

IPR Protection Plan v1



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Executive Summary

This report provides an overview of basic concepts of Intellectual Property Rights (IPR), with general information on what an IPR is and how it shall be handled from the perspective of Horizon Europe projects.

Furthermore, it outlines a preliminary exploitation path for each of the Exploitable results and provides general information on the methodology that will be used within the SmartLivingEPC project to make sure that results are properly protected.

This deliverable has been conceived using R2M's exploitation methodology, which has been developed and refined over time as R2M has fulfilled this role in several EU projects (e.g., NESOI GA864266, LIGHTNESS GA953020, HYCOOL GA792073, GEOFIT GA792210). Although continuous improvements have been made, the methodology's core is common to other deliverables and, for this reason, the table of contents, some pictures, and some text modules are similar or very similar to other ERs Tables and IPR methodology developed in the framework of previous projects. Nevertheless, the contents developed in this task are project-specific and represent the outcome of R2M's and all contributors' efforts in creating this report.

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List of Acronyms and Abbreviations

Term	Description
EPC	Energy Performance Certificate
IPR	Intellectual Property Right
ER	Exploitable Results
KER	Key Exploitable Results
GTM	Go-To-Market
SLE	SmartLivingEPC

1 Introduction

The *SmartLivingEPC* project aims to deliver a certificate that will be issued with the use of digitized tools and retrieve the necessary assessment information for the building shell and building systems from BIM literacy. This includes enriched energy and sustainability-related information for the as-designed building and its actual performance.

This deliverable is part of the T7.5 “Exploitation activities, Business models and IPR management”, the work conducted within this task is divided into several deliverables (D7.1, D7.5, D7.6, D7.7, and D7.9) of WP7. This public report provides initial basic knowledge and information on Intellectual Property Right, and outlines the general methodology to create the short-term and mid-term exploitation vision for each exploitable result (ER) and key exploitable result (KER). It also contains preliminary exploitation paths for each Exploitable Results Manager.

2 Basic concepts

2.1 Intellectual Property Obligations for Horizon Europe beneficiaries

Concerning managing intellectual property (IP) in projects funded under Horizon Europe, there are some new elements and requirements that beneficiaries need to be aware of ¹. Here are the key points:

1. Results Ownership List (ROL):

- Beneficiaries are now required to provide information on the owner(s) of the results in the reporting process. This Results Ownership List should include details such as whether the ownership is single or joint, the name of the owner(s), the country of establishment of the owner(s), and whether the results will be exploited by the owner(s).
- Failure to provide this information can have consequences, such as blocking the submission of the final periodic report and the final payment. This requirement aims to clarify results ownership, which has been a barrier to the exploitation of certain results in the past.

2. Public Emergency Provision:

- In situations where the call conditions impose additional exploitation obligations in cases of public emergencies (e.g., pandemic diseases like Covid-19, terrorist attacks, natural disasters, CBRN events), beneficiaries may be required to grant non-exclusive licenses of their results to legal entities that need the results to address the emergency.
- These non-exclusive licenses can be granted for a limited period, with a maximum duration of four years. This provision allows for a more flexible approach in addressing urgent and critical situations by facilitating access to necessary research results.

These new elements in IP management within the framework of Horizon Europe aim to enhance the exploitation of research results by promoting transparency in ownership and facilitating the sharing of knowledge and technologies in times of public emergencies.

Article 16 of the SmartLivingEPC Grant Agreement establishes that *“Beneficiaries which have received funding under the grant must — up to four years after the end of the action— use their best efforts to exploit their results directly or to have them exploited indirectly by another entity, in particular through transfer or licensing”*.

To maximize the successful exploitation of project results, it is crucial to consider appropriate intellectual property (IP) protection mechanisms. Properly protected results can then be commercialized using various techniques, as outlined in the ["IPR Helpdesk: Your Guide to IP and Contracts."](#)

These techniques include:

- **Licensing:** This involves an IP license agreement, which is a contract allowing the IP owner (licensor) to permit a third party (licensee) to use certain IP assets under specified conditions. In return, the licensee typically pays a fee, which can be a lump sum, royalties, or other forms of payment. Licensing allows the IP owner to retain ownership while generating revenue from the IP.
- **Assignment:** An IP assignment entails a permanent transfer of IP ownership from one party (the assignor) to another (the assignee). After the transfer, the assignee becomes the new owner of the IP assets. If the assignor uses the IP after the assignment, it would be considered an infringement. While a license is similar to a rental agreement, an assignment is akin to a sales contract, providing the assignee with full ownership rights.

