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Publishable executive summary

HYBUILD dissemination and exploitation activities aim at demonstrating that hybrid energy storage solutions are a key component in providing flexibility and supporting renewable energy integration in the energy system and can efficiently contribute to the decarbonisation of buildings.

HYBUILD dissemination and exploitation will not be an after-thought. It will be an ongoing dialogue with potential users during the project, more especially with the relevant stakeholders' groups specifically interested in the project outcomes, which include professionals (designers, ICT installers, energy advisors), construction and engineering companies, manufacturers (ICT, BMS, storage, thermal equipment), building owners/facility managers, government, municipalities (building and energy regulators, standardization bodies), academia, scientific community, and the general public.

The **HYBUILD dissemination strategy** identifies, organises and defines the public disclosure of the results of the project and as such it is integral to meeting the overall aim of the project. The idea is to take key external stakeholders through a three-stage process of awareness to understanding and ultimately to point where they are applying the HYBUILD innovative concepts and solutions for compact hybrid storage for low energy buildings.

Several dissemination actions including preparation and submission of scientific papers and organization of technical workshops have already been planned by the project partners for the first half of the project (until M24): these actions are detailed in the report.

The **HYBUILD exploitation strategy** aims at enabling an active use of the exploitable results created by the project to generate positive impacts. The methodology includes the identification of Exploitable Results (ERs), IPR background, market analysis and assessment for each of them, selection of an exploitation strategy and eventually implementation of this strategy. At the time of writing this report, 12 ERs have been identified and described by their ER manager(s). This includes for instance the HYBUILD integrated systems for both the Mediterranean and Continental climates (ER01 and ER02) as well as more specific components such as for instance the innovative DC bus controller solution for the heat pump market (ER03). This report also presents an updated individual exploitation plan for each of the 21 HYBUILD beneficiaries.

The progress of the implementation of this dissemination and exploitation plan will be monitored and reported through the project periodic reports as well as through further upcoming deliverables which include HYBUILD Exploitable Results table (D7.5 – M12), HYBUILD business model (D7.4 – M18), Report on dissemination activities (D7.2 – M48), HYBUILD patent filings (D7.7 – M48), HYBUILD Replication plan (D7.8 – M48), and Partner exploitation agreement (D7.9 – M48).

Communication activities are covered through two complementary reports, namely the internal and external communication strategy (D8.1 delivered M6), and the communication plan (D8.4 – M12).

Acronyms and Abbreviations

AA	Acronyms and Abbreviations
Al	Aluminum
ARIPO	African Regional Intellectual Property Organization
BEMS	Building Energy Management System
CA	Consortium Agreement
COP	Coefficient of performance
CPC	Cooperative Patent Classification
CSH	Concentrated Solar Heat
CTeam	Coordination Team
DC	Direct Current
DHC	Domestic Hot Water
DL	Deadline
DR	Demand Response
DSO	Distribution System Operator
EC	European Commission
ECLA	European Classification System
EeB	Energy efficient Buildings
EMS	Energy Management System
EPO	European Patent Office
ER	Exploitable Result
EU	European Union
FTO	Freedom To Operate
GA	Grant Agreement
HP	Heat Pump
HVAC	Heating, Ventilation and Air-Conditioning
IP	Intellectual Property
IPC	International Patent Classification
IPR	Intellectual Property Rights
JPO	Japan Patent Office
JV	Joint Venture
JVC	Joint Venture Company
KTI	Knowledge Transfer Ireland
M&A	Mergers and Acquisition
MTA	Material Transfer Agreement
NDA	Non-disclosure Agreement
OAPI	Organisation Africaine de la Propriété Intellectuelle
OpenADR	Open Automated Demand Response
PC	Project Coordinator
PO	Project Officer
PR	Press Release
PCM	Phase Change Material
PCT	Patent Cooperation Treaty
TRIPS	Trade Related Aspects of Intellectual Property Rights

TRL	Technology Readiness Level
UPC	Unified Patent Court
USPC	U.S. Patent Classification System
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Glossary

Communication means taking strategic and targeted measures for promoting the action itself and its results to a multitude of audiences, including the media and the public, and possibly engaging in a two-way exchange. The aim is to reach out to society as a whole and in particular to some specific audiences while demonstrating how EU funding contributes to tackling societal challenges.

Dissemination is the public disclosure of the results of the project in any medium. Disclosure may sound passive, like a shop opening up, but it is an activity, like a shopkeeper attracting customers. It is a process of promotion and awareness-raising right from the beginning of a project. It makes research results known to various stakeholder groups (like research peers, industry and other commercial actors, professional organisations, policymakers) in a targeted way, to enable them to use the results in their own work. This process must be planned and organised at the beginning of each project, usually in a dissemination plan.

Exploitation is the use of the results during and after the project's implementation. It can be for commercial purposes but also for improving policies, and for tackling economic and societal problems.

1. Introduction

1.1 Aims and objectives

This deliverable presents the dissemination and exploitation plan which aims at ensuring a maximum visibility and impact of the HYBUILD project.

1.2 Relations to other activities in the project

The development of the Dissemination and Exploitation plan is supported by Task 7.1. Development of a Dissemination and Exploitation plan.

The dissemination and exploitation strategies and plans are informed by all other work packages of HYBUILD since they will structure their timeline and provide the content (exploitable results, lessons learnt and findings, news items, events, etc.) to be disseminated through selected media channels and / or to be exploited through appropriate commercial / marketing / protection channels. The progress of the implementation of this dissemination and exploitation plan will be monitored and reported through the project periodic reports as well as through further upcoming deliverables which include HYBUILD Exploitable Results table (D7.5 – M12), HYBUILD business model (D7.4 – M18), Report on dissemination activities (D7.2 – M48), HYBUILD patent filings (D7.7 – M48), HYBUILD Replication plan (D7.8 – M48), and Partner exploitation agreement (D7.9 – M48).

This plan is complementary to the Internal and External communication strategy (D8.1) which was delivered at M6 and the communication plan (D8.4 to be delivered at M12) which contain the additional promotional actions to a wide range of audiences, including the media and the public through the HYBUILD website, social media, the FlipBoard online magazine, press releases, and other presentations in relevant events.

1.3 Report structure

Chapter 2 introduces the HYBUILD overall dissemination and exploitation strategy, its key underpinning concept, and clarifies the differences and potential overlap between dissemination, communication and exploitations activities. Chapter 3 identifies the main relevant stakeholders' groups to which dissemination and exploitation activities will be targeted at. Chapter 4 presents the dissemination plan: this includes its objective, timeline, validation process to be followed for dissemination activities, KPIs and target to follow their progress, and a detailed planning of dissemination actions for the first half (until M24) of the project. Chapter 5 presents the exploitation plan: this includes a presentation of the overall exploitation methodology and measures to be implemented (some of this content is rather generic although it represents important knowledge to be shared with all HYBUILD partners), the identification of Exploitable Results, and an update of each partner' individual exploitation plan. Eventually Chapter 6 concludes the report.

1.4 Contributions of partners

R2M as WP7 leader is the main editor of this report. All partners contributed to the report in particular for (1) the detailed planning of dissemination activities for the first half of the project, (2) the identification and description of the project exploitable results, and (3) the update of their individual exploitation plan.

2 Overall dissemination and exploitation strategy

The present dissemination and exploitation plan has been designed according to the European Commission guidelines[1]. Under Horizon 2020, beneficiaries should engage in dissemination and exploitation activities. As HYBUILD is financed by EU citizens, it should benefit to the largest number and the fruits of the research reach society as a whole.

There's often some overlap between dissemination, exploitation and communication, especially for close-to-market projects. Dissemination will aim at sharing HYBUILD research results with potential users - peers in the research field, industry, other commercial players and policymakers - whereas Exploitation is the use of results for commercial purposes or in public policymaking. Eventually, Communication aims to reach out to society as a whole: it is further described in a dedicated Communication strategy (D8.1) and plan (D8.4).

HYBUILD Dissemination and Exploitation will not be an after-thought. It will be an ongoing dialogue with potential users during the project, more especially with the relevant stakeholders' groups specifically interested in the project outcomes, as highlighted in the next section.

3 Key relevant stakeholders

During the first half of the project (until M24), dissemination and communication activities will be mainly intended at raising awareness about the project, therefore its main targets will be the **scientific community** and the **general public** interested in energy storage, renewable energies and future smart energy networks. Then when the project will be more mature (M24 to M48), Technology Readiness Levels (TRLs) of the developed HYBUILD components will increase, and additional content will become available (especially through the project public deliverables, but also with demo site results) which will then target **professionals** (designers, ICT installers, energy advisors), **construction and engineering companies**, **manufacturers** (ICT, BMS, storage, thermal equipment), as well as potentially **government and municipalities**.

Table 1 below presents a deeper stakeholder analysis and identifies the benefits that each stakeholder category can expect from HYBUILD outcomes.

Table 1 - The benefits the HYBUILD project offers to different stakeholders

Target groups	Benefits from HYBUILD	Dissemination (or communication) tool
Professionals (designers, ICT installers, energy advisors)	• Potential of HYBUILD innovation to meet the needs and expectations for their residential / energy efficiency projects.	• Demonstration cases (visits, webinars, conferences, videos) • Training courses and workshops, seminars • Project website
Construction and engineering companies	• Increased knowledge on the integration of hybrid storage systems and synergies with other systems (within building and with DHC networks)	• Demonstration cases (visits, webinars, conferences) • Events (presentation of project's results, fairs) • Project website

[1] Fact Sheet - the Plan for the Exploitation and Dissemination of Results in Horizon 2020 - https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/FS-Plan-for-the-exploitation-and-dissemination-of-results_1.pdf

Manufacturers (ICT, BMS, storage, thermal equipment)	• Potential integration / interoperability / synergies between their products and HYBUILD	• Demonstration cases (visits, webinars, conferences) • Networking activities (workshops/events in general) • Project website
Building owners/facility managers	• Understanding the benefits of HYBUILD storage technologies to consider their adoption and installation	• Demonstration cases (visits, webinars, conferences) • Networking activities (workshops/events in general) • Training courses and workshops
Government, municipalities (building and energy regulators, standardization bodies)	• Understanding the benefits of HYBUILD storage technologies to include ad-hoc specifications in regulations / norms / labelling schemes / market codes, etc.	• Demonstration cases (visits, webinars, conferences) • Networking activities (workshops/events in general) • Project website
Academia, scientific community	• Understanding the potential of hybrid energy storage technologies and their application • Data from the HYBUILD pilot sites (and other data released as described in the Data Management Plan of the project – see D8.2) for secondary analysis • Knowledge transfer and results capitalization for further R&D activities	• Demonstration cases (visits, webinars, conferences) • Training courses • Project website
General public	• Promote how energy storage can support the EU's plans to decrease its energy imports, improve the efficiency of the energy system, and keep prices low by better integrating variable renewable energy sources	• Demonstration cases (visits, webinars, conferences) • Project website • Communication actions (e.g., videos, press releases) • Leaflets

HYBUILD also has a **Stakeholder Advisory Board** (SHAB) formed by a group of selected experts which belong to some of the above stakeholders' groups. They will be represented in the General board of the project and might benefit from early version of the project results for their review and potential inputs. The SHAB description of tasks and composition will be further described in D7.6 due at M12.

4 Dissemination plan

4.1 Objective and key underpinning concept

The key underpinning concept of the HYBUILD dissemination strategy is presented in Table 2 below. The idea is to take key external stakeholders through a three-stage process of awareness to understanding and ultimately to point where they are applying the HYBUILD innovative concepts and solutions for compact hybrid storage for low energy buildings.

Table 2 - HYBUILD three-stage dissemination process of awareness, understanding and action

Stage 1. Dissemination for awareness (M1-M24)	Stage 2. Dissemination for understanding (M25-M36)	Stage 3. Dissemination for action (M37-M48)
In the first instance, the purpose of the HYBUILD dissemination plan is to make the general public, relevant external organisations, stakeholders and potential users of the HYBUILD outputs aware of the project and its aims and objectives.	Within the wide target audience to which the dissemination for awareness activities is targeted, there is a narrower set that will be able to directly benefit from the project in significant ways. For this group, an important function of the dissemination plan is to provide a deeper understanding of the HYBUILD project's work.	For a further sub-set of the HYBUILD stakeholders, it is intended that their adoption of the applications and approaches resulting from the project will lead to an increase in adoption of innovative concepts of hybrid storage solutions for EeB. This group will be equipped with the skills, knowledge and understanding of the HYBUILD project in order to achieve a real change and the uptake of the HYBUILD systems.

4.2 Dissemination timeline

In the first 24 months of the project the main focus of the dissemination actions is on stage 1 of the dissemination strategy (i.e. dissemination for awareness). During the next 12 months of the project it is anticipated that project partners continue with stage 1, but as more of the work is completed, they move towards stage 2 of the dissemination strategy (i.e. dissemination for understanding). While in the final twelve months of the project it is expected that, with a subset of the primary stakeholders, project partners move towards stage 3 of the dissemination strategy (i.e. dissemination for action) with practical material for exploitation/replication. The focus is on those stakeholders with the ability to implement the HYBUILD systems, concepts and innovations.

The proposed dissemination timeline follows that of the project timeline. As such it is in line with the delivery dates of the projects 36 public deliverables (see Table 3). It is also similar and synchronized with the communication timeline presented in Deliverable D8.1 (Internal and External communication strategy). As it can be seen in the work plan, several submissions of public deliverables are grouped every year: M12 (6 public deliverables), M24 (7 public deliverables), M36 (5 public deliverables) and M48 (5 public deliverables). Key dissemination events presented in the next sections will be activated in conjunction with these milestones.

