corewind

D7.5 Identification and assessment of final exploitable results

IREC

August 2022

Disclaimer:

This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under grant agreement No 815083.

Project details:

Duration:
1 Sep 2019 - 28 Feb 2023
Grant agreement:
No: 815083

Document information

Deliverable number	D7.5
Deliverable name	Identification and assessment of final exploitable results
Reviewed by	UL
Date	August 2022
Work Package and Task	WP7, Task 7.2
Lead Beneficiary for this Deliverable	IREC
Dissemination Level	PUBLIC

Authors

Name	Organisation	E-mail
Marta Fonrodona	IREC	mfonrodona@irec.cat
Bernd Neddermann	UL	bernd.neddermann@ul.com
José Luis Domínguez	IREC	jldominguez@irec.cat

Version control

Version	Date	Author	Description of Changes
[Draft V0.1]	[2022-07-26]	Marta Fonrodona	First version distributed for revision.
[Draft V1.0]	[2022-07-29]	J.L.Domínguez	Revision and updates
[Draft V1.1]	[2022-08-22]	B. Neddermann, T. Neumann	Revision
[Final V2.0]	[2022-08-29]	M. Fonrodona, J.L. Domínguez	Revision modifications

Table of contents

1 EXECUTIVE SUMMARY

This document upgrades, summarizes and deals with the management of the exploitable results for the COREWIND project. As the final deliverable of task T7.2 , D7.5 uses the updated results identified and developed in D7.3 and D7.4 as a starting point, also taking the inputs from the last 9 months (M27-M36) of development in the COREWIND project.

This deliverable summarizes the COREWIND project Exploitable Results (ER) and their exploitation vision, serving as a final analysis of their progress. It characterizes their distinctive features, maturity levels and steps needed to maximize exploitation, market uptake and commercialization and revenue stream foreseen. It is part of Work Package WP7 (Standardization, Commercialization and Exploitation Actions) and specifically of Task T7.2 (Competence analysis, identification and management of exploitation results). T7.2 activities, initially reported in D7.3 and D7.4, are finally wrapped up in this document. These activities run in parallel to the technical development to ensure readiness of market entry, while at the same time shaping the development paths to increase the strengths and limit the weaknesses.

In total, after evaluating the status of the project, a list of 21 ER have been identified and characterized: 11 “Products/Application”, 4 “Services’’, 6 “Knowledge & IP’’. As part of the activities foreseen in this task, LEAN canvas models have been used and are documented. The analysis documented in this report will be used to define exploitation plans (T7.3) and commercialization plans (T7.4).

2 Introduction and Methodology

Offshore wind generation is currently an expansive market and a lot of interest has been placed in recent years on floating technologies that have several advantages, including access to deep-water sites with more stable wind speeds. However, floating offshore wind is facing several challenges, including those related with corrosion, fatigue, erosion, lightning strikes and biofouling, just to name a few.

Offshore wind technology still needs to overcome some market barriers, mainly related to technical, social and economic (i.e., cost) aspects. The objective of this deliverable is to identify the final list of Exploitable Results (ER) of the COREWIND project, upgrade the ER management and exploitation strategy and clarify the framework for their post-project market uptake and exploitation. The outcome is a list of exploitable results and the exploitation strategy and revenue generation streams foreseen for the innovations generated. In the project, exploitable results provide a mechanism to define impact and strategy. After the project completion, exploitable results provide the way to achieve their impact.

This deliverable D7.5 is the final version of the series in task T7.2 and an upgrade on D7.3, where initial exploitable results were identified, and D7.4, where the ER list was updated and the exploitation strategy of the ERs was analysed by means of SWOT analysis and Value Proposition Map, and takes into account the progress made until M36 of the COREWIND project. As part ot T7.2, LEAN canvas have been used to analyse the exploitation models foreseen.

As a base definition, Exploitable Results are the achieved and/or expected results coming from the COREWIND project that will have an impact on economy, environment and/or society as a whole. These results have commercial or social significance and can be exploited as stand-alone products, processes, services, etc. In principle, these exploitable results might need further R&D, prototyping, engineering, validation after the project ends and before they become commercially exploitable. This set of exploitable results also includes “softer” results such as the platforms, publications of a journal article, a methodology or piece of knowledge that can be “shopped” to create contacts, first adopters, networks or other opportunities. However, often exploitable results are more tangible and concrete with therefore envisioned economic benefits for developers/owners.