¹ Your Guide to Intellectual Property Management in Horizon Europe, The European IP Helpdesk, 2022, www.ec.europa.eu/ip-helpdesk

- **Joint Venture:** This involves a business alliance between two or more independent organizations (venturers) to undertake a specific project or achieve a common goal. Each venturer contributes their own intellectual assets, shares risks, and agrees on their initial contributions, responsibilities, and obligations as outlined in the joint venture agreement. This collaborative approach leverages the strengths and resources of each partner for mutual benefit.
- **Spin-off:** A spin-off is a separate legal entity established by a parent organization (PO) to commercialize its intellectual property (IP) assets. This approach is particularly advantageous for parent organizations, such as universities and research institutions, that may lack the resources or expertise to bring their IP assets to market on their own. Spin-offs serve as an effective method of technology transfer, bridging the gap between the research environment and industry. By creating marketable products from research outcomes, spin-offs facilitate the practical application and commercialization of innovative technologies, thereby enhancing their economic impact and societal value.
- **Franchising:** Franchising is a specialized form of licensing that allows the replication of the owner's (franchisor) business model in different locations by providing ongoing support and training to the recipient (franchisee). This business model relies heavily on the use of IP, as it enables the franchisee to operate the business under the established brand and system of the franchisor. Franchising inherently involves the licensing of intellectual property rights (IPRs) and know-how, making it a strategic way to expand a business while ensuring consistency and quality across different locations. Through franchising, businesses can achieve rapid growth and market penetration, leveraging the franchisor's established brand reputation and operational expertise.

By considering these mechanisms, project results can be effectively protected and commercialized, enhancing their overall value and impact.

2.2 Ownership of Results for SmartLivingEPC

Article 16.4 and its Annex 5 of the SmartLivingEPC Grant Agreement establish the obligation of Consortium Partners to ensure that results are owned by the party that generates them. Especially for Joint Ownership, following additions apply (Unless otherwise agreed):

- *each of the joint owners shall be entitled to use their jointly owned Results for non-commercial research and/or teaching activities on a royalty-free basis, and without requiring the prior consent of the other joint owner(s),*
- *each of the joint owners shall be entitled to otherwise Exploit the jointly owned Results and to grant non-exclusive licenses to third parties (without any right to sub-license), if the other joint owners are given:*
 - (a) at least 45 calendar days advance notice; and*
 - (b) fair and reasonable compensation.*

The joint owners shall agree on all protection measures and the division of related cost in advance.

2.3 Exploitation strategy and IPR Clinic into the SmartLivingEPC Impact

The Exploitation Strategy for the SmartLivingEPC project, encapsulated within the SmartLivingEPC DEC Plan (D7.1, D7.6, and D7.7), is structured into four consecutive steps to ensure that the Key Exploitable Results (KERs) are effectively identified, and protected, and brought to market. This comprehensive strategy integrates legal, regulatory, and market considerations to optimize the commercialization of the project outcomes, with a significant focus on Intellectual Property Rights (IPR) management. The initial part of the task was already carried out in D7.1 and D7.6 by establishing an exploitation route defining ER and KERs. Within the context of this deliverable, the methodologies for the IPR management will be defined to ensure that all project results are in a protectable form. A final IPR Protection Plan will be issued by the end of the project (M36).

To summarize the four steps of the exploitation strategy already defined:

- **Step 1: Identification and Protection of KERs** - already carried out in D7.6, with an initial IP analysis for each ER.
- **Step 2: Market Assessment and Regulatory Analysis** - involves a detailed market assessment to understand the demand and supply dynamics, as well as the regulatory framework influencing the project's outcomes.
- **Step 3: Development of Exploitation and Go-To-Market Strategies** – defines a Go-To-Market strategy with a joint exploitation plan to enhance the project's overall impact.
- **Step 4: Investment Plan and Financial Projections** - focuses on creating an investment plan and financial projections to support the market growth of the project's outcomes.