Table 3 - HYBUILD public deliverables timeline (ranked by delivery dates)

Deliverable n°	Deliverable name	Delivery date
D8.3	Web-based platform	M3
D7.3	HYBUILD Flipbook	M6
D8.1	Internal and external communication strategy	M6
D8.2	Data Management Plan (DMP)	M6

D7.1	Dissemination and exploitation plan	M9
D1.1	Requirements: context of application, building classification, and dynamic uses consideration	M12
D1.2	Technical and market review codes studies, national and European certification frameworks	M12
D3.1	Modular flow sheet simulation of the hybrid (sub-) system	M12
D4.1	Smart system algorithms	M12
D7.6	Stakeholder advisory board description of tasks and composition	M12
D8.4	Communication plan	M12
D1.3	Requirements: Key Performance Indicators, system components and performance targets	M14
D7.4	HYBUILD business models	M18
D3.2	Configuration of the hard- and software interfaces of the DCS finished	M20
D2.1	Report on adsorber/ desorber and evaporator/ condenser design and manufacturing	M24
D2.2	Low & high temperature latent storage realized	M24
D2.3	DC driven compression heat pump tests successful	M24
D2.4	Report on performance tests on the operation of the electrical energy storage	M24
D3.3	Full hybrid storage integrated	M24
D4.2	Functional requirements specification	M24
D6.2	Report of the energy performance analysis before intervention	M24
D3.4	Report on the experimental tests and the final design of the hybrid sub-systems	M30
D4.3	HYBUILD optimised building management system	M30
D1.4	Technology Payback analysis	M36
D4.4	Report on system performance	M36
D5.1	Life Cycle Assessment of the HYBUILD system	M36
D5.4	Report on existing standards and standardization landscape	M36
D6.1	Report of commissioning tasks	M36
D5.2	Social Life Cycle Assessment of the HYBUILD system	M42
D5.5	Full standardization proposals	M42
D5.3	Life Cycle Cost Assessment Studies	M46
D6.3	Report of the energy performance	M48
D7.2	Report on dissemination activities	M48
D7.8	HYBUILD replication plan	M48
D8.5	Report on communication activities	M48
D9.3	Report on synergies between HYBUILD and other global initiatives	M48

It is therefore anticipated that HYBUILD dissemination peaks will occur 2 or 3 months after those “project birthdays”. This will be monitored through the dissemination KPIs (see Section 4.7).

4.3 Validation process for dissemination activities

The following validation process shall be followed by all project partners before a HYBUILD dissemination item goes external:

Prior notice of any planned publication shall be given to the other Parties at least 45 calendar days before the publication, together with sufficient information on the results it will disseminate.

To illustrate with a concrete example:

1. Partner xx intends to prepare a publication for which the submission deadline is July 1st, 2018
2. Partner xx should then send to all partners (**i.e. in an email to all_partners@hybuild.eu**) sufficient information on the results that the publication will disseminate, at the latest on May 18th, 2018 (i.e. 45 calendar days before July 1st)

Further details are provided in the Consortium Agreement (in particular *Article 8.4 - Dissemination*) and Grant Agreement (in particular *Article 29 – Dissemination of results, open access, visibility of EU funding*) with further detailed explanations.

4.4 Recording dissemination and communication activities

The ownCloud platform includes a form for partners to record their dissemination and communication activities. It records the dates, location of dissemination events, a description of the event, the participants involved, the different countries that were addressed, along with the size and type of the audience. It is each partner organizations responsibility to record their communication and dissemination activities through the form in the ownCloud.

An example of such a dissemination event report is shown in Figure 1.

HYBUILD Dissemination Event report

Date	27 June 2018
Event name	Sustainable Places 2018
Event description	**"The future of energy storage" Workshop** at the 6th annual Sustainable Places (SP) international conference series, intends to benchmark the progress of several projects supported by the European Commission which are focused on the development of innovative energy storage solutions. • HYBUILD and SCORES – two projects started in 2017 which are focused on the development of innovative hybrid storage solutions for residential buildings • TESSe2b (2015-2019) – a project which ambitions to develop an integrated solution for residential building energy storage through the use of solar and geothermal resources. • CREATE (2015-2019) – which aims to tackle the thermal energy storage challenge for the built environment by developing a compact heat storage. • E2VENT (closing in 2018) – which developed a ventilated façade with SMHRU (smart heat recovery unit), LHTES (latent heat thermal storage system) and BEMS (building energy management system). • STORY (2015-2020) – which aims at showing the added value of storage to the distribution grid through demonstrations or a variety of storage types in a variety of environments, and simulating the effects of large scale implementation of the small and medium scale storages Each project introduced itself during the workshop and proposed one or two horizontal topics for establishing cooperation to be further implemented after the event (e.g. shared dissemination activities, business models, KPIs reference framework, market studies, etc.)
Location	Aix-les Bains, France
HYBUILD participants	R2M, CNR-ITAE
Nature of participation	Workshop with HYBUILD-sister projects
Number of attendees	*To be completed after the event*
Feedback & added-value	*To be completed after the event*
Picture(s)	

Figure 1 - HYBUILD Dissemination Event Report

4.5 Detailed dissemination plan for the first half (until M24) of the project

R2M in its role of dissemination manager has been in touch with all HYBUILD partners in order to gather and support the definition of their dissemination and communication intents over the first 24 months of the project.

The following Table 4 and Table 5 present planned scientific publications and workshops. **It is noted that the validation process described in Section 4.3 is ongoing at the time of writing this report or still has to be conducted for these events and therefore the information provided in these tables is still subject to potential modifications.**

Scientific publications (conference or journal papers)

Table 4 - HYBUILD planned scientific publications until M24

Month	Targeted journal or conference	Open Access	Focus of the paper	Key targeted stakeholders	Lead partner	Contributing partner(s)
M12 Sept. 2018	Eurosun 2018, 10-13 Sept. 2018 Rapperswil, Switzerland	Open Access	To present the modelling activity of the hybrid storage concept. Tentative title: *Dynamic modelling of a Hybrid Solar Thermal/Electric storage system for application in*	Academia, scientific community, students; Professionals (designers, ICT installers, energy advisors, engineers)	CNR ITAE	UDL, AIT, NTUA Tentative authors: V. Palomba, F. Sergi, A. Frazzica, J. Emhofer, T.

			residential buildings			Barz, S. Varvagiannis, S. Karellas, G. Zsembinszki, L.F. Cabeza
M20	Passive and Low Energy Architecture (PLEA) | PLEA 2019	Gold Open Access	Literature review, overall presentation of the project with a specific focus on the Cyprus pilot site in Aglantzia	Professionals, Construction and engineering companies, Building owners/facility managers, Government, municipalities, Academia, scientific community	UCY/FOSS	AGLANTZIA, UCY/FOSS, To be completed
M23 Aug. 2019	ICR 2019 - The 25th IIR International Congress of Refrigeration Montreal, Canada (biggest conference for heat pump topics in 2019).	To be completed	To be completed	Academia, scientific community, students; Professionals (designers, ICT installers, energy advisors, engineers)	AIT	UDL, OCHSNER, AKG
M24 Sept. 2019	Sustainable Design of the Built Environment | SDBE 2019	Gold Open Access	Architectural integration of Active Solar Systems on the Facades and Roofs of Existing Buildings /Urban Centers in the East-Mediterranean Region / Southern Europe	Professionals, Construction and engineering companies, Building owners/facility managers, Government, municipalities, Academia, scientific community	UCY/FOSS	AGLANTZIA, UCY/FOSS, To be completed

Workshops

Table 5 - HYBUILD workshops until M24

Month	Where (event or name of the hosting partner)	Focus of the workshop	Key targeted stakeholders	Lead partner	Contributing partner(s)
M7 25 April 2018	Aglantzia Council	Presentation of the project to the inhabitants of Aglantzia Municipality as well as to the community council and poster presentation.	General public, Government, municipalities (building and energy regulators, standardization bodies)	AGL	UCY
M9 27 June 2018	UCY	Overall presentation of the project. This one-day workshop intends to benchmark the progress of several projects	Professionals (designers, ICT installers, energy advisors), Construction and engineering companies, Academia, scientific community, General public	UCY/FOSS	AGL
M9 27-29 June 2018	Sustainable Places 2018, Aix les Bains, France	Energy storage can support the EU's plans for the Energy Union by helping to ensure energy security and a well-functioning internal market and helping to bring more	Academia, scientific community	R2M (organisation of the overall workshop	CNR-ITAE (will present the HYBUILD

		carbon-cutting renewables online. By using more energy storage, the EU can decrease its energy imports, improve the efficiency of the energy system, and keep prices low by better integrating variable renewable energy sources. This workshop intends to benchmark the progress of several projects supported by the European Commission which are focused on the development of innovative energy storage solutions including: HYBUILD and SCORES TESSe2b CREATE E2VENT STORY Each project will introduce itself during the workshop and will propose one or two horizontal topics for establishing cooperation to be further implemented after the event (e.g. shared dissemination activities, business models, KPIs reference framework, market studies, etc.)		with sister projects)	project at the workshop)
3rd November 2018	TESSe2b Conference, Wyndham hotel, Athens.	"Thermal Energy Storage Systems for Energy Efficient Buildings. An integrated solution for residential building energy storage by solar and geothermal resources" – workshop with sister projects (TESSe2b, CREATE, SCORES, STORY and E2VENT – exact list to be confirmed)	Academia, scientific community	NTUA	
TBD (M13-M20)	InnoEnergy CommUnity Barcelona, Spain	Highlighting the developments of the HYBUILD project. Final proposal is still to be determined but could take the form of a business case challenge for current master's students to contribute ideas on the exploitation of the project or a speaker series where a discussion on the progress and objectives of the project is presented.	Academia, scientific community Professionals (designers, ICT installers, energy advisors)	COMSA	
TBD (M15-M24)	Sustainable Places 2019 (Place still to be determined)	Innovation workshop for the EU building research community, with anticipated participant number of 250	Scientific community, Building companies, HVAC companies, Professionals	TBD	CNR ITAE, ?
M24 September 2019	SHC 2019 (International Conference on Solar Heating and Cooling for Buildings and Industry)	The IEA Solar Heating & Cooling Programme has conducted international collaborative research to expand the use of solar energy for buildings and industry, involving both academia and industries in the transition from fossil fuels to renewables. SHC conferences serve as a platform to build understanding, collaboration and strong cooperation between research and industry in the themes of Solar Heating and Cooling components and applications and production and storage of energy from renewables. The workshop, focusing on the integration of solar energy in buildings for heating and cooling, will help in defining KPIs and optimal integration of the HYBUILD technology at the building scale.	Academia, scientific community, Energy professionals	TBD	CNR ITAE (will present the activity on the Mediterranean subsystem at the conference) EURAC will present activities related to simulations
M25 October	IMPRES 2019 (International Symposium	This international symposium hosts contributions of professionals dedicated to theories, experiments, and simulations, on	Academia, scientific community	CNR ITAE	CNR-ITAE (will present the activity on

2019	on Innovative Materials for Process in Energy Systems 2019), Japan	the development of functional materials for fuel cells, heat pumps, heat storage, sorption systems and their applied aspects. Attendees will include consulting engineers, design engineers, contractors, architects, manufacturers, researchers and academics. The workshop will focus on the discussion about development of innovative materials and components for thermal energy storage. This will help the HYBUILD activity in further optimize the components design, in order to improve the TES storage density and efficiency.			sorption module at the conference)
M24 / M25 Sept. / Oct. 2019	EU PVSEC 2019	European PV solar energy conference	Academia, scientific community, energy professionals, PV experts		EURAC will present results from simulations related to PV systems
M24 / M25 Sept. / Oct. 2019	DEBATEK/ Solar Energy Storage	This workshop intends to highlight the Solar energy technologies integrated with Energy Storage in the building. it includes an overall presentation of the project with a specific focus on the thermal energy storage.	Academia, scientific community, students, Professionals (designers, ICT installers, energy advisors, engineers), Construction and engineering companies, General public	NOBATEK	

In addition to the above workshops it is reminded that the following workshops are planned as part of the Grant Agreement:

- *An industry workshop for the building industry stakeholder with anticipated participant number of 100 at Month 36 (AIT).*
- *A stakeholder workshop for the Sustainable construction practitioners, with anticipated participant number of 100 at Month 40 (NBK).*

Exhibitions

No exhibition of the HYBUILD project (e.g. through a dedicated project booth in a global exhibition event) is planned within the first 24 months of the project. However, it is reminded that the following exhibition is planned as part of the Grant Agreement:

- *An exhibition to present results and products to industry, which will be part of the Europe wide large-scale exhibition (e.g. Construmat) with anticipated visitor number of 50,000 (COMSA).*

This major event will be planned near the end of the project so that HYBUILD final results can be presented.

Other types of actions including:

- Presentation of the project in an event (without associated paper / publication);
- Web article, press release, promotional video, or other type of dissemination / communication;

will be presented in the upcoming Communication plan (D8.4 – due at M12), although it is acknowledged that this type of activity often overlaps between dissemination and communications activities.

4.6 Dissemination guidelines

The HYBUILD logo is the primary identifier which is used on all materials and publications issued by members of the HYBUILD consortium. This gives a clear and memorable brand and visual identity to all of the work arising from the project.

To ensure a common visual identity for both deliverables and presentations arising from the project, templates for both have been developed and are available to partners on the HYBUILD ownCloud platform. Various versions are available (large, short, white background, etc.) as shown in Figure 2 and Figure 3.

Figure 2 - HYBUILD Logo - large version

Figure 3 - HYBUILD Logo - short version

According to the European Commission guidelines, all materials and communications issued by HYBUILD must also include the EU emblem, as well as the following text:

"The HYBUILD project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 768824."

4.7 Dissemination KPIs and monitoring

KPIs to measure dissemination performance are summarized in the Table 6 below.

Table 6 - Communication KPIs

KPI	1st half (M1-M24)	2nd half (M25-M48)	Cumulative target
Submitted conference papers	2	2	**4**
Submitted journal papers	0	3	**3**
Dissemination workshops	2	2	**4**
Exhibitions	0	2	**2**
Training videos	0	2	**2**

R2M is in charge of monitoring the progress of dissemination activities against the KPI targets and informing the consortium of that progress. The consortium members are responsible for recording their dissemination actions (see Section 4.4) and reporting them to R2M.

5 Exploitation plan

5.1 Overall exploitation methodology

The following section provides an overall methodology and fundamental generic knowledge to support the exploitation of research results generated by a project such as HYBUILD. It does not intend to be exhaustive: instead, there is a stronger focus on the particular exploitation paths which are a-priori more relevant for HYBUILD.

Processes from Intellectual Property (IP) creation to IP exploitation do not follow a linear sequence: there are instead important dependencies, feedback effects and simultaneities (hence the representation of the IP “funnel” in Figure 4). This section starts with the subject of IP commercialization; it then moves to IP asset management; eventually it finishes with IP protection strategy. The subject of IP creation is excluded in this report, as it is implemented within the technical Work Packages (WP1 to WP6) of HYBUILD and leads in particular to the Exploitable Results presented in Section 5.2.