The journey of exploitable result identification and management is exciting and should encourage “an entrepreneurial spirit” and “culture of innovation” within the project. Part of this spirit is captured in Figure 1 to communicate the vision of the exploitable results process.

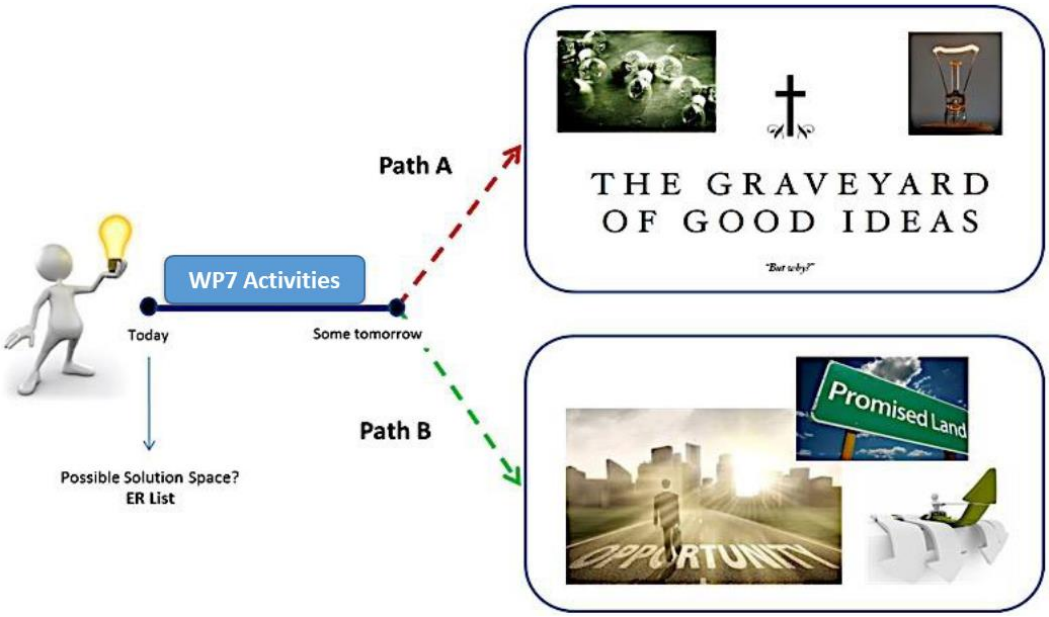

Figure 1: The journey of exploitable result identification and management. Outcomes.

Considering Innovation Levels and Providing a Benchmark Reference

It is helpful to provide reference points and benchmarks in the identification, communication and development of exploitable results related to innovation level and technology readiness levels (TRL). We do this using the concepts shown in Figure 2.

In considering these figures and concepts, it may be the case that Innovation Level or TRL may not be directly applicable to each type of exploitable result. However, they do provide one measure of "what is the progress beyond the state of the art?", "what is the current readiness of the ER in question?" and ''how far are they from commercialization/market entry?'' As a general objective, the COREWIND project aims to bring the project results to TRL 5, technology validated in a relevant environment. As the different ERs identified during the project are of different nature, some of them might even achieve a higher TRL at the end of the project.