2.3.1 IPR Clinic

Once all KERs are defined, the IPR Clinic will establish the rules for distributing IPR among the project partners, in line with the Consortium Agreement (CA). The Key aspects include:

- **Individual and Joint IP:** IP that belongs to individual partners or is jointly owned by partners working on specific tasks. This IP is restricted to those partners.
- **Generic IP:** IP that can be used by all consortium partners.
- **Publicly Available IP:** IP that will be published on the SmartLivingEPC website and made available without restrictions.

2.3.2 Challenges of Joint Ownership

A key challenge in Horizon collaboration projects comes from the alignment of different partners 'cultures, business objectives, and approaches².

Joint ownership presents significant challenges in managing, disseminating, protecting, transferring/licensing, and exploiting research results. It is crucial to address these issues properly, considering the diverse interests and objectives of all partners, while also ensuring that the commercial goals of SMEs are met. Even in cases of exclusive ownership, where one partner gains full ownership of the project results to be exploited through exclusive licenses or assignments, specific provisions must be established. These provisions should ensure access rights to the results for other parties and appropriate remuneration for exploiting the acquired project results to protect the interests of all involved parties. Any assignment or exclusive license requires the consent of all partners.

Throughout the project lifecycle, from the start to implementation and after its conclusion, several key actions should be taken and it's shown in Table 1:

Table 1. IP issues at different project stages (source²).

Beginning of the project	During Project Implementation	After Project End
Define the existing IP brought into the R&I cooperation.	Consider current and potential knowledge creation and management tools.	Agree on (joint) exploitation strategies and pathways.
Review the patent landscape and other relevant IP rights.	Discuss possible IP protection methods (e.g., patents, copyright, trade secrets, defensive publications, semiconductor topographies) and their pros and cons.	Examine possible IP ownership arrangements and related responsibilities, including defining the relative contributions of joint owners.

² Your Guide to Intellectual Property Management in Horizon Europe, European IP Helpdesk, www.ec.europa.eu/ip-helpdesk, 2022

Assess the opportunities and risks of sharing knowledge with consortium partners.	Identify potential complementary IP protection methods.	Evaluate potential (licensing) agreements and remuneration options linked to the use of IP resulting from the project, ensuring all parties are appropriately compensated.
Determine if default Horizon IP rules or other relevant default rules are suitable.		

2.4 What is intellectual property

Intellectual property (IP) encompasses intangible products of human creativity, including inventions, artistic works, logos, and symbols used in commerce, which can be legally protected. Intellectual Property Rights (IPRs) establish exclusive rights for a set period, enabling creators to protect their innovations from unauthorized use. These rights are territorial, meaning they are enforceable only in the jurisdictions where they are registered or acquired.

Key points about different types of IPRs include:

- **Copyright:** Protects literary and artistic works like books, music, and movies.
- **Trademarks:** Distinguish goods or services of one business from others and grant exclusive use rights.
- **Geographical Indications (GI):** Identify products as originating from a specific region.
- **Industrial Designs:** Protect the ornamental aspects of articles, both two- and three-dimensional.
- **Patents:** Grant exclusive rights for inventions, offering new technical solutions or processes, typically lasting 20 years.
- **Trade Secrets:** Safeguard confidential business information like formulas, techniques, and customer lists, providing a competitive edge by relying on secrecy.
- **Utility Models:** Exclusive rights granted for inventions that offer new ways of doing something, generally for 10 years.

Noteworthy details about specific IPRs:

- **Trademarks:** Can be words, symbols, sounds, or combinations that distinguish products or services.
- **Design Protection:** Covers the appearance of an article, including shape, patterns, or colors.
- **Copyright:** Protects works such as music, paintings, movies, and computer programs.
- **Software Protection:** Encompasses safeguarding software-related information like algorithms and program codes stored on hardware.

Trade secrets are distinct as they rely on confidentiality to maintain a competitive edge, encompassing proprietary information like processes, formulas, and strategies. Eligibility as a trade secret hinges on meeting specific criteria, notably confidentiality and providing a competitive advantage. In Table 2 an overview of the typical IPR type with more information is reported.

Table 2. Typical Type of IPR.