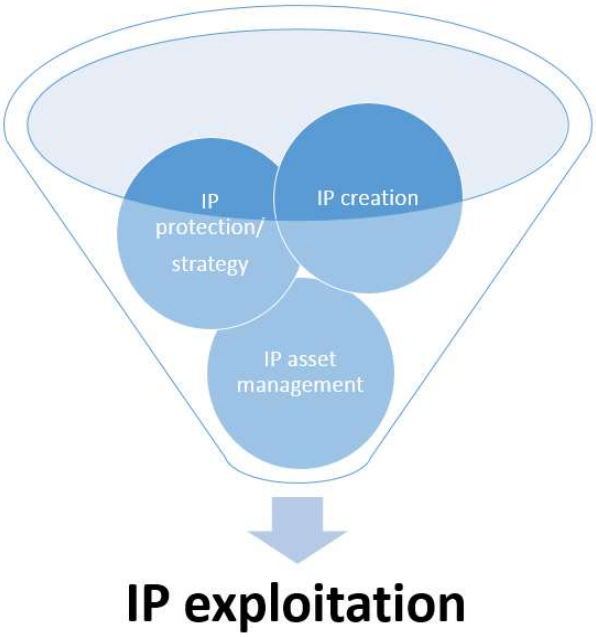

Figure 4 - IP funnel

5.1.1 Exploitation process of project results

The exploitation strategy aims at enabling an active use of the exploitable results created by a research project in order to generate positive impacts.

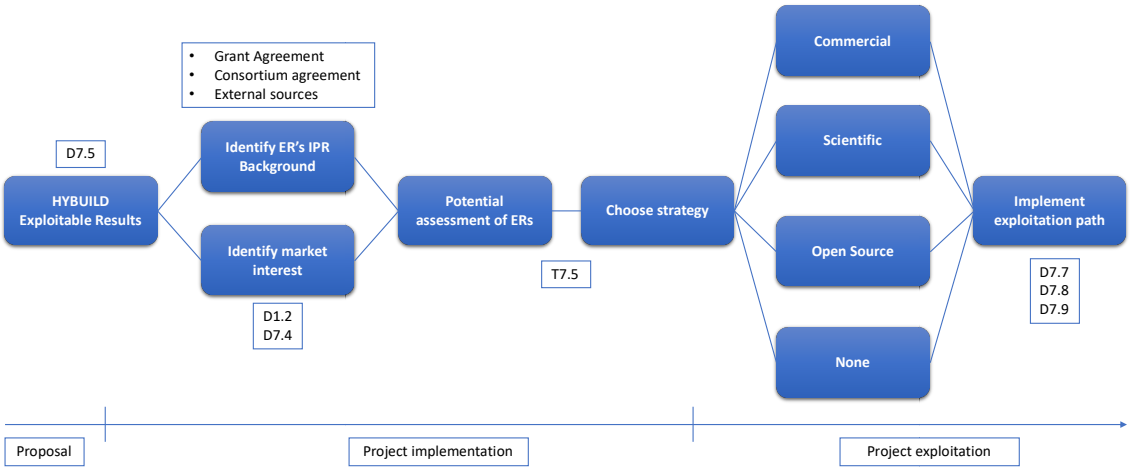

Figure 5 presents a typical HYBUILD route for an individual result from its identification to its exploitation. The figure also includes the corresponding tasks, deliverables and key documents where corresponding activities are performed and reported.

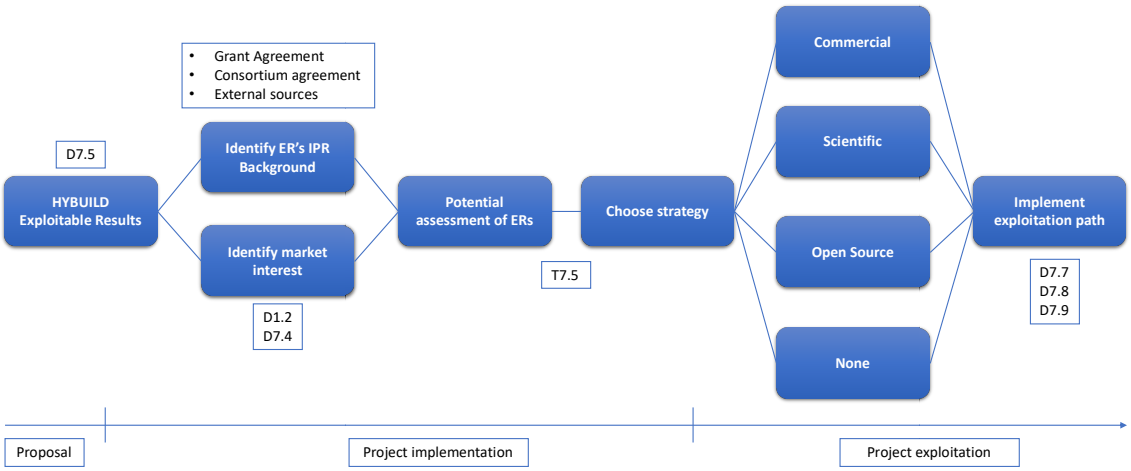

Figure 5 - Scheme of a typical exploitation path: from the identification of ERs to the selection of appropriate strategies for their exploitation

However, the above process becomes more complex when dealing with:

- several Exploitable Results (ERs): see Section 5.2;
- several climates: in HYBUILD, both Mediterranean and Continental climates are addressed for the 2 integrated storage systems,
- several markets: HYBUILD for instance simultaneously address markets related to energy storage, Building Energy Management Systems (BEMS), solar thermal, heat pumps, etc.
- several organizations: HYBUILD is a group of 21 beneficiaries with different IP views and different individual exploitation plans – see Section 5.3.

In HYBUILD the Technology Readiness Level (TRL) associated to the HYBUILD integrated systems (ER01 and ER02) is moving from 4 (Technology validated in a lab) to 6 (Technology demonstrated in relevant environment), while some of the individual components of the overall systems have higher expected TRLs by the end of the project. Thereby the present exploitation plan gives attention to both potential commercial and scientific exploitation.

For each exploitable result, the conducted market analysis must carefully understand the needs of the respective target groups as well as the situation of the associated regulatory environment, in order to develop a suitable business plan for the ER (this is addressed by ongoing tasks of WP1 in HYBUILD, in particular through Task 1.2 Technical and market codes and Task 1.4 dealing with certifications).

A first important step to define an exploitation strategy is to explicitly spell out objectives for the post-project activities. Apart from finding a viable business model to pursue, concrete decisions should be made on how to reach these via:

- a concrete market positioning / concept of the ER itself or the know-how created;
- a geographical focus;
- related legal aspects;
- and eventually an operational management strategy.

Human and financial resources as well as know-how for such exploitation have to be taken into consideration for these decisions and they will most likely be different from the ones for the ER creation. Only when these decisions have been made, final dissemination activities will follow (in HYBUILD, dissemination will be conducted as part of WP7, Task 7.2 – see also the previous Section 4 of the present report).

Over the first 9 months of the project, the work was already initiated with the identification and a first assessment of HYBUILD expected ERs. Each draft ER description includes a first draft vision for its future exploitation (see Section 5.2). Such vision will mature: it will be fine-tuned and updated over the upcoming months.

The next subchapter looks into which commercial exploitation options generally exist for IP, without going into detail for specific IP asset classes.

5.1.2 Typical commercial exploitation paths of IP

Figure 6 - Continuum of IP commercial exploitation paths

There are 3 main categories of IP commercial exploitation as shown in Figure 6, with each of them being able to take different forms.

A - Use by the creator
"Use by the creator" means that the IP gets used in-house for:

- further R&D;
- the integration into existing product / processes / services;
- or the production / marketing as a new offer.

The integration into existing business means that the IP gets used to create a competitive advantage, either in the form of a cost cutting mechanism (for example in the case of a process innovation or a new material) or by product differentiation (which should result in an improved customer perception and higher value of the solution).

Should the intention be to offer a new product / service, then the crucial factor is the ability and competence to produce and market it efficiently. The creation of an IP and its commercialisation are two different kinds of processes which require different capabilities: being good in the first one does not automatically result in being successful in the other.

"Use by the creator" can also be a solution in situations where there is a strong fear of creating competitors in the market (and critical information should be kept internally), or if the creator does not have the capacity to build / maintain partnerships and transfer know-how to third parties in ways that would enable other commercialisation options.

B - Collaboration
If one considers collaboration as a viable option to successfully commercialise IP, then there are different ways of doing so: there can be a direct marketing in the form of a Joint Venture (JV) or a spin-off, or a more distant approach via out-licensing (see Figure 7).

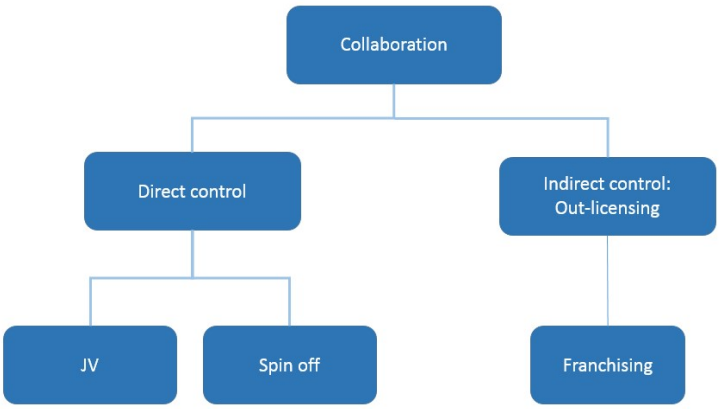

Figure 7 - Collaboration modes for commercial IP exploitation

A JV is a business alliance of at least two independent organisations to reach a certain goal together while sharing the risk and financial investment. This type of collaboration is often chosen to gain access to a certain market, gain knowledge in the areas of technology research and development, production, marketing and commercialisation and / or to bring unexploited IP assets into use. JV can also be considered a convenient means for organisations with limited financial resources to enable them to develop a new technology and / or to bring a product to market at costs that would otherwise be prohibitive, with a likely faster business growth.

In such type of collaboration, partners should agree in advance on initial contributions (financial contributions, background, etc.), responsibilities and obligations in a written agreement as well as foreground exploitation and ownership if new IP is created together, access rights to each other IPs, as well as an appropriate management structure, termination rights, and new partner entry conditions. In this context it is important to prevent potential problems from the beginning in balancing contributions of expertise, assets and investments and to identify how business culture and management style might differ between the partners. Usually, with a JV agreement an independent legal entity (Joint Venture Company - JVC) is created.

A Spin-off is a separate legal entity created by a parent institution (which can be a private company, a research body, a university, etc.). Often the spin-off will have a different focus than the core business of its parent company: it is often used as a means of technological transfer of intermediate research results to the industry through a marketable product.

Formally, the spin-off can be created either by a separation, and hence direct contribution of financial, human and intellectual capital from the parent, or by external agents such as a venture capitalist. In the first case IP gets normally transferred by assignment which means that also risks and obligations are transferred to the subsidiary, while in the second case it is often preferred to transfer via licensing to keep some control. In any case, NDAs for negotiations with investors should be signed beforehand and clear IP rules in employment contracts established with researchers should be spelled out to avoid legal IP issues.

When out-licensing, a licensor (who is the IP owner) grants contractually a permission of use of the IP to a licensee within certain limits of time and / or geography and / or application in return for a fee. Legally speaking, a license is not connected to IPR law as such, but it falls under normal contractual business law in its respective jurisdiction.

The agreements normally spell out the parties, objective, subject matter, granted rights as well as grant provisions such as the right to sublicense, the treatment of future improvements by any party, the remuneration and calculation of royalties (percentage vs. fixed amount), minimum provisions, warranties, infringement rules, the governing law and the dispute settlement mechanism if applicable and the contract registration if legally required.

Licenses can be:

- exclusive (just for the use of the licensee);
- sole (own use of licensor remains possible);
- or non-exclusive.

These are usually long-term partnerships with both benefits and potential risks for both parties as shown in Table 7.

Table 7 - Benefits and risks for a licensor and licensee of IP

Benefits

For Licensor	*For Licensee*
Opportunity to reach new markets with existing products/ services.	Opportunity to create new businesses.
Opportunity to enter a market with existing clientele of the licensee, which reduces risks for market failure.	Opportunity to provide licensor's already available/well established products/services to the clients, which reduces risks for market failure.
No need to invest in marketing and distribution.	No need to invest on R&D.
The licensor retains ownership of the IP while receiving royalty income from it.	The licensee does not need to "purchase" the IP and use the opportunity to test market success of the licensed product/service without investing much.
Licensing is a means for turning a possible competitor into a partner.	

Risks

For Licensor	*For Licensee*
The licensee can become a competitor.	Licensing may create a techno-logical/business dependence.
The licensor can lose control of the licensed product/service.	The licensed IP may be chal-lenged and the technology become obsolete.
There are difficulties to find a fair, solid licensee willing to obtain a licence.	There are difficulties to find a fair, reliable licensor willing to grant a licence.
Licensors must trust licensees as a source of revenue. In the case of a market failure, licensees may generate no revenues although there may be a minimum royalty clause in the agreement.	Payments can be too burden-some to cover and a certain amount might still need to be paid even though there is a market failure because of a minimum royalty clause in the agreement.

Source: IPR Helpdesk, Factsheet "Your guide to IP Commercialisation"

Generally, the advantages of licensing in comparison with other arrangements include the fact that the owner of the IP maintains its ability to exploit its assets in determined territories or fields of use, while licensing the technology for other territories or fields not of interest to its business. Licensing therefore allows expansion to other markets and obtaining further economic benefits through licensing fees. A very important success factor for license agreements is the absorptive capacity of the licensee as it plays a key role in understanding external knowledge.

As with all collaborations, NDAs should be signed in advance and potentially additional Material Transfer Agreements (MTAs) should also be considered. If done on a systematic basis with a specific business concept, out-licensing becomes referred to under the term of "franchising". A license agreement of Intellectual property rights (IPR) can be a standalone agreement or an integral part of larger partnerships, such as manufacturing agreements as well as trade collaborations with technical assistance obligations.

