



# D5.1





# WILLOW

Project: Wholistic And Integrated Digital Tools for Extended Lifetime and Profitability of Offshore Wind Farms	
<b>Project number:</b>	1011122184
<b>Project acronym:</b>	WILLOW
<b>Call:</b>	HORIZON-CL5-2022-D3-03
<b>Topic:</b>	HORIZON-CL5-2022-D3-03-04
<b>Type of action:</b>	HORIZON - RIA
<b>Project starting date:</b>	01/10/2023
<b>Project duration:</b>	36 months

## Deliverable D5.1

### Project web-site

Due date of deliverable	Month 3
Actual submission date	2023-12-19
Organization name of lead contractor for this deliverable	CEIT
Dissemination level	PU
Revision	1.0



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DRAFT PREPARATION			
Version	Publication date	Content	Author
0.0	28/11/2023	First Draft	Ainhoa Cortés (CEIT)
0.1	03/12/2023	Contributions from VUB and TSI	Ezio Mosciatti (TSI) Koen Robbelein (VUB)

HISTORY OF CHANGES		
Version	Publication date	Change
1.0	29/11/2023	First draft of the document
2.0	19/12/2023	Second draft of the document



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## EXECUTIVE SUMMARY

The present document constitutes Deliverable D5.1 “Project website” in the framework of the Project titled “Wholistic And Integrated Digital Tools for Extended Lifetime and Profitability of Offshore Wind Farms” (Project Acronym: WILLOW; Grant Agreement No 1011122184.).

This document has been prepared to provide a first overview of the webpage that has been created for this research project.

The website of the WILLOW project has been set up in the following link: <https://willow-project.eu/>. This website has a tree structure composed by the following sections: “Home”, “About”, “Partners”, “WILLOW Concept”, “News”, “Documents”, “Public Data”, “Related Projects” and “Contacts”.

Additionally, two icons have been added to the Social Media channels of the project (LinkedIn, and Twitter).



# TABLE OF CONTENTS

DISCLAIMER .....	3
EXECUTIVE SUMMARY .....	4
TABLE OF CONTENTS .....	5
LIST OF FIGURES .....	5
LIST OF TABLES .....	5
ABBREVIATIONS AND ACRONYMS .....	6
1 STRUCTURE AND CONTENT OF THE WILLOW WEBSITE .....	7
2 CONCLUSIONS.....	16

## LIST OF FIGURES

FIGURE 1 FRONT PAGE OF THE WILLOW WEBSITE .....	8
FIGURE 2 "ABOUT" SECTION OF THE WILLOW WEBSITE .....	9
FIGURE 3 "WILLOW CONCEPT" SECTION OF THE WILLOW WEBSITE .....	10
FIGURE 4 "PARTNERS" SECTION OF THE WILLOW WEBSITE .....	11
FIGURE 5 "RESULTS" SECTION OF THE WILLOW WEBSITE.....	12
FIGURE 6 "RELATED PROJECTS" SECTION OF THE WILLOW WEBSITE .....	13
FIGURE 7 "CONTACT" SECTION OF THE WILLOW WEBSITE.....	14
FIGURE 8 "PRIVATE AREA" SECTION OF THE WILLOW WEBSITE .....	15

## LIST OF TABLES

NO TABLE OF FIGURES ENTRIES FOUND.



## ABBREVIATIONS AND ACRONYMS

Abbreviations / Acronyms	Description
CBM	Condition-Based Maintenance
CM	Condition Monitoring
DSS	Decision Support Systems
EPC	Engineering, Procurement and Construction
FEM	Finite Element Method
IPS	Indoor Positioning System
LCoE	Levelized Cost of Energy
OPEX	Operational Expenditures
O&M	Operation and Maintenance
PdM	Predictive Maintenance
RUL	Remaining Useful Lifetime
SHM	Structural Health Monitoring
UAV	Unmanned Aerial Vehicle
US	Ultrasound
UWB	Ultra-Wide Band
WT	Wind Turbine
WF	Wind Farm
WFO	Wind Farm Operator



# 1 STRUCTURE AND CONTENT OF THE WILLOW WEBSITE

The content of the WILLOW website will be dynamic and constantly updated with the aim of keeping the public information updated according to the project achievements. All partners are involved and will be requested to participate in different dissemination activities.