IPR	What is protected	Type of protection and requirements	Duration
Patents	Inventions and technologies, such as processes, machines,	Provide exclusive rights to the inventor for a limited period of time.	Normally up to max 20 years from the date of

	products or improvements.	Main requirement: novelty, inventive step, industrial applicability	filing the patent application
Trademark	Graphically representable means of identification (logos, names, slogans, etc)	Provide exclusive rights to use the trademark and prevent others from using a similar mark that may create confusion. Main requirement: Distinguishable, non-descriptive	Indefinite (if mark continues to be distinctive and renewed)
Copyright	Literary and artistic Works. Computer programs	Provides exclusive rights to reproduce, distribute, display, perform, and modify their work. Main requirement: originality	Normally the creator's lifetime + 70 years
Design	Form/appearance of a product (shape, configuration, patterns, etc)	Provide protection to safeguard the aesthetic features of a product, making it visually appealing or distinctive. Main requirement: Novelty and individual character	Up to 25 years
Trade Secret	Unique processes, formulas, patterns, devices, etc. that provide a competitive advantage to a company	Provide protection for confidential information in a form of a protocol for maintaining secrecy	As long as the secret is kept from becoming common knowledge

Moreover, IPR can be categorized into registered and non-registered rights. Registered rights require the owner to go through a formal registration process, such as obtaining a patent. These rights are only protected within the jurisdiction where the registration has occurred. Conversely, non-registered rights are automatically conferred upon the creation of the IP, such as an artistic work being protected by copyright without the need for any formal registration process.

2.4.1 Copyright license

As mentioned earlier, copyright is a form of intellectual property that protects original works of authorship as soon as they are fixed in a tangible medium of expression. This includes a wide range of works such as paintings, photographs, illustrations, musical compositions, sound recordings, computer programs, books, poems, blog posts, movies, architectural works, and plays. Copyright grants the owner the exclusive legal right to reproduce, publish, or sell the work, and to decide how it is used.

Copyright licensing is a common method for granting and transferring the rights to use copyrighted works. Various types of licenses exist, including:

- **All Rights Reserved:** This default copyright license applies when no explicit license is granted. It means all rights are reserved to the copyright owner, and the work cannot be used without permission.
- **Public Domain:** Works in the public domain are not protected by copyright and can be used freely by anyone. This typically occurs when the copyright has expired, the work was created by the government, or it has been explicitly dedicated to the public domain.
- **Creative Commons:** These licenses offer a range of permissions that creators can choose to apply to their works, allowing others to use the work under specified conditions.
- **Fair Use:** A legal doctrine that allows limited use of copyrighted material without permission from the copyright owner, typically for purposes such as criticism, comment, news reporting, teaching, scholarship, or research.
- **Open-Source Licenses:** These licenses apply to software, allowing users to access, modify, and distribute the source code.

- **Commercial Licenses:** These licenses grant permissions for commercial use of works, often involving payment of fees or royalties for the right to use the copyrighted material in commercial projects.

Among these, Creative Commons licenses are widely used, including within the Lightness project. The main types of Creative Commons licenses are:

- **CC BY (Attribution):** Allows others to distribute, remix, adapt, and build upon the licensed work, provided they give credit to the original creator.
- **CC BY-SA (Attribution-ShareAlike):** Permits others to remix, adapt, and build upon the licensed work, as long as they credit the original creator and distribute their contributions under the same license.
- **CC BY-ND (Attribution-NoDerivs):** Allows others to redistribute the licensed work, even commercially, as long as they

2.4.2 Software license

A software license is a document that sets legally binding guidelines for the use and distribution of software, thereby protecting the intellectual property (IP). When software is licensed to other parties, they acquire the right to use it under predefined terms and conditions. A license allows the owner of the software, known as the Licensor, to officially grant usage rights to another party, the Licensee, while safeguarding the Licensor's interests.

Software licenses generally fall into two categories:

- **Free and Open-Source Software (FOSS) licenses:** Also known as open source, these licenses provide the source code to the customer along with the software product. Customers are typically allowed to modify the source code.
- **Proprietary licenses:** Also known as closed source, these licenses provide customers with compiled and deployed code that users are not permitted to alter.

3 Methodology for the SmartLivingEPC project

Within this document the methodology used to define the type of IPR for each ER is presented. Since this document is a public report and no sensible information can be shared, only the general exploitation roadmaps defined for the partners that will be managing ERs will be presented, followed by a general methodology that will be used to gather more information. Results of the full analysis conducted within Task 7.5 will be reported in the final deliverable D7.9 “IPR Protection Plan v2” due at M36.