C – Assignment

The last type of IP commercial exploitation, Assignment, consists in selling the IP and making a permanent transfer of ownership to a third party which becomes the new IP owner. In such case, the organisation transferring the ownership has no more responsibility for the management of the IP title, including the payment of fees or the monitoring of infringements.

Reasons to choose the Assignment strategy can be a lack of financial resources or of suitable marketing capabilities, the need or wish to realize an immediate cash flow income from the IP asset (if paid in one-off lump sum) or the incoherence with the business setup / model in the case for instance of research centers. Here again NDAs are crucial for safe negotiations, especially if at the end of negotiations, no deal gets signed, since a lot of confidential information will be shared for due diligence purposes of risk and opportunity assessments. In many cases not only the IP itself might have to be transferred, but also the know-how.

A final contract should also include appropriate clauses (similar to licensing agreements) in relation to warranties, governing law and dispute resolution mechanisms.

For EC funded projects such as HYBUILD there are additional limitations and objections (e.g.: no sale or exclusive licensing to a third party in a non-EU country or if the partnership is considered to go against EU' interest).

Generally speaking for all exploitation forms involving third parties, the compensation should always be based on fair and reasonable conditions and reward both the original IP holder and the party wishing to exploit it. The latter need assurance / protection that the provided know-how will not be passed on to a competitor in their local market in way that undermines their ability to recover project investment costs and / or their investments.

In the next section, we further discuss the subject of jointly developed IP given its high relevance for EU-supported projects such as HYBUILD.

5.1.3 Exploitation of jointly developed IP

Joint or co-ownership refers to a situation in which two or more parties are entitled to proprietary shares of an asset because of their active contribution[2] into its shared development and initial endowment. This scenario frequently arises in collaborative research and innovation projects when the results have been jointly generated by the partners. For such projects it is crucial to agree on a set of IP governing rules in order to avoid potential problems which could escalate to a formal litigation in court. If no formal "joint ownership agreement" has been signed, then a default one will apply: it will depend on the national jurisdiction with considerable variation in exploitation rights. It is best practice to seek professional advice to create apart from the main consortium agreement a separate contract for exploitation purposes only.

In a first step the expectations with regards to the ER produced through a joint effort should be defined. Even if it might not be possible to predict every detail in advance and while being aware that things are in motion and might change to a certain degree, it makes sense to write down what is known at regular intervals once an exploitable result is identified.

The essential next step includes a thorough and stringent background declaration from the partners. It should include provisions for derivative works, modification of background and use and exploitation of joint results as well as grant royalty-free access rights in accordance with the project scope.

For HYBUILD, a background declaration has been provided by each partner in the 1st Attachment of the Consortium Agreement. In addition to the background description, specific limitations and / or conditions for implementation and for exploitation are identified for each them (see example on Figure 8). This represents the baseline for partners with regards to subsequent joint ownership agreements.

[2] "Active contribution" means more than just information provision or idea sharing.

Describe Background	Specific limitations and/or conditions for implementation (Article 25.2 Grant Agreement)	Specific limitations and/or conditions for Exploitation (Article 25.3 Grant Agreement)
Know-how, ideas, designs, algorithms, patents and software programmes for model-predictive control for energy systems in buildings	Access rights will be granted to outcomes of projects which have received funding from the European Union. Source code is excluded from access rights. Due to third-party rights, thermal management is excluded from access rights.	Object code and source code are excluded from access rights. Access to any part of the background is conditioned on the conclusion of an ad-hoc exploitation agreement between CSEM and the requesting partner.

Figure 8 - Example of declared background by HYBUILD beneficiary n°6 - CSEM

Next, the allocation of the IP in shares for each joint owner should be spelled out. There are several ways for doing this: it could be agreed upon to have equal shares, a rule established with respect to the involvement proportions in the ER development or some variation like the one presented in Figure 9. In this example all participants receive an equally divided participation share (the total share does typically not exceed 10%), while the rest is assigned based on the relative contribution of background and foreground share associated to each involved partner (Figure 9). Obviously, the definition of the background and foreground shares among the different parties involved is a complex process that requires the quantification of the investment occurred and the contribution of the background and foreground to the value of the entire IP.

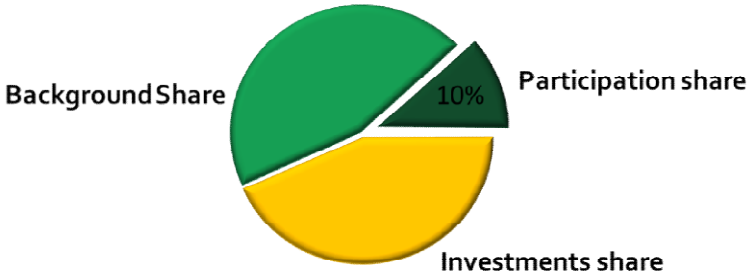

Figure 9: Royalty sharing mechanism for jointly developed ER

Consequently, the rights of use and exploitation of the joint results are to be fixed between the partners:

- The rights to use are normally unrestricted for each party, although it might be necessary to limit one party due to interests of the other(s) or for the purpose of further research. In this case, either mutual restrictive conditions for the use of results get agreed upon or one party gets the property of entire asset assigned, supporting all costs on its own and then grants licenses on as-needed basis.
- The rights of exploitation touch upon the conditions under which co-owner can assign, license and exploit themselves jointly-owned results. Main questions are if the consent of the other(s) is needed for any of these actions and which compensation is paid among the co-owners.

Another key aspect of a joint ownership agreement should regulate the management of the jointly owned IP with regards to its protection, maintenance and defense. Contractual rules should set how confidential information, IPR filing, renewal and infringement should be dealt with by the co-owners. Starting with the assumption that the IPR protection and maintenance costs can be equally shared between joint owners, parties need also to agree on:

- how the generated IP will be protected;

- if registration is required for protection, who will file the application and then follow the procedure;
- who should be responsible for monitoring and policing the joint IP;
- who will bear all associated costs;
- what happens if one partner fails to participate as foreseen.

Here the nature of the jointly-owned IPR plays a significant role for the rights at disposal, for example in infringement cases. Further provisions should include dissemination (hence limits and means to disclose data and materials), the governing law and jurisdiction[3] (for uniform interpretation and common rules in dispute situations) and potentially a mechanism for alternative dispute resolution.

Figure 10 provides a summary of the key items to be included within jointly-owned IP agreements.

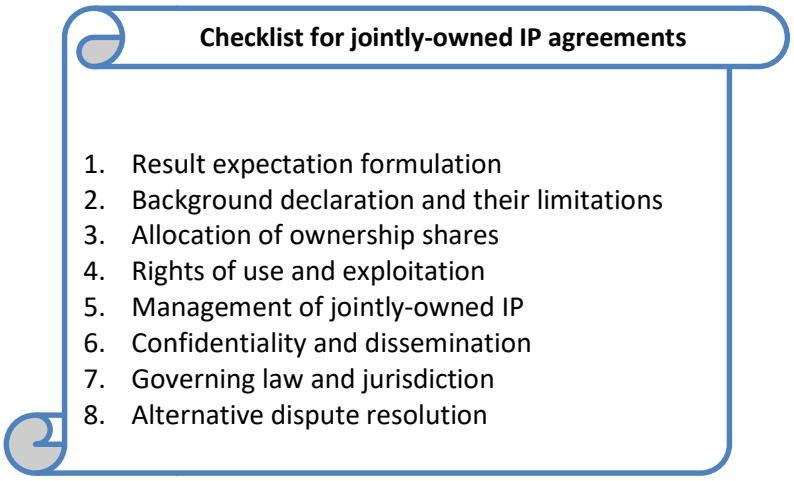

Figure 10: Subjects to include in jointly-owned IP agreements

Because of the extensive knowledge outputs from EC co-funded projects, the focus of the next section is on "IP asset management". All HYBUILD partners should have a minimum understanding of this subject: on one hand to extract the maximum value from the ERs created in the project, and on the other hand to also use it as an opportunity to create a more holistic approach to the management of all of their intangible business assets.

IP asset management

Well-managed IP adds value to the overall business as it can worth more than physical assets of a company, particularly in knowledge intensive, highly innovative or brand-driven sectors. Figure 11 illustrates how IP asset management and a continuous IP strategy optimization should work.

[3] The best jurisdiction for a joint ownership agreement would be the one that gives the highest degree of impartiality and the highest standard of protection and efficiency.

Figure 11: IP asset management and strategy optimization

Step 1 "IP due diligence/audit" is the main focus of this report as it gives HYBUILD partners useful insights and concrete tools and methods to conduct such a process for their relevant ERs. This process should then be repeated for participants' IP assets not connected to HYBUILD (the actual audit process) in order to produce in step 2 an overview of the complete IP portfolio and classify it within 3 different "buckets":

A) Essential to business / markets

B) Real potential but not necessary for the company

C) Seems to be no value for anyone

Subsequently different strategies for managing these different outcomes are derived and executed in step 3 and 4. Of course many of the decisions taken in step 3 are inherently connected to the content of step 2, hence the time separation of these 2 phases is just a modelling simplification.

The market conditions, competitors, regulations and opportunities change constantly and rapidly. In consequence, reviews of conditions and contracts[4] which impact on IP should be carried out periodically as well as an assessment of how the IP of competitors has evolved and what the conditions are regarding Freedom To Operate (FTO).

Part of this process is also to form an IP asset management team or to name an internal responsible, create/improve IP asset management in-house policies, procedure and practices, establish an IP culture and (re)formulate the business strategy. The main question to ask here is if business objectives, model and IP management policies align and if IP assets are used for strategic objectives and their respective relevance.

Step 1 - "IP due diligence" – is a kind of a small IP audit, driven by an internal need. IP audits as such are general-purpose, systematic and thorough reviews of the whole portfolio of a company's intellectual assets (created, used or acquired) and its management[5], while a due diligence is more of a constrained, specific purpose vehicle for a particular IP asset in a situational project event context. The name of "due diligence" comes from investigating the value and risks of a company's key assets and liabilities for a third party and was originally developed for mergers and acquisitions (M&A) contexts. Here we shall use it for the participants' ER(s) created out of HYBUILD in order to complement their exploitation plan and potentially as a second step to create/update their own IP strategy.

[4] This includes licenses, supplier agreements, partnering arrangements and employment contracts

[5] It includes the creation of actual IP inventory.

5.1.4 Motivation – What is the value of an IP due diligence and an IP asset strategy?

The main motivations of an IP due diligence boil down in essence to 1) appropriation and 2) risk management which are summarized in Table 8. This process also helps companies to internally implement IP best practices and to enable a better understanding on whether IP assets are aligned with the overall business strategy pursued.

Table 8: Motivations to conduct an IP due diligence

Appropriation of IP benefits (Capitalization)	Management of inherent IP risks (Costs)
Maintain or improve strong market position and competitive advantage in home market ➲ Allows to recover investment and ideally increase returns via higher profit as hindering others to exploit = reduced competition ➲ Need to ascertain legal status of IP asset: effective threat against free riders and imitators as legal action more credible ➲ Profit from advantages of different IP asset classes **Discovery of additional revenue streams of under-utilized IP assets** ➲ Own production/distribution to be extended internationally ➲ Out-licensing (royalties) or asset sales (lump sum) intention need an IP valuation (and often legal protection) **Signaling function of value to third parties, as demonstration of high level of expertise / specialization / technological capacity improves bargain position for:** ➲ raising capital more easily, either in the financing form of debt collateral (credit worthiness) or funding from investors ➲ attracting potential business partners or collaborations, particularly important for SMEs to fill own resource and expertise gaps ➲ attracting potential buyers (IP assets enter in company's market value)	**Identify and assess threats such as** ➲ Effects of changing IP law ➲ Ensure FTO / Avoid infringement of third-party rights and forego potential litigation >>> particularly important for new product launch, out-licensing, etc. ➲ Understand (possibly mandatory) licensing costs / cheaper alternative of in-licensing a needed tech for own development ➲ Take legal action against infringement (is it worth it?) **Identification of obsolete IP assets** ➲ Cut of unnecessary maintenance costs **Reduce in-licensing IP expenses via possibility of cross-licensing**

5.1.5 Process of an IP due diligence (or audit)

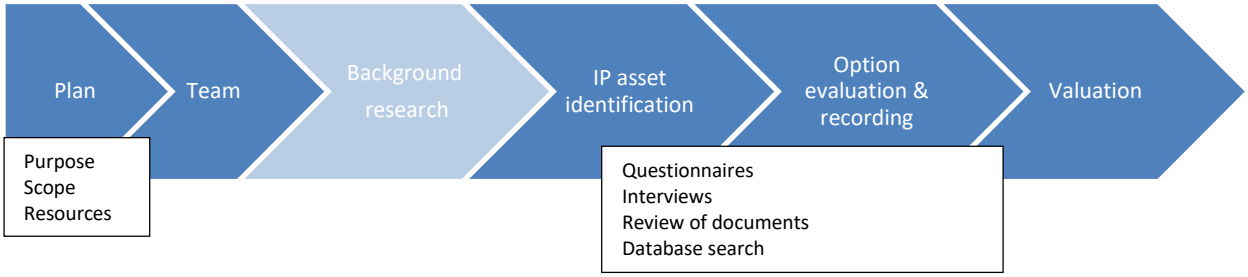

Figure 12: IP due diligence/audit process

Figure 12 gives an overview of the process when conducting an IP due diligence or audit. It works like every other internal project: first a plan should establish

- the purpose of the work;
- the scope / business area to be covered;
- and the resources: timetable, budget, responsibilities.

In a best-case scenario, the staff who takes part in an IP due diligence includes both people from management, marketing & sales, R&D, production and human resources. As a minimum, someone with expertise in IP and at least a representative of the relevant technological /

technical area should work on it, potentially with (external) help from IP lawyer[6]. Our point of view in this report is the one of an "IP Manager" who is responsible for the management of the "IP due diligence/audit. Table 9 summarizes which information would be delivered from each team member in a thorough enquiry.