The WILLOW webpage is hosted at <https://willow-project.eu/>, created with the last version of CMS WordPress and compatible with the latest versions of the different browsers. This webpage has been specifically tested in Chrome Version 79.0.3945.88 (Build official) (64 bits), Microsoft Edge 44.18362.449.0 and Firefox 71.0 (64-bit). It will be used for the promotion of the research results (public deliverables), information (news and events) of the interested public, as well as for communication among the members of the consortium.

As mentioned, the website will be updated frequently with the project activities: meetings, announcements of events, conferences workshops, as well as with the project progress and relevant outcomes.

The sections of the web page and their descriptions are:

- **HOME:** Front page of the web site (Figure 1).
- **ABOUT:** Main objective of the WILLOW project (Figure 2).
- **WILLOW CONCEPT:** Description of the WILLOW concept providing the block diagram of the WILLOW solution and explaining the technical developments involved (Figure 3).
- **PARTNERS:** Presentation of the partners and link to their web pages. Partners will play a leading role in promoting public exposure and awareness of the project by providing a link to the WILLOW public website in their institutional websites (Figure 4).
- **NEWS:** The WILLOW webpage will announce important events such as progress in project development, contribution to conferences, meetings, events, etc. The social media channels created for this project (Twitter and LinkedIn) will be linked to the webpage, as well.
- **RESULTS:** Repository of the public deliverables/documents generated by WILLOW and media package to be generated (Figure 5).
- **PUBLIC DATA:** Data sets generated by the WILLOW solution and available for the public.
- **RELATED PROJECTS:** Related projects (Figure 6).
- **CONTACTS:** Contact of the coordinator to gather the request for information about WILLOW. The project coordinator (CEIT) will maintain the website during the entire project lifetime and extend it to 5 extra years for dissemination purposes (Figure 7).
- **PRIVATE AREA:** as can be seen in Figure 8, at the bottom of the webpage a private area has been included which is directly linked to the WILLOW Repository.

[https://tecnun365.sharepoint.com/sites/CEIT-Proyectos/04-000275/Documentos%20compartidos/Forms/AllItems.aspx?RootFolder=%2Fsites%2FC\\_EIT%2DProyectos%2F04%2D000275%2FDocumentos%20compartidos%2FCOMPARTI\\_DOS%20CON%20EXTERNOS&FolderCTID=0x0120003C852089F227264BB97F8C2E5780AE15](https://tecnun365.sharepoint.com/sites/CEIT-Proyectos/04-000275/Documentos%20compartidos/Forms/AllItems.aspx?RootFolder=%2Fsites%2FC_EIT%2DProyectos%2F04%2D000275%2FDocumentos%20compartidos%2FCOMPARTI_DOS%20CON%20EXTERNOS&FolderCTID=0x0120003C852089F227264BB97F8C2E5780AE15)

The material and the content of the website will be developed mainly in English, although some news or documents could be done in other mother languages from the partner's home countries.

An account of Analytics and Search Console have been created and associated to the WILLOW email ([analitica@willow-project.eu](mailto:analitica@willow-project.eu)). Thus, we will be capable to analyse the number of the



webpage visitors, their locations, how many times they view or download the public documents or the public data sets.