To fulfil this task, a questionnaire will be used to complete the previous steps of this task on the exploitation path. This will help in understanding the market approach as well as in developing an exploitation roadmap with concrete actions and next steps towards the market. This procedure is part of the common Exploitation and IPR management toolkit of R2M Solution.

As a recap, Table 3 report the list of the ER identified in D7.6 with a preliminary analysis on which need to be protected, when N/A is showing means that other type of protection is needed. While Figure 1 shows the KER identified also in D7.6.

Table 3. List of the ER.

ER	Exploitable Result	WP	ER Manager	Type	Protection level
ER1	SmartLivingEPC Digital platform	WP4	CERTH	S/W, SaaS	Yes
ER2	SmartLivingEPC Asset rating methodology- Building Unit	WP2	AIRFV	Methodology Process	N/A
ER3	SmartLivingEPC Asset rating methodology - Building Complex	WP2	UDEUSTO	Methodology Process	N/A
ER4	SmartLivingEPC Operational Rating Methodology - Building Unit	WP3	FRC	Methodology Process	N/A
ER5	SmartLivingEPC Operational Rating Methodology - Building Complex	WP3	UDEUSTO	Methodology Process	N/A
ER6	Building Dynamic Behavior Monitoring System	WP4	CERTH	S/W	Yes
ER7	SmartLivingEPC Building Digital Twin (SBDT)	WP4	IES RD	S/W, SaaS	Yes
ER8	Added Value AI tools	WP4	IES RD	S/W	Yes
ER9	Nudge-ready performance benchmarking & evaluation tool	WP5	DEMO	S/W	Yes
ER10	Common Information Exchange Model (CIEM)	WP4	QUE	S/W	Yes

Selection criteria (1-5)											
#[SR1]	Exploitable Result	WP	ER Manager	Type	1. Expected TRL	2. Innovation level	3. Protection level	4. Potential adopters	5. Applicable at EU level	ER risks Mapping	KER
ER1	SmartLivingEPC Digital platform	WP4	CERTH	S/W, SaaS	7	2	Yes	assessors, energy	Yes		KER1
ER2	SmartLivingEPC Asset rating methodology- Building Unit	WP2	AIIRFV	Methodology Process	7	3	N/A	assessors, researchers,	Yes		
ER3	SmartLivingEPC Asset rating methodology - Building Complex	WP2	UDEUSTO	Methodology Process	7	4	N/A	Energy assessors,	Yes		
ER4	SmartLivingEPC Operational Rating Methodology - Building Unit	WP3	FRC	Methodology Process	7	2	Yes	owners, energy	Yes		KER2
ER5	SmartLivingEPC Operational Rating Methodology - Building Complex	WP3	UDEUSTO	Methodology Process	7	4	N/A	assessors, researchers,	Yes		
ER6	Building Dynamic Behavior Monitoring System	WP4	CERTH	S/W	7	2	Yes	Energy assessors,	Yes		KER3
ER7	SmartLiving Building Digital Twin (SBDT)	WP4	IES RD	S/W, SaaS	7	3	Yes	assessors, energy	Yes		
ER8	Added Value AI tools	WP4	IES RD	S/W	6	3	Yes	owners, real energy	Yes		
ER9	Nudge-ready performance benchmarking & evaluation tool	WP5	DEMO	S/W	7	2	Yes	assessors, researchers, engineers,	Yes		
ER10	Common Information Exchange Model (CIEM)	WP4	QUE	S/W	7	2	Yes	energy assessors,	Yes		KER4

Figure 1 - SmartLivingEPC KER defined in D7.6

4 Exploitation plan for partners

As a first step within this task, an exploitation plan for each of the Exploitable results Manager was conducted.

In the following subchapters are reported by the organization, the ER number, the name of the ER, the IPR plan in short, and the ownership. Furthermore, a preliminary explanation on the exploitation vision for that particular ER is described.

4.1 Exploitation Plan for CERTH

Results number	1
Exploitable results	SmartLivingEPC Digital platform
IPR Plan	Copyright, Direct selling to relevant stakeholders; Spin-off.
Ownership	Joint

The SmartLivingEPC visualization platform connects real-time performance data from buildings with BIM context data. It provides actionable advice to building owners and occupants by visualizing heterogeneous information, such as energy consumption, building performance, and visual analytics, allowing users to make informed decisions for optimal building operation.