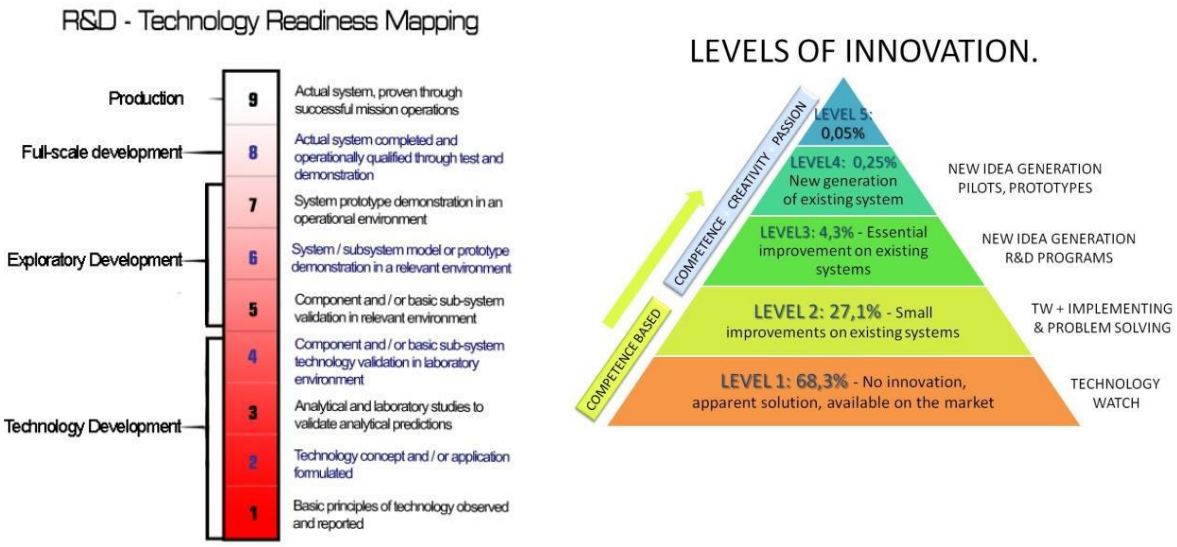

Figure 2. Innovation and TRL levels when communicating ERs

Exploitable Result Categories

Exploitable results can be categorized into several areas. They are not rigid and in the context of COREWIND the following areas are used:

- **Products** – items for sale
- **Processes** – ways to make or do something
- **Knowledge & Intellectual Property (IP)** – valuation of "how to"
- **Services** – by offering the above products, processes, equipment, or knowledge
- **Other** – Platform, publications, patent….

Exploitable Result Definition Points

From an Exploitation Strategy Seminar (ESS) provided by the Meta Group, the following items are key points to consider in the shaping and development of exploitable results. These points are part of the development and management process that will occur across the project and have been considered in the different updates.

- Innovativeness introduced compared to already existing Products/Services
- What is the Unique Selling Point (competitive advantage)?
- Product/Service market size?
- Market Trends/Public acceptance?
- Product/Service positioning?
- Legal or normative or ethical requirements (need for authorizations, compliance to standards, norms, etc.)?
- Who are the competitors for this result?
- Prospects/Customers?
- What are the costs to be incurred after the project end and before commercial exploitation?

- When is the time to market?
- Foreseen Product/Service price?
- Adequateness of consortium staff?
- External experts/Partners to be involved?
- Status of IPR: Background (type and partner owner)?
- Status of IPR: Foreground (type and partner owner)?
- Status of IPR: Exploitation forms (type and partner owner) e.g. direct industrial use, patenting, technology transfer, license agreement, publications, standards, etc?
- Which partner contributes to what (main contributions in terms of know-how, patents, etc.)?
- Partner(s) involved expectations?
- Sources of financing foreseen after the end of the project (venture capital, loans, other grants, etc.)?

3 Exploitable results – Consolidated view

The table below presents the final list of COREWIND ERs. It is an update of the ER list presented in D7.4, taking into account the progress made in the COREWIND project up to M36. Each ER is assigned to a/several manager(s) who is/are responsible for providing information and updates on the result, defining the steps needed to reach full exploitation and launching it eventually into the market. This process is managed and supported by IREC. In the case of "Knowledge & IP" the ER Manager is likely associated to the IP owner(s). With the addition of the newly identified ERs, finally we have identified a total of 21 ERs, of which 11 are "Products/Application", 6 "Services", and 4 "Knowledge & IP", as illustrated in Table 1.

Table 1 - Consolidated view of exploitable results

#	Type of ER	Exploitable Result	WP	ER Manager
1	Product /Service	FOWAPP	6	IREC
2	Product	DigitalTwin for FOWT	4	IREC
3	Product	Optimized mooring design – WindCrete	2	Innosea
4	Product	Optimized mooring design – ActiveFloat	2	Innosea
5	Product	WindCrete 15MW	1	Universitat Politècnica de Catalunya
6	Product	ACTIVEFLOAT floating structure	1	COBRA - ESTEYCO
7	Product/ Software Feature	HAWC2 software new modelling capability: Floating Wind Farm Modeling	1	DTU