Table 9: IP due diligence/audit team and their information input

Responsible/ Function[6]	Information to be collected
Company Management	✓ Company's management structure (information about the management, shareholders, etc.) ✓ Company's business strategy including the business targets ✓ IP policy
IP Manager	✓ IP assets: Patent/utility models, trade marks, designs and domain name filings, copyright, technological know-how, confidential information, public disclosures, etc. Their owners, filing dates (for registered rights), their geographical coverage, maintenance fees ✓ IP assets that are not sufficiently or appropriately protected (such as patentable inventions for which no patent applications have been filed) should be taken into account ✓ Used IP assets: Types, owners and areas of use, clarification of legitimate use for the rights not owned by the company (e.g. through licensing) ✓ Company's non-used IP assets: types, owners and reasons for non-use ✓ Company's IP strategy including IP related policies
Legal Counsel	✓ Infringement cases: Information about any previous/ongoing cases where the company's IP is infringed and/or where the company is accused of infringing others' IP ✓ IP contracts: Copies of all IP-related contracts. Assignment, licensing, franchising, joint venture agreements, other contracts in relation with IP such as non-disclosure agreements, material transfer agreements, consortium agreements, R&D contracts, consultancy agreements ✓ Information about the IP laws for the current/target markets
Sales & Marketing	✓ Information about the current/potential markets ✓ Information about the competitors: Identification of competitors, their products ✓ Information about disclosures in fairs, company presentations, adverts, brochures, etc.
Production	✓ Information about the manufactured products, data sheets, specifications
R&D	✓ R&D strategy ✓ Information about the technologies under development ✓ Information about the disclosures in scientific publications ✓ R&D reports
Human Resources	✓ Company's HR structure: Organisation chart, shareholders, partnerships ✓ Employment agreements, subcontracting agreements

Source: IPR Helpdesk, Fact Sheet "IP Audit: Uncovering the potential of your business"

[6] It is good practice to have internal and external team members to sign a NDA, if earlier contracts do not include confidentially clauses.

If the due diligence includes a wide range of critical IP (which then would be more of an audit than just a due diligence), it makes sense to put it in a wider context and first do some background research. It serves to better understand the current situation if the company, what it exactly does and where it wants to go. This might be obvious information, but quite often it is not the case. The matter of detail depends on the type and size of business, IP laws of the country, and the purpose and desired outcome of the IP audit. Typical questions which should be investigated are:

Background check information

- Internal/external relations: Who are regular interactors (real and intended) of the company and which role do IP assets play in these relationships?
- Strategy: How is business done? What are policies for key aspects of business? What is the business model?
- Importance of IP assets: How important are they? If they do not play a significant role, do not go into details and just check if your rights are in a good status. If they are a principal element, go into a more thorough assessment of the portfolio and activities attached to it.
- Status IP management: What is the overall approach? Is there an in-house manager/department and/or are there external advisors? What is the IP policy/strategy? Is staff informed/trained on IP issues?
- IP disputes: Are there any infringements suits happening (as plaintiff or defendant)? Are there any disputes or potential for them?
- Financing: Are IP assets tied to it?

Next, the IP needs to be identified. For doing so, one needs to revert back to its meaning: it includes any creations of mind such as inventions, literary and artistic works, designs, symbols, names, images etc. In a business context, this often includes manuals, recipes, formulations, publications and training materials. It can also be the result of a technology assessment which consists in the analysis of available technologies and identification of potential for creation of competitive advantage.

In the case of HYBUILD, this was started during the proposal preparation phase and will be further continued throughout the project. Within a broader company audit, the IP asset identification might be a bit more complex. It should look at the four IP groups presented in Figure 13).

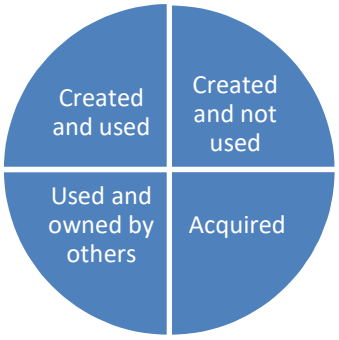

Figure 13: Potential IP groups in a company

Common tools used to conduct an IP due diligence/audit and gather all relevant information are questionnaires and structured interviews, the collection and review of existing documentation which were/are/will be part of the

creation/registration/use/protection/exploitation of the IP asset, as well as searches in relevant databases connected to the IP asset.

Once the IP assets have been identified, a number of assessments and evaluations have to be conducted. They relate to[7]:

IP asset characteristics/option information

- the nature and scope of the IP
- the ownership (sole or joint: in case of jointly owned IP > early decisions on IP management, exclusive/non-exclusive license)
- the protection mechanism (if it can/should be protected and obstacles to do so)
- the validity and strength of the legal status (if already protected, remaining timeframe & enforceability, procedures to hinder lapses such as payment of renewal fees)
- the intention of exploitation (with often more than one possibility)8
- encumbrances/restrictions on use (FTO? territorial/product/time limits? possible claims of third parties and infringements risk?)
- the importance/relevance to core business and technology (critical or ancillary? connections to other key assets? effective usage)
- IP lifetime expectancy (law- and/or technology-wise) of underlying potential and exclusivity
- the infringement potential by third parties and own policies for detection
- strengths and weaknesses (is further technology needed to increase the own value? if so, should it be licensed or bought?)
- any problems/barriers to transfer
- related expenses

With regards to the nature and the scope of the IP as well as its protections mechanism to achieve market power, basics of IP law are introduced in chapter 5.1.6. The different protection instruments have different requirements, advantages and drawbacks which need to be understood to form a coherent strategy.

One very critical step is the identification of surrounding IP and understanding potential third-party claims. The list of possible actions includes Prior Art, Invalidation & Opposition search, Freedom to Operate study, Indication of Use, Claim chart. For the scope of HYBUILD we envision conducting Prior Art evaluation and FTO for the hybrid storage market as well as other attractive applications for selected ER of interest. This includes the identification of improvements and differences with existing processes and patents as well as the identification of new areas to research and protect.

With respect to the claims from members of the consortium, the general governing rules are defined in the Consortium Agreement, specifically in Section 8 - 'Results'. They are often not specific enough though and subsequent detailed agreements should be prepared on a case by case basis (as in the cases for jointly developed IP described in 5.1.3).

All IP asset information should be recorded, maintained and updated as presented in Table 10.

Table 10: Example of an IP inventory

[7] Annex 4 presents a further catalogue of questions to ask to partners who are conducting an extensive IP audit.
[8] For example, own production and out-licensing for another application/geography.

Type	Name / Title	Number	Internal / External	Date of filing / creation	Expiration / Renewal Date	Owner	Inventor / Designer / Creator / Author	Geogaphical Coverage	Status	Use	Notes	Value, if available
Patent	p1	EP 123456	Internal	07.01.1997	07.01.2017	XYZ Ltd.	inventor1, inventor2, inventor3	European Patent	Granted	In use		approx. 500,000 EUR
Patent	p2	WO 123456	Internal	25.03.2014	25.03.2034	XYZ Ltd.	inventor4	FR, IT, BG, TR	Examination in international	In use	search report positive	n/a
Patent	p3	FR 654321	External	25.06.2005	25.06.2025	ABC Ltd.	inventor5	FR	Granted	In use	Exclusive licence in FR only for footwear with licenced tm4	100,000 EUR
Design	d1	123456	Internal	12.06.2004	12.06.2019	XYZ Ltd.	designer1, designer2	EU design	Registered	In use	Third renewal in 2019	approx. 100,000 EUR
Trademark	tm1	11111	Internal	13.04.1995	13.04.2025	XYZ Ltd.		EU trademark	Registered	In use		approx. 200,000 EUR
Trademark	tm2	22222	Internal	31.01.2015	31.01.2025	XYZ Ltd.		EU trademark	Appeal	In use	ongoing appeal with EUIPO	n/a
Trademark	tm3	33333	Internal	23.10.2015	23.10.2017	XYZ Ltd.		DE	Published	Non-used	to be licenced	20,000 EUR
Trademark	tm4	44444	External	25.06.2005	25.06.2025	ABC Ltd.		FR	Registered	In use	Exclusive licence in FR only for footwear with licenced p3	50,000 EUR
Domain Name	d1	d-000001	Internal	01.02.1996	01.02.2020	XYZ Ltd.			Registered	In use		n/a
Copyright	c1	c-000001	Internal	10.12.2005		XYZ Ltd.	author1			In use		n/a

Source: IPR Helpdesk, Fact Sheet "IP Audit: Uncovering the potential of your business"

The IP asset database/catalogue/register should also contain additional information such as

IP asset basic data

- the description of the asset
- how it works and should be used
- its stage of development (e.g. proof-of-concept, prototype, trials etc.)
- the inventors, creators or authors
- when and how the asset was created or acquired
- the asset's IP status (e.g. pending or granted patent, trademarks etc.)
- ongoing maintenance aspects (e.g. patent fees, license fees etc.) expiration or renewal date of the IP protection
- how it can be further exploited (e.g. by licensing)
- how it fits with the corporate business plan

Agreements and contracts that touch upon IP should be included in the overall analysis. This includes licensing agreements, employment and contractor agreements, R&D grants, collaboration contracts as well as any contract touching upon technology transfer / development / distribution.

In the last step a valuation of the IP asset is estimated. This can be done in 2 different ways as summarized in Figure 14: a qualitative approach based for example on the key benefits of an invention; or quantitative approaches, through the use of comparable transactions / royalties or an industry benchmark, expected future income, etc.

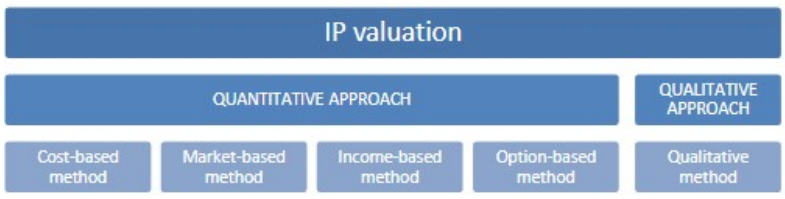

Figure 14: IP valuation approaches

Source: IPR Helpdesk, Fact Sheet "IP Audit: Uncovering the potential of your business"

5.1.6 Basics of IP law

The different means for IP protection get categorized by IP asset classes: different actions for per IP asset classes are required to be able to protect the asset value. An adequate protection allows for appropriating the value created without fear of imitation and free riding from the competition. IP asset classes structure themselves after the underlying legal basis.

The most comprehensive reference with regards to the different international IP rights (IPRs) is the Handbook[9] of the World Intellectual Property Organization (WIPO). WIPO has been established in 1970 as the specialized agency of the United Nations for IPR issues. Their main task is the creation of global standards in IPRs. There are now some common principles established, but it has to be highlighted as a general rule that any legal basis is strictly national and therefore territorially limited. That being said, IPR is very similar to other juridical areas with international application and multilateral agreements. The earliest references in this respect are the Paris Convention from 1883 and the Berne Convention from 1887 to establish some basic rules such as the national treatment of all applicants for patent applications, the right of priority or protection during the lifetime of the author and for up to 50 years after his death for copyright works. Both conventions are administered by WIPO, they have over 170 members[10] and have been updated over time to reflect as much as possible latest technological developments.

The World Trade Organization (WTO) established the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) in 1994 as a worldwide framework to harmonize trade practices with regards to IPR worldwide. It forces all of its members to comply with all of its provisions and establishes in this way a minimum standard. It has currently 164 member-states[11].

The European Union (EU) has established procedures for unitary IPR rights within its single market initiatives which in some cases allow a single application and potentially also a single grant (depending on the property right requested), but so far infringements still need to be pursued nationally with the inherent fragmentation that comes with this practice. Different jurisdictions interpret common European directives differently, also because infringement cases not only touch upon civil law but can also concern criminal law. In the course of 2018 the unitary patent is planned to become operational[12] and with it comes the first Unified Patent Court (UPC) which will have exclusive competence in respect of European patents and European patents with unitary effect after ratification in the single member states. For other rights, the defense of rights remains national, solely with appeal courts on European level.

Figure 15 shows there are both:

- “hard or formal IPRs” which are enforceable and statuary rights, granted by government agencies. These include industrial property rights such as patents and trademarks which need to be applied for and granted as well as rights which are unregistrable such as copyrights.
- “Soft or informal IPRs” which are mechanisms of strategic appropriation such as trade secrecy, lead time or complementary assets.

The following subchapters discuss the particularities of both IPR categories.

[9] WIPO handbook: www.wipo.int/about-ip/en/iprm
[10] Paris Convention members: www.wipo.int/treaties/en/ShowResults.jsp?lang=en&treaty_id=2.
Berne convention members: www.wipo.int/treaties/en/ShowResults.jsp?treaty_id=15.
[11] WTO members: www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm
[12] Source : www.epo.org/law-practice/unitary/unitary-patent/start.html

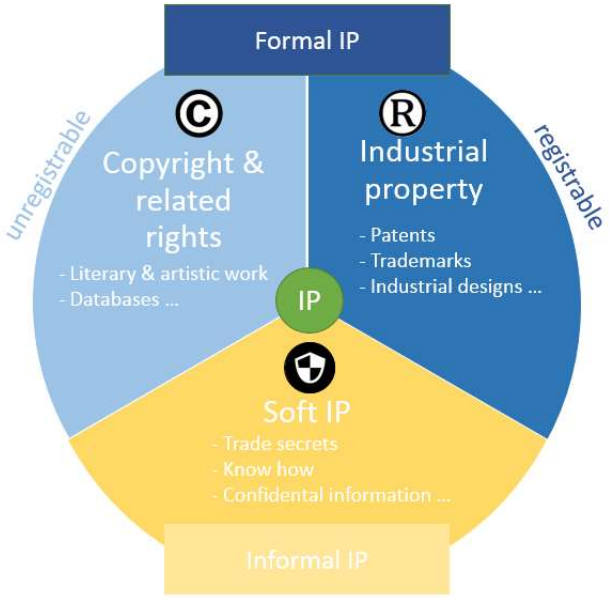

Figure 15: Different IPR asset classes

Source: Own representation based on IPR Helpdesk, "Guide for SMEs Managing IP in FP7"

5.1.7 Industrial property

Industrial property as an IPR asset generally needs to be registered in order to be valid, albeit there are some cases of trademarks which can be left unregistered (more below). They usually have national validity with some exceptions (more below).

These rights include patents, trade- and service marks, industrial designs among others. All three of them are "negative rights" which means that the holder of the right has the monopoly to explore it and prevent other parties from exploiting it. Table 11 gives an overview and highlights their main characteristics.