It is a new solution that will be developed by CERTH within the framework of SmartLivingEPC.

SmartLivingEPC Digital platform could be considered both innovative and potentially exploitable due to its novel approach, user-centric design, the potential for market adoption, and contributions to sustainability and efficiency. It is a powerful tool for making informed decisions and optimizing building operations, aligning with current European Standards and future growth opportunities.

In terms of intellectual property rights (IPR), individual and joint IP are considered for the SmartLivingEPC Digital platform. Provisions for the use of IP background will be determined during the commercialization strategy.

For this IPR Plan, copyright protections will be considered to safeguard the platform's intellectual property. Additionally, direct selling to relevant stakeholders, and the possibility of a spin-off to maximize the commercial potential of our intellectual property.

Results number	6
Exploitable results	Building Dynamic Behaviour Monitoring System
IPR Plan	Copyright, Direct selling to relevant stakeholders; Licenced for stand-alone solution.
Ownership	Joint and individual

The Building Dynamic Behaviour Monitoring System considers various factors such as energy consumption, indoor environmental conditions, and occupancy to extract an optimal model for the building's behaviour. The modelling approach is user-centric, taking into account occupant parameters as they significantly influence the building's overall behaviour.

It is a new solution that will be developed by CERTH within the framework of SmartLivingEPC.

The ER stands out for its advanced use of real-time data to improve energy efficiency and comfort in buildings. Its innovation comes from predicting occupancy and adjusting systems before users even notice changes, saving energy more effectively than traditional systems. The technology is market-ready, with potential integration into existing energy systems or as an independent product, appealing to the growing demand for smart and sustainable building solutions

In terms of intellectual property rights (IPR), individual and joint IP are considered for the SmartLivingEPC Building Dynamic Behaviour Monitoring System. . Provisions for use of IP background will be determined during the commercialization strategy.

The IPR Plan will address copyright issues, include strategies for direct selling to relevant stakeholders, and explore options for licensing the technology as a stand-alone solution.

4.2 Exploitation Plan for AIIR

Results number	2
Exploitable results	SmartLivingEPC Asset assessment methodology for buildings and communities (group of buildings or building complex)
IPR Plan	knowledge transfer, software licensing and commercialisation
Ownership	Joint and individual

The SLE asset rating methodology describes the calculation and the assessment procedure of the asset (energy & nonenergy) building performance rating or of a " building complex" under investigation.

AIIRFV is using results from the development of a national calculation software tool for the energy performance of buildings, based on EPB set of CEN standards, series 52000.

The SLE asset assessment procedure incorporates not only the energy but also the non-energy indicators, the smart readiness and the sustainability level of a building or building complex. The technical audit results are also integrated in the asset evaluation procedure. It can provide a holistic approach for all building categories under the EPBD.

Individual and joint IP, which belongs to individual partners or is jointly owned by partners working on a particular task and is restricted to those partners.

The IPR Plan will focus on knowledge transfer, software licensing, and commercialization to effectively manage and monetize the intellectual property

4.3 Exploitation Plan for UDEUSTO

Results number	3
Exploitable results	SmartLivingEPC Operational Rating Methodology
IPR Plan	Not defined
Ownership	Joint

The SLE Operational rating methodology consist in a set of indicators to build an operational rating methodology encompassing both energy and non-energy aspects.

The ER linked to the operational rating methodologies proposed by SLEPC constitutes an innovation due to its comprehensive approach that incorporates energy and non-energy aspects of performance on a scale that exceeds the physical limits of efficiency. This is a proposal that existing systems do not contemplate, as they mainly focus on energy-related assessments at the building level.

The IPR plan for this ER is not defined yet but it will be defined with the last version of this document at M36.

Results number	5
Exploitable results	SmartLivingEPC Asset Rating Methodology

IPR Plan	Not defined
Ownership	Joint

The SLE Asset rating methodology consist in a set of indicators to build an asset rating methodology encompassing both energy and non-energy aspects.

The ER linked to the asset rating methodologies proposed by SLEPC constitute an innovation due to its comprehensive approach that incorporates energy and non-energy aspects of performance on a scale that exceeds the physical limits of efficiency. This is a proposal that existing systems do not contemplate, as they mainly focus on energy-related assessments at the building level.

The IPR plan for this ER is not defined yet but it will be defined with the last version of this document at M36.