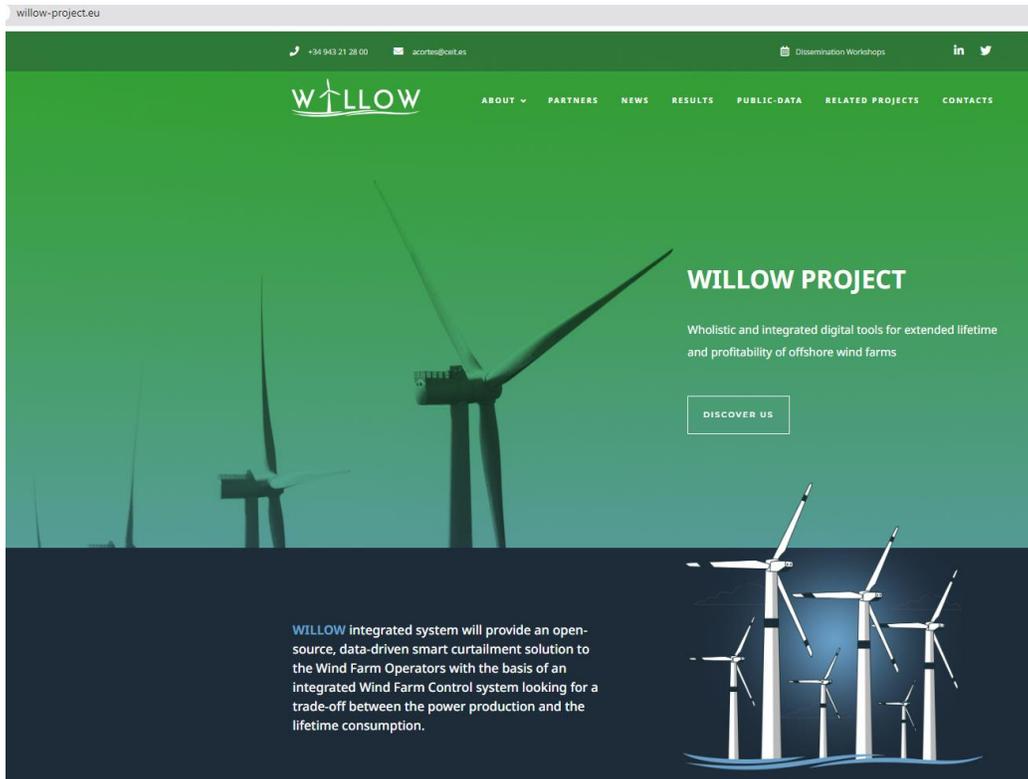


Figure 1 Front page of the WILLOW website

Project Acronym  
**WILLOW**

Project Title	Project reference	EU Grant	Project Coordinator
Wholistic and Integrated digital tools for extended Lifetime and profitability of Offshore Wind farms	HORIZON-CL5-2022-09-03-04 Number: 101122184	-5.8 ME	Ceit (Ceit Technology Center) REVISAR

Project Start Date	Project End Date	Type of Action	Budget
2023-10-01	2026-09-30	HORIZON-RIA	-18 ME

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 851207. The dissemination of results herein reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.

As wind energy (and other weakly controllable renewables) takes a larger share in the energy markets, wind farms (WF) take a more important role in power system stability. The current scheme of systematically maximising power production while solving for the variability of wind with other dispatchable electricity generation sources bidding in day-ahead markets is expected -and already witnessed- to be challenged<sup>1</sup>. Instead, wind farms will actively contribute to power system stability by delivering a commanded (rather than maximum) power output following the needs of the grid operator. This implies downregulating (also known as derating) the wind farm (producing less than available power), and hence the individual turbines. Playing with possible dispatch combinations brings an additional degree of freedom, that may be used to prevent structural degradation of the asset.

Current practice consists often in downregulating each turbine by the same amount, i.e. uniform power dispatch between the turbines, or in stopping a few turbines and letting the others produce maximum power. This is done in a static, open loop way without a supervisory WF controller to actively track the commanded total power in closed loop, with the advantage of not making use of -and hence not needing knowledge about -available power.