Table 11: Characteristics of patents, marks and industrial design

	Patent	Trade-/Service marks	Industrial design
Protection of	a technical invention (the idea as such)	a name / sign / color combination to distinguish an origin from others	ornamental or aesthetic aspect of an object (not technical features)
Duration	20 years, subject to renewal fee payment	"eternal" if renewed every 10 years	5 years, once extendable to a total of 10 years
Selection of relevant international law	Paris Convention, TRIPS, Patent Law Treaty, PCT	Paris Convention, TRIPS, Trademark Law Treaty, International Madrid System	Paris Convention, TRIPS, Hague Agreement
Classification system	IPC (Strasbourg agreement) CPC	NICE	Locarno

For HYBUILD, relevant envisaged IPRs are patents (D7.7) for which more detailed information will now follow.

Patents

Technical products or processes inventions which are intended to be patented need to fulfil several requirements:

1) They need to have a practical use/industrial applicability.
2) They need to be of a patentable subject matter which excludes: mathematical methods, medical treatment methods, scientific theories, game rules, business practices, ideas contrary to public morality/law/national security, plant or animal

species and also software in many jurisdictions (patentable in US). Also, service innovations are by definition a not-patentable subject matter.

3) They need to be "new" on a global scale.
4) They need to represent a sufficient innovative step which means the invention should not be "obvious to a skilled person".
5) They need to be sufficiently disclosed in the application form.

Condition number 5 is very important because "universal disclosure" is required in exchange for the grant of a patent which kills novelty anywhere in a global scale (influencing condition number 3 for other inventions). In this way, technical knowledge is shared and accumulated over time which leads to new inventions building on former ones and is in the interest of the state. The monopoly right is hence the temporary "prize" for the quickest to patent the respective invention. Because of the investments done, the inventor or applicant of the patent will want to protect its new invention as much as possible despite having to disclose information for the application. At this point, a skilled patent lawyer is of high value to assure maximum protection with a minimum disclosure in order to effectively get the grant, but not give too much traction for imitation.

The novelty clause is a crucial requirement and gets invalidated by any publication or trade show/other public demonstration, not though by criminal behavior for example via theft from competitors. In consequence, it is best to remain cautious about own technical inventions and let employees sign Non-disclosure Agreements (NDAs) or also partners in case of collaborations. Information regarding the novelty of the invention can be researched in patent databases. The biggest three patent offices worldwide EPO[13], USPTO and JPO[14] have such tools available for trial periods or annual subscription fees. Otherwise Google patents can be used as a starting point. For this research it has to be kept in mind that

- the usual publication timeframe of applications is about 18 months,
- public databases are often only a timestamp copy of the real databases lying behind it
- in addition, administrative delays can occur.

In consequence, data from the last 2 to 3 years can be scarcely populated and less reliable.

Available are usually the description, drawings and claims of the invention as well as administrative data such as the name of inventor / applicant etc. One main data point is the so-called "priority date" which is the first date of application filing made of the invention. All subsequent filings such as amendments or international extensions to cover a greater territory will revert back to this priority date. Also, infringement cases will take this date as the main reference point. Patents with the same priority filing are called a "patent family". After the priority application, an applicant has 12 months to file for patent protection in other territories before it is considered Prior Art by the Paris Convention.

Another important data section of a patent is the so-called "IPC code": Patents get classified according to the International Patent Classification (IPC) from the Strasbourg agreement of 1971 as a hierarchical and language independent system with 70 000 different codes for different technological areas. Since EPO and USTPO started their project to harmonize their respective systems (European Classification System - ECLA and USPC - U.S. Patent Classification System) also the Cooperative Patent Classification (CPC) is used which includes a new technology section Y. These codes make patent searchable by their technology class instead of

[13] Simple patent searches can be conducted with ESPACENET on www.worldwide.espacenet.com. More sophisticated analysis is possible with PATSTAT on www.data.epo.org/expert-services/index-2-3-6.html

[14] EPO is the European Patent Office, USPTO is the United States Patent and Trademark Office and JPO is the Japan Patent office.

simple key words. Often a patent has more than one code especially if it is a broad patent or includes a technology which requires more one "background technology and/or knowledge". It is useful to be aware of the IPC system because some companies prefer the not mention certain wording in their application language in order to remain "under the radar" for others to find them. Searching databases by technology codes instead of key words can turn out to be useful for research purposes of own patenting activity.

The usual procedure for a patent application is:

1) Filing of the document
2) Production of a search report by the patent office to enquire Prior Art
3) Examination
4) Grant is validated, otherwise refusal

The publication of the application happens in most states after 18 months. This means that it is possible to withdraw before that date and keep the invention a secret in case no patent is intended anymore. After the publication date, there is a certain time for "opposition" from other parties to oppose the granting process for the invention. After the patent has been granted, it can be 1) exploited by own usage, 2) licensed in an (non-) exclusive way or 3) sold on the technology market. In case of infringement through a third party or the intended invalidation of the patent from a third party an enforcement procedure has to be followed. The standard claims for litigation are (partial) invalidity, misuse, ad hoc exemptions or cross-licensing intentions. In order to avoid the often-costly litigation, it is recommendable to spend some money to have a well-written patent with an adequate scope as particular single words can carry important significance in these legal documents.

There is a "worldwide" procedure to <u>simplify the application</u> for patents, but which then requires validation in each of the states where protection is looked after – so it is <u>not</u> a global patent. The Patent Cooperation Treaty (PCT) has been in place since 1970 and has 152 member-countries[15]. Figure 16 shows the different procedures in comparison. The main advantages of the PCT filing are the following: it is less costly than doing many applications in different countries; there is an early and simplified administration process; it also gives a longer period for the selecting the countries where to protect the invention.

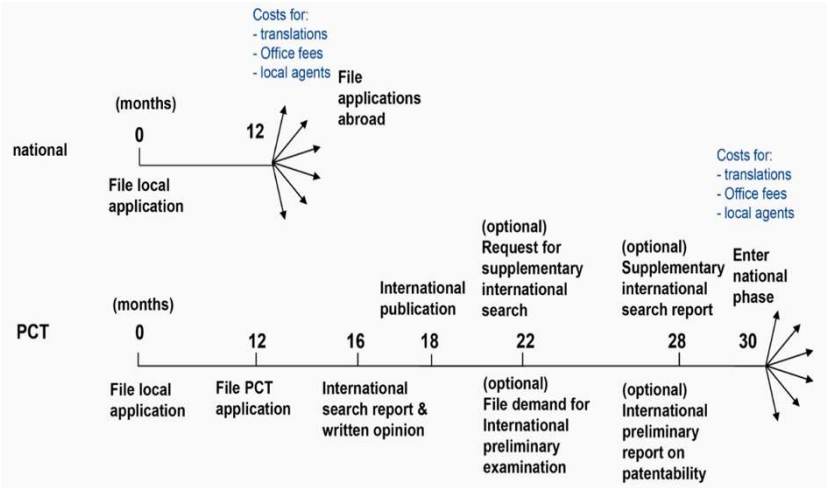

Figure 16: Comparison national vs. PCT filing procedures

Source: http://www.wipo.int/pct/en/faqs/faqs.html#note1

[15] PCT members: www.wipo.int/pct/en/pct_contracting_states.html

There are also some regional approaches for patenting. The EU currently has a system in place which is similar to PCT (one application with subsequent national validation procedures and litigation) with restriction to its 38 EPO member states[16]. As mentioned above, the unitary patent is supposed to arrive within 2018 with validity for 26 countries and a single European litigation possibility in the UPC seats in Paris, London and Munich. There are other agglomerated patent procedures for some ex-soviet countries (Eurasia) and in Africa (OAPI and ARIPO).

To summarize, important aspects to consider when filing for a patent are: geographical coverage, technical coverage, timing to file, duration, cost and conditions.

5.1.8 "Soft IP"

Table 12: Summary of "Soft IP"

Protection of	any kind of IP
Duration	limited to independent discovery, improper disclosure or natural erosion time
Selection of relevant international law	none

"Soft IP" is not a legal right but rather to be understood as a bundle of mechanisms of strategic appropriation where no official disclosure happens. This includes (trade) secrecy, lead time or complementary assets.

Trade secrets are confidential business information and know-how that derive an economic value from not being generally known by others who could extract value of it. Know-how is the procedural knowledge linked to specific application domain and consists in the organizational capability to perform certain activities. It is formed out of routines and different skills and not a skill of a single person. Trade secrets allow the protection of any kind of IP and no registration nor requirement criteria is to fulfil – which can be helpful in the case of non-patentable subject matter. Its duration is limited to the independent discovery or improper disclosure. It can include sales and distribution methods, communication strategies, lists and profiles of suppliers and clients as well as manufacturing processes. The related costs are often more limited (mostly to the establishment of confidentially clauses and NDAs), but the risks with regards to imitation are higher as no formal entitlement is granted. Some jurisdictions, such as the US[17], have legislation in place helping to protect trade secrets and even license them out. In the EU, trade secrets have been a country matter in the past with inherent differences until the passage of the "Directive on the protection of trade secrets" in 2016 which requires all member states to have legal basis in place by May 2018.

The lead time or speed to market can be an important way to advance quickly on the learning curve or minimum production capacity, allowing to either demand higher prices in the beginning or subsequent lower prices than the competition.

Complementary assets such as specific manufacturing or distribution channels can also form a barrier to the competition and allow fruitful exploitation.

Generally speaking it makes sense to employ such a "soft" strategy when the intellectual property created contains a big portion of "tacit knowledge" which makes it difficult to imitate by others.

Knowledge can be understood as a continuum going from a "codified" to a "tacit" status. Codified knowledge is easily transferable and teachable, often observable, "simple" in its

[16] EPO member states include also non-EU countries such as Norway, Turkey, Switzerland etc: www.epo.org/about-us/foundation/member-states.html
[17] "Defend Trade Secrets Act" (2016)

nature and independent. It has dramatically increased with the ICT "revolution" which helps its diffusion. Tacit knowledge on the contrary is very contextual and localized, mostly based on experience, complex and systemic, which makes it difficult to transfer as it is often not observable and/or difficult to teach. On the opposite, if the IP is easy to "reverse engineer" soft IP is often not a good option.

In this area of "Soft IP", there is also the act of "defensive publishing" which is the open disclosure of IP to the public. This "private solution" strategy can hinder others to patent and results in having FTO (with an obviously foregone return on investment on the IP creation).

5.1.9 Concluding remarks with regards to IP law

Each single IP asset class protection requires some investment such as the registration and validation fees for industrial property, the management of NDAs for employees, partners and higher security measures for systems and facilities for soft IP as well as possible litigation costs.

IP asset classes are not mutually exclusive tools; they rather complement each other in order to form a hybrid strategy for a synergistic protection of innovation. For example, it can make sense to patent the innovative part of an invention (especially if reverse engineering is attainable), but to keep secrecy over a certain process in its manufacturing[18] or other collateral know-how to have the best of both worlds. There is no wrong or right as such, as the effectiveness of each appropriation "technique" varies by the respective innovation, industry and country environment, for example fast product cycles result in patents are not really being the best mean of protection.

Especially an international approach consists in a much greater challenge as each jurisdiction has their own "perks" to consider for an effective protection. The EU has recognized the difficulty and has made it easier including IP within their single market initiates, outside the border one needs not only to be aware of the legal basis but also the enforceability of rights.

The decision which option of IP management and strategy to pursue boils down to a cost-benefit analysis with the business model and context, the market environment, the research intensity and the innovation type to take into consideration. These decisions can also vary over time: in the beginning it might be the better option to remain in secrecy over a new invention, but as one moves closer to commercialization the "right moment to patent" comes.

5.1.10 Further resources

Further information about IP due diligence or audits can be found on the website of WIPO (including a free online module for self-study), in the IP documentation from the IPR Helpdesk as well as in the guidelines for collaborative research initiatives and templates from the Knowledge Transfer Ireland (KTI).

Three very concrete aids to use for:

1) an IP due diligence/audit
2) IPR decision making

Extracts of these are presented in **Annexes 3, 4 and 5**.

[18] Process infringements are much harder to detect, but they are also more difficult to copy if they have not been made public.

5.2 HYBUILD Exploitable results

Shortly after the Kick-off of the project, R2M has started the process of identification of Exploitable Results by liaising with all project partners. Table 13 below presents an overview of the 12 Exploitable Results identified within HYBUILD at the time of writing this report.

Table 13 - HYBUILD Exploitable Results overview

#	Type of ER	Exploitable Result name	ER Manager
ER01	Product	HYBUILD integrated system for the Mediterranean climate	COMSA
ER02	Product	HYBUILD integrated system for the Continental climate	COMSA / OCHS
ER03	Product	Innovative DC bus controller solution for heat pump market	DAIKIN
ER04	Product	Innovative adsorber (high specific surface + in-situ crystallized SAPO 34)	SOR / AKG / MIKRO
ER05	Product	PCM thermal storage module for HVAC applications (and possible scale up for waste heat recovery)	AKG
ER06	Product	Domestic solar collectors	FRESN
ER07	Product	Innovative solutions for smart BEMS	ENG
ER08	Product	Design Methodology for Smart BEMS	ENG
ER09	Service	Consulting offer for designers, engineers, planners	R2M
ER10	Product	Adapted stainless-steel water storage	PINK
ER11	Knowledge	Stakeholder Advisory Board (SHAB)	R2M
ER12	Knowledge	HYBUILD Patent(s)	*TBD*

Each ER Manager has been asked to fill-in an ad-hoc ER description template – see **Annex 1** - sent by R2M in November 2017. Completed templates for each ER will be provided in D7.5 – Exploitable Results Table (due at M12). They will be periodically revised and updated during the project.

Also, during the next phase of the project, R2M will circulate a further detailed questionnaire in order to gather short- and medium-term ER exploitation visions, as well as intellectual property (IP) considerations. The questionnaire addresses the envisaged exploitation model, identification of milestones, limitations, risks and potential collaboration / resources required. With respect to IP, the questionnaire includes possible forms of protection, understanding of Prior Art and FTO and partner background declarations (particularly relevant for jointly-owned ERs) among others. An example of the questionnaire can be found in **Annex 2**.

5.3 Individual exploitation plans

In addition to a potential joint exploitation of the previous ERs, each of the 21 partners of HYBUILD has its own individual exploitation path of the project results, which relates to its own internal strategic activities and roadmap. These exploitation plans were initially presented in the Grant Agreement of the project and have been updated for some project partners as presented in Table 14 below.