4.4 Exploitation Plan for FRC

Results number	4
Exploitable results	SmartLivingEPC Operational Rating Methodology - Building Unit
IPR Plan	knowledge transfer, technology licensing
Ownership	Not Defined

This service aims to develop the operational rating methodology for SmartLivingEPC under the scope of a dedicated CEN Standard (CEN TC 371/WG5), in coordination with D2EPC and Chronicle projects.

The ER is considered innovative because it addresses the need for a standardized operational rating methodology for SmartLivingEPC in coordination with relevant CEN standards and projects. It fills a crucial gap in the market and offers a standardized approach to evaluating building unit performance, which is currently lacking.

The ER's exploitation vision includes knowledge transfer, technology licensing, and direct production and commercialization. It aims to establish partnerships and collaborations to ensure widespread adoption of the rating methodology.

The IPR Plan will include strategies for knowledge transfer and technology licensing to optimize the use and dissemination of intellectual property

4.5 Exploitation Plan for IES

Results number	7
Exploitable results	SmartLivingEPC Building Digital Twin (SBDT)
IPR Plan	Copyright protection, closed source software code
Ownership	Individual

The SLBDT will be capable of visualizing IFC files and simulate scenarios with ICL engine which combines physics-based dynamic simulation with real-time operational data.

Digital Twins help users gain insights, make informed decisions, and optimize processes throughout the entire lifecycle of a physical asset. On the other hand, BIM models are becoming a key technology to in the construction sectors as enables collaboration across the project team. Therefore, integrating Digital Twin software with existing BIM protocols can transform the construction sector.

As the BIM industry continues to grow, there is an increasing demand for standardized 3D model design within the industry. The challenge lies in establishing standardized processes to ensure interoperability across diverse technologies, crucial for unlocking the full potential of Digital Twins in optimizing built environment management.

IES IPR Plan will prioritize copyright protection and the maintenance of closed-source software code to safeguard their intellectual property.

Results number	8
Exploitable results	Added Value AI tools
IPR Plan	Copyright protection
Ownership	Individual

IES AI tools bring extra value by showing users how their actions impact a building's energy performance. Through Machine Learning, the system generates suggestions that will be displayed on the web platform

IES time series data platform allows you to centralize data from different sources like building systems and sensors in one place. One can use advanced anal to analyse this data to get smart insights and improve how buildings operate through Integrate Artificial Intelligence and Machine Learning (ML). For example, in previous projects like Auto-DAN, IES has developed ML models to advise users on the best time to use their appliances based on existing tariffs. AI services tool is exceptionally innovative, meeting the growing demand for AI-driven solutions in building management. They offer cutting-edge algorithms that will personalize user experience and optimize building performance.

IES IPR Plan will emphasize copyright protection to ensure the security and legal integrity of their intellectual property.

4.6 Exploitation Plan for DEMO

Results number	9
Exploitable results	Nudge-ready performance benchmarking & evaluation tool
IPR Plan	Knowledge transfer, technology licensing, direct production, and commercialization.
Ownership	Joint and individual

The Nudge-ready performance benchmarking & evaluation tool provides three subcomponents for benchmarking, evaluation, and recommendation for the building performance by collecting and analysing data from the asset rating and operational rating engines.

DEMO provides RE Suite functionalities that can support the development of SmartLivingEPC benchmarking and evaluation practices as it provides the possibility to create multiple strategic scenarios and facilitates the process of substantiated decision-making based on multiple indicators. It is innovative cause uses the state-of-the-art of the asset and operational rating methodology and it provides and easy-to-use KPIs and recommendations based on the performance of the building.

DEMO IPR Plan will include strategies for knowledge transfer, technology licensing, direct production, and commercialization to maximize the value of their intellectual property.

4.7 Exploitation plan for QUE

Results number	10
Exploitable results	Common Information Exchange Model (CIEM)
IPR Plan	Knowledge transfer, technology licensing, direct production, and commercialisation.
Ownership	Joint or individual

CIEM is a cloud-based repository for data collection from buildings all over Europe, which service data exchange requests from multiple applications. Some of its features include: security features (authentication, and authorization, overseeing the storage and administration of user accounts and their role; data ingestion/querying, gathering data from the various sources via RESTful Application Programming Interface (API), encryption), API data management, including intelligent data pre-processing, configurable event detection processes.