XXXXXXXXX 14%

Figure 2 “ABOUT” Section of the WILLOW website



Figure 3 “WILLOW CONCEPT” Section of the WILLOW website

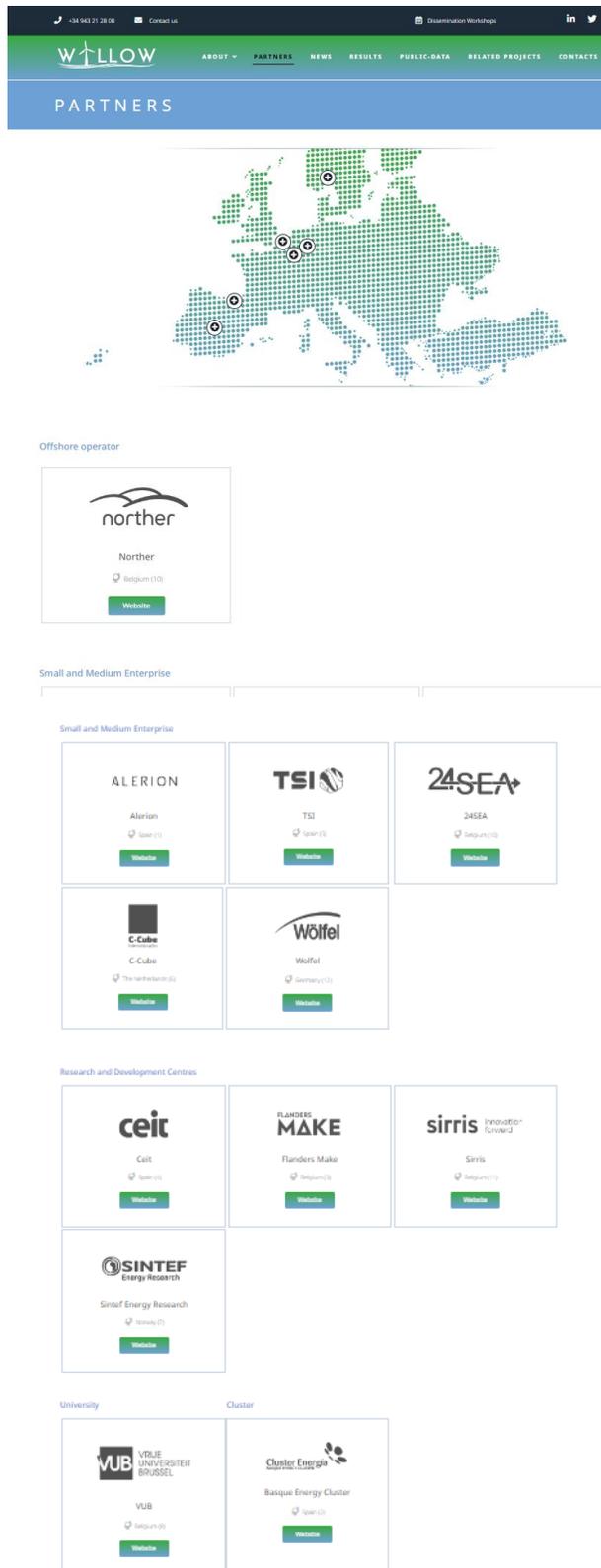
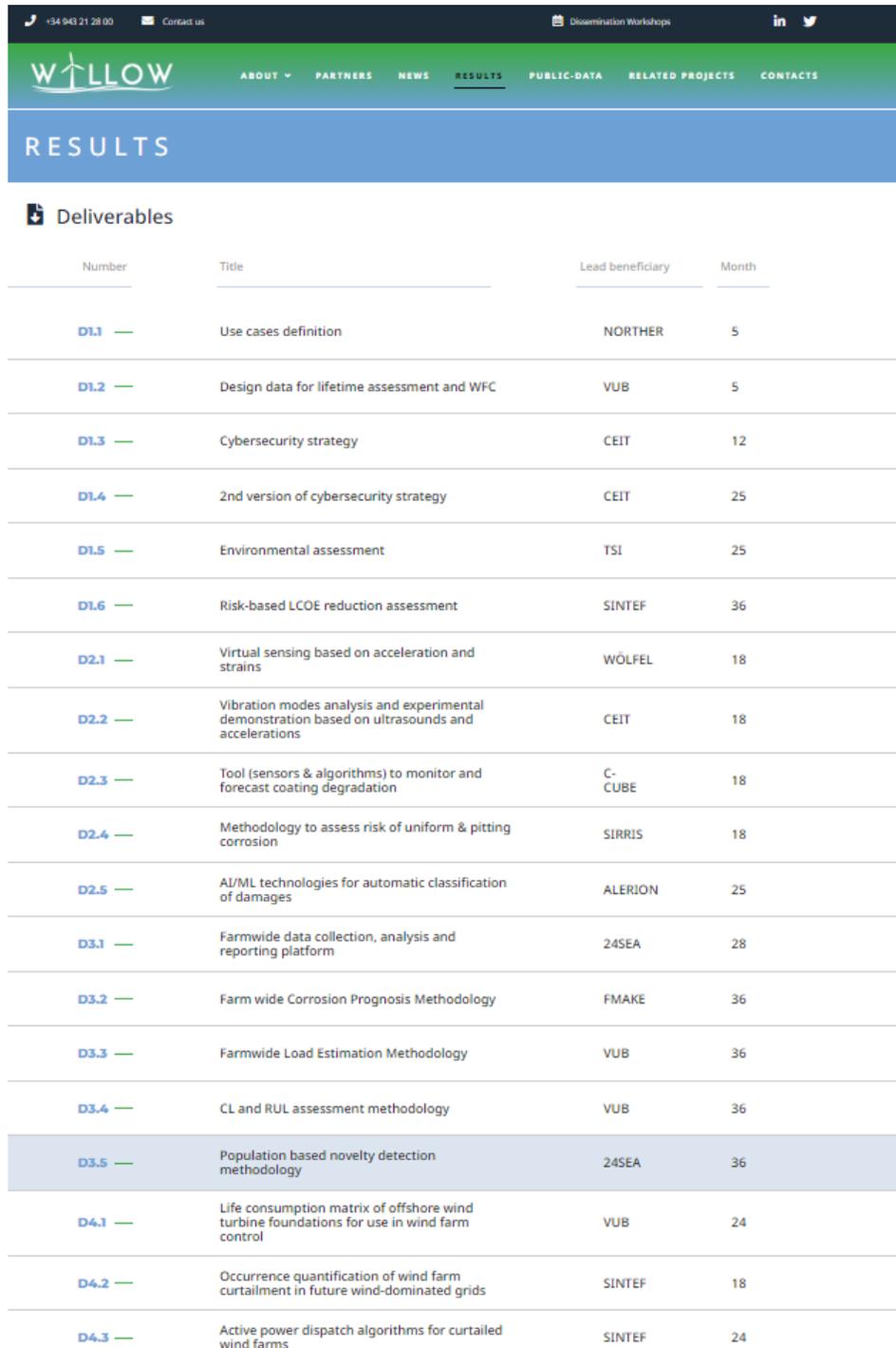