These plans will be revised and updated periodically during the project.

Table 14 - HYBUILD Partners individual exploitation plans

Partner	Individual Exploitation Plan	Related ERs
Industrial organization and technology providers		
COMSA	COMSA is heavily committed to developing NZEBs in the tertiary building sector based on R&D advances. HYBUILD provides an opportunity for COMSA to exploit the acquisition of new competencies surrounding a revolutionary integrated heat pump technology development and management of thermal and electric energy storage systems. At the end of the project, COMSA will be able to exploit the complete Mediterranean and Continental solutions as part of its construction activities for new and retrofitted buildings. More importantly, COMSA will gather expertise in the energy management systems and business models that could differentiate the company as NZEBs become more common in the building energy services market.	ER01, ER02
FAHRENHEIT	Fahrenheit intends to commercialise the developed innovative adsorber (high specific surface + in-situ crystallized SAPO 34) also as subcontractors for larger companies such as Viessmann and Vaillant	ER01, ER02, ER04
MIKROMETAL	Mikrometal intends to commercialize the developed innovative adsorber (high specific surface + in-situ crystallized SAPO 34) also as subcontractors for larger companies such as Viessmann and Vaillant	ER01, ER02, ER04
FRESNEX	FRESNEX intends to expand the market of concentrating solar collectors to small scale, low temperature applications in the domestic sector (< 100°C).	ER01, ER06
ENG	At the end of the project, ENG will be able to exploit its innovative solutions for Smart Building Energy Management System (Smart BEMS). ENG has already designed and developed Energy Management Systems (EMSs) for different previous projects, but the building domain was unexplored. The adaptation of the previously developed EMS in this new field will allow ENG to expand its offer entering in the BEMS market thanks to its innovative product. Furthermore, ENG has the chance to exploit the acquisition of new competences. Indeed, the design methodology for the BEMS optimiser, based on the multi-carrier hub concept and already applied and consolidated in other domains, will be customised for the BEMS domain. Since this approach is a cutting-edge one and seems to be promising for the development of effective BEMSs, ENG will be able to exploit the acquired methodology for further research initiatives.	ER01, ER02, ER07, ER08
DAIKIN	DAIKIN intends to exploit the innovative DC bus controller solution (ER03) for the heat pump market, with particular attention to the cooling application in Southern Europe.	ER01, ER02, ER03
OCHSNER	HYBUILD is investigating a new and complex system for heat generation. The OCHSNER heat pump will be especially optimized for using storage system and photovoltaic energy during dynamic conditions	ER01, ER02
R2M	R2M serves as commercial and resell agents for the solutions developed across its networks of sustainability professionals and organizations (e.g. it became recently the exclusive reseller of Onyx Solar BIPV solutions in Italy and France, after a successful collaboration through EU-supported projects). R2M provides consulting to clients (designers, engineers, planners): its current portfolio includes for instance energy audits services or LEED	ER01, ER02, ER09, ER11

	consulting. HYBUILD outcomes will augment current services offered by R2M, especially adding the energy storage dimension into its global and holistic sustainability approach.	
AKG	AKG is planning to expand the scope of applications of aluminum heat exchangers to applications for buildings. One field is adsorption coolers where AKG heat exchangers are expected to provide a compact and cost-efficient solution for the adsorber as well as for the evaporator/condenser. A first step will be the cooperation with our project partner Fahrenheit also beyond the scope of the HYBUILD project. The knowledge gathered within this project shall enable AKG to also provide solutions to other manufacturers of adsorptions coolers. The second field is applying AKG's technology to integrate PCM directly into a heat exchanger to new applications. This could either be large scale thermal storage for buildings but also for use of waste heat or increasing the efficiency of conventional refrigerant based HVAC applications.	ER01, ER02, ER04, ER05
PINK	PINK will aim at commercializing the adapted stainless-steel water storage as presented in ER10.	ER01, ER02, ER10
RTOs and universities		
UDL	UDL has large experience in the development of innovative solutions based on the integration of thermal energy storage systems in building and industrial applications, as well as the use of artificial intelligence techniques for their control and optimisation. HYBUILD is a very good opportunity for UDL to apply and improve its expertise in developing, integrating, and controlling an innovative thermal energy storage component in two different complex systems that combine electric and thermal solutions for reducing energy consumption in buildings. This will open possibilities for future research activities that can be published in high-impact international journals and presented in relevant events, such as scientific conferences, workshops, exhibitions, as well as opportunities for knowledge transfer to market through establishing contact with relevant stakeholders' groups interested in the results and outputs of the project.	ER01, ER02, ER05
CNR	ITAE has a longstanding experience in the development of innovative solutions for heating and cooling at the building scale. During HYBUILD it will increase its knowledge and experience in the design and testing of innovative components for the thermal and electric energy storage for residential applications. Particularly, the integration of these storage technologies will open possibilities in view of future research activities as well as in making CNR ITAE as one of the main European research centers on the storage technology. Furthermore, thanks to the innovative feature of the proposed concept, CNR ITAE will have the chance to present the performed activities in the most interesting conferences on storage technology as well as to publish scientific papers in high-impact international journals, thus disseminating the main results towards the scientific community.	ER01, ER02, ER05
AIT	AIT is strongly interested to increase its scientific knowledge of the direct integration of a latent storage in the heat pump cycle. At the end of the project AIT will have a deep understanding of the interaction between refrigerant and PCM material for DHW generation and for defrosting operations in a heat pump process which will increase AIT's extensive expertise in the field of heat pump technologies. Therefore, AIT can help manufacturers as a scientific partner to develop further solutions based on the HYBUILD technologies. Other marketing opportunities for AIT are license agreements following from patents developed in the HYBUILD project.	ER01, ER02, ER05

NOBATEK	Nobatek is strongly committed to developing innovative solutions for renewable energy systems in the building sector. Through the accumulated experience of project partners, Hybuild helps Nobatek /INEF4 to develop innovative hybrid approach for the storage of renewable energy in the building and to reinforce the role of Solar Energy in Building Renovation. The French demo site in Talence has been selected in order to share with the wider industry several examples of the best practices, innovation and new technologies in typical European climates. The site will be open to students, engineers, researchers and developers.	ER01, ER02
CSEM	Publication to key journals and conferences, future research/consultancy projects, expose large student body to the ideas and methods emerging from the project as a means to support future innovation within the construction sector; opportunities for knowledge transfer to market.	ER01, ER02
EURAC	Publication to key journals and conferences, future research/consultancy projects, expose large student body to the ideas and methods emerging from the project as a means to support future innovation within the construction sector; opportunities for knowledge transfer to market.	ER01, ER02
STRESS	STRESS acts as service provider to both its associated companies and to public and private entities related to the construction sector (regional and local authorities and construction associations). It provides know-how and technology scouting services on innovative solutions for the construction sector. HYBUILD outcomes will enhance the potential services to its associated companies, in particular the Engineering Consulting Companies and the Energy Service Companies.	ER01, ER02, ER09
NTUA	Publication to key journals and conferences, future research/consultancy projects, expose large student body to the ideas and methods emerging from the project as a means to support future innovation within the construction sector; opportunities for knowledge transfer to market.	ER01, ER02
UCY	UCY is strategically working through FOSS, the Research Centre for Sustainable Energy, on solutions and systems that exploit the solar resource in support of the targeted energy transition. As a consequence, HYBUILD is a natural research area for FOSS aligned with technology and system solutions that are of prime interest in two distinct directions. Firstly, to develop the required technologies and systems and secondly to actually implement them in the real environment of Cyprus to fine tune the solutions and work with end users to identify best practices for implementing them. Working with a municipality in this direction and more importantly with the municipality of Aglantzia which is hosting the university in its build up area, adds a desired dimension that opens many other side applications that are of critical importance to both. As a university, we intend to exploit to the full the above inviting opportunities and make sure that the results find their way in publications to key journals and conferences, future research/consultancy projects, expose large student body to the ideas and methods emerging from the project as a means to support future innovation within the construction sector as well as opportunities for knowledge transfer to the market.	ER01, ER02
Local authorities		
ALMATRET	Almatret's Municipality aims at becoming the first positive energy town in Spain where all energy used comes from renewables. Focusing on its environmental, climate, and historical characteristics, an action plan called "ALMIA" has been designed and includes actions to achieve the European	ER01, ER02

	goal of climate change mitigation. By the implementation of the measures in our plan, besides contributing to climate change our objectives are to increase social and economic opportunities as well as environmental protection. The proposed measures include the following: • Energy Savings in Municipality public buildings • Energy Savings via informational campaigns • Municipality investments in renewable energy sources By applying these measures, we intend to become a unique attraction in our area, where students, families, and researchers worldwide will be able to visit and study our case. The HYBUILD demo site in Almatret will be one of the main attractions, located in the town center, in the R+D area next to the ALMIA building, which will hold a Passive House certificate and host an energy museum. The mentioned building will work as a multi-use building for the public but also as an exhibition center for the promotion of domestic energy efficiency approaches, for the integration between territory and energy and to divulge renewable energy research and energy efficiency. Moreover, collaboration between the University of Lleida (50 km from Almatret) and two of its research groups will allow this project to evolve. On one hand GREiA research group (member of INSPIRES research center) which has given a great boost to the development of the research part of the project by implementing the demo of two H2020 projects and by carrying out their evaluation. On the other hand, the EDO educational research group experience will allow the development of our educational program, reaching to all students from Catalonia to visit the exhibition center. In 2018 we have offered awards to the most creative and innovative projects enlisted regarding energy efficiency. These actions will be followed by other listed actions aiming at the installation of renewable energy sources in other buildings and public services. In conclusion, all the above measures and actions will help Almatret to gather experience, from an energy point of view, regarding aspects such as tourism, education, historical heritage and research.	
AGLANTZIA	Aglantzia Municipality has prepared and applied its “Sustainable Energy Action Plan”, which includes certain measures and actions in order to - at least - achieve the European goal of combating climate change. The actions that will be taken by the Municipality, in addition to national measures, will help to achieve the goal of reducing CO2 emissions by at least 20% by the year 2020, with respect to the reference year 2009. The proposed measures include the following categories: • Energy Saving in Municipality public buildings • Energy Saving via informational campaigns • Municipality investments in renewable energy sources When the above measures are applied, the estimated annual emission reduction for the year 2020 is going to be 16.466 tons. Furthermore, it is expected that the implementation of the national measures – which are taken in an attempt to reduce carbon dioxide emissions – will result in an additional decrease of 31.249 tons, which, in return, will have a positive impact on Aglantzia Municipality. Thus, with the implementation of the “Sustainable Energy Action Plan” and a total reduction of 47.715 tons – caused by the application of this plan – annual emissions for the year 2020	ER01

will be limited.

The implementation of HYBUILD will help the Municipality to achieve the targets set in its "Sustainable Energy Action Plan". The "preserved" (protected) building (HYBUILD), which is located in the center of our city, will be the first one in Cyprus to host renewable energy sources and will become the starting point for the installation of renewable energy sources in other listed buildings. The current premises will work as a multifunctional, multi-use building for the public but also as an exhibition center for the promotion of novel domestic energy efficiency approaches.
Moreover, a collaboration between the Department of Environmental Education of the Pedagogical Institute of Cyprus and the University of Cyprus (UCY), will allow students from all over Cyprus to visit the exhibition center within the framework of a training program.
The UCY Campus is located in the territorial boundaries of the Municipality, which has given a great boost to the development of construction and especially the construction of residential developments in an attempt to cover the needs of the students. It is under the legislative power and the responsibility of the Municipality's Technical Services to issue the building permit for all these developments. At the end of the HYBUILD project the Municipality will promote, among the developing and construction community, the Mediterranean solutions for residential buildings up to 100sq.m.

In addition, the Municipality in collaboration with the Technical Chamber of Cyprus and the Cyprus Employers and Industrialists Federation (Energy and Environment Division, which includes the Union of Solar Water Heaters manufacturers [EBHEK], the Cyprus Association of Renewable Energy Enterprises [SEAPEK] and the Cyprus Association of ESCOs and Energy Efficiency companies [PASEEXE]) organizes seminars, briefings, conferences, informative lectures and meetings, while all the community/federation members get informed about new technological or other developments.
Finally, all the above measures and actions will help the Municipality to gather experience in regard to the ways of rejuvenation, restoration and energy efficiency upgrading of the buildings; experience that can be applied to all the Municipality buildings.

7 Conclusions

This report presented the dissemination and exploitation plan for the HYBUILD project which aims at ensuring a maximum visibility and impact of the project. As such the dissemination and exploitation plan is integral to meeting the overall aim of the project, namely to demonstrate that hybrid energy storage solutions can be a key component for supporting renewable energy integration and future smart energy systems.

This dissemination and exploitation strategy is complementary to the internal and external communication strategy (D8.1) which was delivered at M9 and the communication plan (D8.4) to be delivered at M12, which contains all wider promotional actions including those targeted at the general public.

The progress of the implementation of this dissemination and exploitation plan will be monitored and reported through the project periodic reports as well as through further upcoming deliverables which include HYBUILD Exploitable Results table (D7.5 – M12), HYBUILD business model (D7.4 – M18), Report on dissemination activities (D7.2 – M48), HYBUILD patent filings (D7.7 – M48), HYBUILD Replication plan (D7.8 – M48), and Partner exploitation agreement (D7.9 – M48).

