineers, and professionals. Specifically, more than 50 relevant stakeholders stopped by the booth where SmartSPIN was explained together with other European projects where TECNALIA is involved. This engagement effort was used as an appetiser to further invite stakeholders to the 2nd external exploitation workshop in Spain that will take place in 2024.

3. EUNICE is currently mapping the different national events to decide the best option to reach key stakeholders in Greece. The ultimate goal of EUNICE is to assure the participation in an event with a highly qualified audience covering the whole spectrum of Greek commercial rented sector (ESCOs, energy utility companies, landlords and tenants, construction companies and technology developers) in order to further enhance the promotion of SmartSPIN Business Model Toolkit as well as contractual and dynamic tariff templates.

EUNICE is expected to organise the 1st External Exploitation Workshop no later than the 1st quarter of 2024.

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7 CONCLUSION

The market readiness of innovations is based on its technological and business readiness. During SmartSPIN, by means of an innovation assessment, a gap analysis has been performed for individual innovations, which allowed to identify the critical factors for successful market implementation from a business perspective. In cooperation with respective development partners, exploitation roadmaps have been drafted describing exploitation strategies which are tailored to the needs of individual innovations. As such, the most effective actions have been defined which create the largest positive impact on business readiness of respective innovations. Over the course of the SmartSPIN project some of these actions will be implemented but the majority of actions will be after the end of the SmartSPIN project, following the wants and needs of the project partners. They defined that the focus of the SmartSPIN project must be mainly on the (technological) development of the innovation itself, whereas the business development activities will take place mainly after the conclusions of the SmartSPIN project are drawn.

Therefore, SmartSPIN has contributed to drawing the pathway for the acceleration of business readiness of its innovations, which directly improve the market readiness of any innovation. While the SmartSPIN project itself addressed the technological aspects of developing tools to overcome the split incentive, the business and exploitation plan will ensure the development on business level which will to optimize the market readiness of the different innovations. In this way, SmartSPIN has contributed to the acceleration of business as well as technological readiness of its innovations. Addressing technological as well as business aspects is key for successful exploitation of the innovations in the market and society. Maturing technological aspects is required to illustrate the technological feasibility and effectiveness of new innovations to potential end-users. While business aspects contribute to the socio-economic feasibility, which helps to convince potential end-users that innovations are economically viable.

While not all KERs have decided on the pathway towards commercialization or other forms (such as dissemination of gained knowledge, making tools publicly available), possible pathways have been developed for all different KERs. An overview of the KER exploitation roadmaps can be found in the figure below.

	Areas of activity	Score	Actions	Q2 2023	Q3 2024	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025
KER 1 Exploitation Roadmap													
1	Product advantage	0.43	Further develop tool											
			Conduct an exploitation workshop											
2	Market knowledge	0.31	Conduct a market analysis											
			Conduct a user-needs-wants analysis											
			Develop a business plan (optional)											
			Develop a Marketing plan (optional											
3	Clear product definition	0.45	Use value proposition canvas											
4	Risk assessment	0.06	Conduct a SWOT analysis											
5	Project organisation	0.76												
6	Project resources	0.75												
7	Innovation Management Processes	0.7												
8	Management Support	0.81												
KER2 Exploitation Roadmap													
1	Product advantage	0.83	Exploitation workshop											
			Prototyping											
2	Market knowledge	0.50	User-needs-wants analysis											
			Marketing plan											
3	Clear product definition	0.79												
4	Risk assessment	0.72	SWOT analysis											
5	Project organisation	0.73	Exploitation roadmap											
			Obtain operational, sales, marketing expersie											
6	Project resources	0.51	Grant scan											
			Partnership with financier											
			Business development and signed contracts needed											
7	Innovation Management Process	0.33	User visit teams (at demo site)											
			Focus group											
8	Management Support	0.54												
KER 3 Exploitation Roadmap													
1	Product advantage	0.56	Conduct an exploitation workshop											
2	Market knowledge	0.33	Conduct a market analysis											
			Develop a business plan											
			Develop a marketing plan											
3	Clear product definition	0.61	Conduct a business model workshop											
			Determine exploitation route											
4	Risk assesment	0.76	Conduct a SWOT analysis											
			Develop a strategy to overcome market barriers											
5	Project organisation	0.82	Increase internal alignment											
6	Project resources	0.94	Partner up with an IoT supplier.											
7	Innovation management processes	0.77												
8	Management support	0.63												
KER4 Exploitation Roadmap													
1	Product advantage	0.72	Comparison analysis											
			External exploitation workshop											
2	Market knowledge	0.58	Market analysis											
			Business plan											
			SWOT analysis											
3	Clear product definition	0.52	Data security and management analysis											
			Value proposition											
4	Risk assessment	0.70												
5	Project organisation	0.81	Exploitation roadmap											
6	Project resources	0.83												
7	Innovation Management Processes	0.70												
8	Management Support	0.81												
KER 5 Exploitation Roadmap													
1	Product advantage	0.55	Conduct an exploitation workshop											
			Conduct a business model workshop											
2	Market knowledge	0.49	Perform a market analysis											
			Develop a business plan											
			Create a marketing plan											
3	Clear product definition	0.21	Conduct a business model workshop											
4	Risk assesment	0.73	Develop a strategy to overcome barriers											
			Perform a SWOT analysis											
5	Project organisation	0.73	Obtain sales and marketing expertise											
6	Project resources	0.63	Perform a grant scan											
			Find a strategic partner											
7	Innovation management processes	0.37												
8	Management support	0.88												

Figure 11: summary of KER exploitation roadmaps