8	Product/Software	Open-Source Software	1	University Stuttgart
9	Product/Software	Software	1	University of Stuttgart
10	Service	O&M planning and strategy tool	4	Ramboll
11	Service	Refinement of certification process for FOWT	7	UL
12	Service	Improved testing concept for FOWT	7	UL
13	Service	BIM model	4	Ramboll
14	Knowledge & IP	Floating Turbine wake Investigation	1	DTU
15	Knowledge & IP	Floating wind turbine Installation Modeling	4	DTU
16	Knowledge & IP	Limits of heavy-lift maintenance, large component exchange	4	Ramboll
17	IP	Innovative shared mooring system	1-2	University of Stuttgart
18	Product	1st campaign of experimental tests related to mooring and cable dynamics in COCOTSU flume		FIHAC
19	Product	2nd campaign of experimental tests related to integrated FOWT in Cantabrian Coastal and Ocean Basin and in Wind Tunnel		FIHAC and POLIMI
20	Service	Best practices and testing recommendations for experimental modelling of mooring and cable dynamics for FOWT		FIHAC
21	Service	Layout optimization algorithm		IREC

4 LEAN canvas

In order to complete the analysis of the exploitable results and decide the most appropriate exploitation strategy to the market and potential customers, further analysis has been made of selected key exploitable results. With this goal, LEAN canvas of those selected ERs has been prepared.

The canvas is a useful way to lay out and have the exploitation model at a glance, in one page. There are different canvas models that can be used with such goal, like the Lean canvas or the Business Model Canvas. In this case, we have opted for the Lean Canvas, by Ash Maurya, focused on the competitive advantage and the solutions offered by the product/technology and desgined towards entrepreneurship, thus closer to R&D projects than the Business Model Canvas.

The end goal of a lean canvas is that an unknowing third party is able to review it from start to end and through this revision understand what the result and the exploitation model are. They will understand the problem in focus, the customer groups targeted, the solution supplied, why the proposed solution differentiates from possible competitors, how it is intended to create value, etc.

Therefore, key aspects to have in mind when drafting a Lean Canvas are:

1) Who is my customer?
2) What is their problem?
3) How do they solve the problem now?
4) Is our product/technology/solution more efficient than their current one?

The specific concepts taken into account in the canvas together with the definition of each concept can be seen in the template below:

Lean Canvas template

<table>
<tr>
<td rowspan="2">Problem (1)
Top 3 problems

Existing alternatives to address the same problems</td>
<td>Solutions (4)
Top 3 features
Based on the VP
(why it is better than others)</td>
<td rowspan="2">Unique Value proposition (3)
Why you are different and worth buying</td>
<td>Unfair Advantage (6)
What is it that gives you an advantage in front of the competition?</td>
<td rowspan="2">Customer segment (2)

Early adopters</td>
</tr>
<tr>
<td>Key Metrics (8)</td>
<td>Channels (5)
How will you reach your customers?</td>
</tr>
<tr>
<td colspan="2">Cost structure (9)
Which will be the main costs when the solution is ready for the market</td>
<td colspan="3">Revenue Streams (7)</td>
</tr>
</table>

5 Conclusions

This deliverable updates and upgrades the exploitation strategy of the COREWIND project and provides the final list of Exploitable Results (ERs). One ER has been added to the list of those previously identified and undergone the same analysis. Several other ERs have been updated taking into account the progress made within the project. The final list includes a total of 21 ERs identified: 11 “Products/Application”, 4 “Knowledge & IP” and 6 “Services”.

As a step forward in the process of exploitable result management initiated in D7.3 and further developed in D7.4, this deliverable includes tools to define and present the exploitation model for the generated results. In this sense, the LEAN canvas model has been used to illustrate the exploitation model chosen, paying special attention to the potential customers and early adopters, their needs and how the COREWIND technologies offer advantanges compared to the current solutions on the market. This analysis and the proposed strategies are aligned with other tasks within WP7, namely Market and Stakeholder analysis (T7.1) and will be critical for the definition of exploitation plans (T7.3), and commercialization plans (T7.4).

In particular, the methodology to analyse the exploitation model of the identified ERs has been presented, using a widely known and recognized tool like the canvas. Among the strategic ERs whose exploitation model has been proposed, the most appropriate strategy has been selected for each of them.