Annex 1: ER description template (will be used for D7.5)

ER N°	ER01	Title:	LAST UPDATE dd/mm/yyyy
Developer(s) / Owner(s)	List all partners involved in this exploitable result		
ER leader	**Lead partner** (responsible person)		
Output	x Product Service Process / Methodology Know-how/IP Other -> Please specify		
Description of the result			
Unique selling point	• Why this ER is innovative ?		
Illustration (s)	*Please copy here images to make the concepts clear if available*		
Targeted Market Segment			
Value proposition			
State of development at present date			
Performed trials and achieved results at present date			
Activities required for exploitation			
Current level of development for the result (TRL)	Research Market 1 2 3 **4** 5 6 7 8 9		
Expected level of development for the result (TRL)	Research Market 1 2 3 4 5 **6** 7 8 9		
Expected time for marketability			
Preliminary exploitation vision	x Direct sales Open distribution Licenses IP sale Operation fees Joined investment/revenues with clients Turn-key Enabling technology (for subsequent product, service, etc.) Training Other → *Please specify*		

Annex 2: Sample of the exploitation vision/IPR questionnaire for HYBUILD

Exploitation vision and Intellectual property rights		
ER# 5	ER description	Company:
Contributor		
Output	X **Product** ☐ Service ☐ Process / Methodology ☐ Know-how/IP ☐ Other (specify) ->	
Background declaration	*Please explain **which background has been used for the production** of the ER (you might want to check the Consortium agreement for former input)*	
Expected time for marketability	*Please estimate a **realistic readiness timeline** of the ER after project closing*	
Short-term (project end + 2y) exploitation vision	Y1 Y2 Y3 Y4 Y5	
Objective(s) of foreground exploitation	*Please explain your **goal(s)** with respect to the **ER exploitation for the first 2 years** after project closing*	
Model of foreground exploitation	*Please tick which **option(s)** you are considering on **how to use** the ER in the **first 2 years** after project closing* ☐ Internal use ☐ Further research needed ☐ Enabling technology (for subsequent product, service, etc.) ☐ Training ☐ Open distribution ☐ Direct sales/Consultancy service ☐ Licenses ☐ IP sale ☐ Joint Venture ☐ Spin-off ☐ Other -> *Please explain your plans in **more detail** here:*	

In case of foreground commercialisation, target market	*Please define which **market you want to serve in the first 2 years** after project closing if you are planning on exploiting the ER commercially. In particular, give details about the geographic area, application/user circle and your estimated size of the market.*
Preliminary roadmap/milestones of activities required for foreground exploitation	*Please specify which **actions for the ER exploitation you want to take in the first 2 years** after project closing (for example which development/marketing/sales actions such as the production of a particular packaging/communication material/advertisement campaign, organisation of promotion events, training of resellers etc.)*
Possible limitations/risks in the foreground exploitation	*Please mention and shortly explain which **limitations and risks** could occur in this first 2 year phase of **ER exploitation** (for example resources such as staffing, specific knowledge needed etc)*
Countermeasures for these exploitation limitations/risks	*Please name first ideas on how you could compensate for these **limitations/risks in the exploitation** of the ER*
Collaboration with external partners for foreground exploitation	*Please give an overview which **external partners might be necessary** for you to be successful in the **ER exploitation** in the first 2 years after project closing (for example real estate managers, IP lawyers, communication agencies, etc)*
Source of financing required for foreground exploitation after project	*Please specify on how you are planning to **finance the exploitation** of the ER in the first 2 years after project closing*
Mid-term (project end + 5y) exploitation vision	Y1 Y2 Y3 Y4 Y5
Objective(s) of foreground exploitation	*Please explain your **goal(s) of the ER exploitation for the following 3 years** after the 2-year initial phase*

Model of foreground exploitation	*Please tick which **option(s)** you are considering on **how to use the ER in the second exploitation period** (year 3 t 5) after project closing* ❑ Internal use ❑ Further research needed ❑ Enabling technology (for subsequent product, service, etc.) ❑ Training ❑ Open distribution ❑ Direct sales/Consultancy service ❑ Licenses ❑ IP sale ❑ Joint Venture ❑ Spin-off ❑ Other (specify)->*Please explain your plans in **more detail** here:*
In case of foreground commercialisation, target market	*Please define which **market you want to serve in the subsequent 3 years** if you are planning on exploiting the ER commercially. In particular, give details about the geographic area, application/user circle and your estimated size of the market.*
Preliminary roadmap/ milestones of activities required for foreground exploitation	*Please specify which **actions for the ER exploitation you want to take in the following 3 years** (for example due to geographical expansion plans the search for partnerships or setup of commercial offices abroad, broadening of the target market via more applications, etc.)*
Possible limitations/risks in the foreground exploitation	*Please mention and shortly explain which **limitations and risks** could occur in this second phase of **ER exploitation** (for example missing financial resources to scale up business activity, etc)*
Countermeasures for these exploitation limitations/risks	*Please name first ideas on how you could compensate for these **limitations/risks in the exploitation** of the ER*
Collaboration with external partners for foreground exploitation	*Please give an overview which **external partners might be necessary for** you to be successful in the **ER exploitation** in this 2nd phase (for example resellers, marketing agencies in other geographies, etc)*
Source of financing required for foreground exploitation after project	*Please specify on how you are planning to **finance the exploitation of the ER in the medium term***

Related intellectual property rights	
Possible form(s) of protection plan for foreground	*Please tick **all possible protection forms** of the entire/parts of the ER that **you might want to explore**.* ❑ Patent ❑ Industrial design rights ❑ Copyright ❑ Trademark ❑ Trade secret ❑ Database rights ❑ Other ->*Please explain in **more detail** here:*
Understanding of prior Art/Fto relevant to ER	*Please give information about any **relevant prior art or freedom to operate** that you are aware of with respect to the ER*
Management Ideas for shared IP	*In case of an jointly developed ER, please outline your first ideas of **how the ER exploitation could be managed** (for example market splitting, licensing among partners, JV setup etc)*
Necessary funds for protection	*Please give an understanding of the **related fees** that go inherent with your possible options of IP protection (registration, translation, legal costs etc)*

Annex 3: Main questions to ask during an IP audit

Inventory and Ownership	✓ Are the IP assets in the inventory exhaustive? ✓ Does the company own all the intellectual properties of concern? ✓ Are the owners of IP assets clearly identified and are there any ownership issues? ✓ Are there any IP assets used by the company but owned by third parties? ✓ Are the rights for legitimate use obtained? (e.g. through a licensing contract) ✓ Are there any restrictions to use the third party IP?
Protection and Use	✓ Are there any used IP assets, which are not yet protected? ✓ Are all registered IP assets used? If not, are there any opportunities for licensing or assignment? ✓ Are the maintenance/renewal fees systematically paid for registered rights (e.g. for patents, designs, trade marks)? ✓ Are there any protection measures for unregistered IP assets? ✓ Does the protection of IP assets cover all current/target countries? ✓ Are there any non-used IP assets and justification of their non-use?
Contracts and Law	✓ Are all IP contracts still in force? ✓ Are all IP contracts registered with the competent authorities (patent offices, etc.), if required? ✓ Are there Non-Disclosure Agreements (NDAs) signed with employees/third parties? ✓ Are there any loopholes in the contracts? ✓ Are there any identified IP rules within the employment contracts? ✓ Are there any legal issues regarding the contracts vs. local IP rules and competition law?
Enforcement and Infringement	✓ Does the company infringe on the IP rights of others? ✓ Are there any third party infringement issues on the company's intellectual assets?
IP Management	✓ Is there an identified and effective IP strategy integrated with related IP policies? ✓ Is there a certain level of IP awareness within the company?

Source: IPR Helpdesk, Factsheet "IP Audit: Uncovering the potential of your business"

Annex 4: Patent/Trade secret evaluation questionnaire

The 11 questions are arranged by function, not importance, and roughly correspond to marketing (questions 1–4), technical (questions 5–8), and legal (questions 9–11) categories. Each question should be answered on a scale from 1 to 10. The responses are then totalled. With the current number of questions, the total would range from 11 to 110. If the sum approaches the higher end of the scale (above 75), trade-secret protection would seem favourable; a sum at the lower end (below 45) would suggest that patent protection would be more advantageous. At times, values in the middle range (45–75) will result. Such a score suggests that it doesn't really matter which approach is followed initially. For example, trade-secret protection might be appropriate for manufacturing-process technology, which competitors might find easier to re-create; patents make sense for products that can be analysed or reverse engineered. However, there need be no prejudice about resorting to the other strategy to protect collateral aspects and improvements. To obtain the most-accurate results from the questionnaire, the following considerations for each question will be helpful in interpreting the survey responses:

Question 1. If the development is likely to be commercialized or licensed, patent protection would seem preferable to trade-secret protection. There might be some exceptions (such as the Coca-Cola situation), but presumably these would be limited to situations where the nature of the product could not be easily ascertained by reverse engineering (see Question 6).

Note that Question 1 pertains to commercialization of the development itself. Thus the mere use of a process to produce a commercial product is not commercialization of the process (see Question 4, about commercial significance). The desirability of patenting the process itself would depend on the answers to Questions 2–11.

Question 2. Here the aim is to ascertain whether exclusivity on the development would be meaningful commercially. A development of marginal commercial importance might be better kept as a trade secret. One that provided a significant commercial edge, however, probably should be patented.

Question 3. This addresses the opposite of the issue in Question 2, namely the defensive value of a patent publication. Hence, while the development may be of minimum commercial advantage to the company, thereby favouring trade secrets, a patent (or publication) should be considered if a competitor's exclusivity would be disadvantageous.

Question 4. This is a difficult question. Some writers have suggested that a product with a short commercial life favours a patenting approach, while a long life favours trade secrets. In this author's view, life span is not a particularly useful criterion since it depends on factors unrelated to the development itself. Estimating the future lifespan for a product under development may also be a highly subjective matter. In some circumstances this question might not have to be considered.

Question 5. The ability to design around an invention is a function of the nature of the patent protection. If a claim is easily avoided, its value is considerably reduced. The destructive effect

of trade-secret protection by publication is therefore unchanged, and the relative value of the trade-secret option is higher (because of the decreased value of patent protection).

Question 6. Counterbalancing Question five is the issue of whether, if the trade-secret route is chosen, a competitor will nevertheless be able to ascertain the nature of the development from the product. If competitors can reasonably easily ascertain the nature of the product, patent protection would be favoured.

Question 7. The issue of disclosure is often overlooked. For example, the required disclosure of a culture collection-deposit number could provide competitors with access to the culture itself, and this access might greatly outweigh the value of patent protection. The impact of a disclosure of an unclaimed or intermediate process might also have a bearing on whether the final product should be patented.

Question 8. In many cases, evaluating whether others could arrive at the same development independently could be extremely difficult. If, however, it is known that others are working in the field, it would seem quite possible that they could arrive at the same development and patent it first. Consequently, one might eventually be excluded from using the product if patent protection is not sought.

Question 9. Even though patent protection might be indicated for other reasons, this could be counterbalanced by the fact that any coverage eventually obtained would be weak. A weak patent, ignored by competitors and for which the company is unwilling to sue, is as good as no patent. In fact, it may be worse, since the opportunity for trade-secret protection would have been irrevocably lost through publication.

Question 10. Ideally, the dissemination of information from within the company can be controlled. If not, however, a trade secret might be lost. If this risk exists, for example when numerous employees, visitors, and suppliers have access to the development, patent protection is more attractive. The same question arises with scientific publications.

Question 11. This question is related to question nine but goes to the issue of inherent enforceability rather than patent strength. If detecting infringement would be extremely difficult, the ultimate value of a patent would be reduced. Such reduced value must be weighed against the cost of the loss of trade-secret protection caused by patent publication. If the patent rights cannot be effectively enforced, then what ensues may become a de facto release of a trade secret.

BOX 1: INITIAL PATENT/TRADE SECRET EVALUATION QUESTIONNAIRE

1) Is the development likely to be a commercial product or the subject of licensing?
1 2 3 4 5 6 7 8 9 10
Likely Unlikely

2) How much of a competitive advantage would be provided if the company maximized exclusivity?
1 2 3 4 5 6 7 8 9 10
Very Great Very Little

3) How much of a competitive disadvantage would it be if a competitor obtained exclusivity?
1 2 3 4 5 6 7 8 9 10
Very Great Very Little

4) Is it likely the commercial significance of the development would be limited in time?
1 2 3 4 5 6 7 8 9 10
Yes-Limited No

5) Is it likely one could develop alternatives ("design around")?
1 2 3 4 5 6 7 8 9 10
Unlikely Likely

6) Can the nature of development be ascertained from commercial product (could the product be "reverse engineered")?
1 2 3 4 5 6 7 8 9 10
Likely Unlikely

7) Would disclosure of this development require or permit access to other, unprotectable information?
1 2 3 4 5 6 7 8 9 10
No Yes

8) Is it likely others will independently arrive at the same development?
1 2 3 4 5 6 7 8 9 10
Likely Unlikely

9) If a patent was obtained, what are the chances of validity being upheld by a court?
1 2 3 4 5 6 7 8 9 10
High Low

10) Is it likely that dissemination of the development from within the company would be difficult to control?
1 2 3 4 5 6 7 8 9 10
Yes-Difficult Not Difficult

11) Would it be difficult to determine if competitors are using the development?
1 2 3 4 5 6 7 8 9 10
Not Difficult Difficult

Total Score _____

Source: Karl F. Jorda, Chapter No. 11.5, IP Handbook of Best Practices, 2007
The full document can be downloaded under: http://www.iphandbook.org/handbook/ch11/p05/

Annex 5: Excerpt from an IP Audit checklist

Singleton Law Firm, P.C.
www.singletonlawfirm.com

Section:
Establishing The Goals of Your Audit

INTELLECTUAL PROPERTY AUDIT CHECKLIST

Alan R. Singleton
Singleton Law Firm, P.C.

Establishing The Goals of Your Audit 1
Identification of Potential Intellectual Property 2
Classification of Intellectual Property 3
Identification of the Documentation Relating to Intellectual Property 6
Examination of the Documentation 7
Identify Owners 8
Confirm Validity 8
Retrospective Protection of Identified Intellectual Property 10
Prospective Protection of Intellectual Property 16
Methods for Conducting the Audit 21
Final Product 21

Establishing The Goals of Your Audit

- Why are you conducting an audit?
  - ☐ Establishing procedures?
  - ☐ Preparing for a sale, purchase or license?
  - ☐ In contemplation of litigation?
  - ☐ Making sure all IP is "in the box".
- What will the scope be? What assets will be involved?
  - ☐ Broad
    - Overall review of procedures and policies
    - Developing an index of all intellectual property
  - ☐ Narrow
    - Focus on a specific asset for purposes of sale, purchase or license
  - ☐ Generic
    - Overview of IP sources
- What do you want to be the final product of the audit?
  - ☐ Comprehensive snapshot of your intangible assets and related procedures?
  - ☐ List of new procedures to be implemented?
  - ☐ Index or catalogue of all intangible assets?
  - ☐ Phone call or in person meeting for items where it would be better not to reduce the findings to writing.

Source: Alan R. Singleton, Singleton Law Firm, P.C., 2007
The full document can be downloaded under: www.researchpark.illinois.edu/sites/default/files/media/IP%20Audit%20Checklist.pdf