QUE will introduce and further develop the data acquisition solution implemented in H2020-COGITO.

CIEM serves as a centralized system where all project stakeholders can collaboratively manage and exchange information throughout the project's lifecycle enabling thus semantic interoperability. Furthermore, users can experience enhanced data management based on the fusion of BIM and innovative IoT technologies, which has traditionally been a challenging task.

Regarding intellectual property, both individual and joint IP are considered. Provisions for use of IP background will be determined during the commercialization strategy.

QUE IPR Plan will focus on knowledge transfer, technology licensing, direct production, and commercialization to effectively leverage and monetize their intellectual property.

4.8 To market approach questionnaire

Table 4 provides a questionnaire that will be disseminated among each exploitation manager to brainstorm the action to be taken into account for the exploitation but also with a focus on the intellectual property required for each KER. Looking at Table 4 exploitation managers can understand the market target, the early adopters and how can they be reached.

Table 4. To-market approach questionnaire.

KER	Description
Description	<i>Describe in a few lines your result and/or solution (i.e., product, service, process, standard, course, policy recommendation, publication, ...)</i>
Problem	<i>Describe the problem you are addressing (the problem your "customer" has).</i>
Alternative solution	<i>Describe how your customer has solved the problem so far</i>
Unique Selling Point USP - Unique Value Proposition UVP	<i>Describe the competitive advantages, innovative aspects. What does your solution well, what are the benefits, what does the user/customer want, how does your solution solve his/her problem, what distinguishes it from the competition / current solutions?</i>
"Market" – Target market	<i>Describe the market in which your product/service will be used/can "compete", answering the following questions: - What is the target market? - Who are the customer segments? - Who might be the early adopter (those you might address first)?</i>
"Market" - Competitors	<i>Who are your "competitors" (note: they are the ones offering "alternative solutions)? What are their strengths and weaknesses comparing to you?</i>
"Market" Size	<i>What is the market size for your solution? What is the percentage of that market you will be targeting? If you are dealing with training, provide information on the size of potential beneficiaries. If you deal with policy recommendations provide an estimation of how many people/SMEs will be affected. Feel free to propose other ways for an estimation of the size of the impact.</i>
"Market" Trends	<i>What are the market trends related to your solution?</i>

Settings	<p>What is the public acceptance?</p> <p>What is the social impact?</p> <p>What is the environmental impact?</p> <p>What is the economic impact?</p>
Settings	<p>What are the legal requirements?</p> <p>What are the normative requirements?</p> <p>What are the ethical requirements?</p>
Go to Market – Use model	<p>Explain what is your “business model”, how the KER will be put in use (made available to “customers” to generate an impact). Examples of use models: manufacturing of a new product, provision of a service, direct industrial use, technology transfer, license agreement, contract research, publications, standards, etc.</p>
Go to Market – IPR	<p>What is the Background (type/ partner)? Provide information considering also what already agreed in the Consortium Agreement</p>
Go to Market – IPR	<p>What is the Foreground (type/ partner)? Provide information considering also what already agreed in the Consortium Agreement</p>
Go to Market	<p>How will you reach the Early Adopters?</p>
Go to Market	<p>What will be the eventual price of the solution? Estimation of price / unit and number of units sold to reach breakeven point (cover costs)</p>
Go to Market	<p>What is the time to market?</p>
The Team	<p>Do you (and your partners) have the adequate skills for providing your solution to the users (to implement the next steps you envisage to put the KER into use) Please provide names and qualifications of the team members Please provide a short description of the partner organisation in an annex</p>
The Team – External providers	<p>If you need to integrate your “team, whom do you need (new) external partners? Which type of partners?</p>

5 Conclusions

In this public deliverable an overview on basic knowledge and information on Intellectual Property Right were presented as well as the general methodology to create the short-term and mid-term exploitation vision for each ER and KER in the SmartLivingEPC project.

The first paragraphs outline the basic concepts of the IPR on Horizon Europe beneficiaries as well as the exploitation strategies and the IPR plan determined for the SmartLivingEPC project.

The second part of the document shows the methodology that will be used for the IPR definition in future months and a preliminary exploitation plan for partners.

This document is the first version of the IPR management plan that will be further developed and updated at month 36 (end of the project).

Advanced Energy Performance Assessment towards Smart Living in Building and District Level



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