Figure 4 “PARTNERS” Section of the WILLOW website



The screenshot shows the 'RESULTS' section of the WILLOW website. At the top, there is a navigation bar with the WILLOW logo and menu items: ABOUT, PARTNERS, NEWS, RESULTS (highlighted), PUBLIC-DATA, RELATED PROJECTS, and CONTACTS. Below the navigation bar is a large blue header with the word 'RESULTS' in white. Underneath, there is a section titled 'Deliverables' with a download icon. The main content is a table with four columns: Number, Title, Lead beneficiary, and Month. The table lists 20 deliverables, each with a unique ID (e.g., D1.1, D2.1, D3.1, D4.1), a title, a lead beneficiary, and a completion month. The row for D3.5 is highlighted in light blue.

Number	Title	Lead beneficiary	Month
D1.1	Use cases definition	NORTHER	5
D1.2	Design data for lifetime assessment and WFC	VUB	5
D1.3	Cybersecurity strategy	CEIT	12
D1.4	2nd version of cybersecurity strategy	CEIT	25
D1.5	Environmental assessment	TSI	25
D1.6	Risk-based LCOE reduction assessment	SINTEF	36
D2.1	Virtual sensing based on acceleration and strains	WÖLFEL	18
D2.2	Vibration modes analysis and experimental demonstration based on ultrasounds and accelerations	CEIT	18
D2.3	Tool (sensors & algorithms) to monitor and forecast coating degradation	C-CUBE	18
D2.4	Methodology to assess risk of uniform & pitting corrosion	SIRRIS	18
D2.5	AI/ML technologies for automatic classification of damages	ALERION	25
D3.1	Farmwide data collection, analysis and reporting platform	24SEA	28
D3.2	Farm wide Corrosion Prognosis Methodology	FMAKE	36
D3.3	Farmwide Load Estimation Methodology	VUB	36
D3.4	CL and RUL assessment methodology	VUB	36
D3.5	Population based novelty detection methodology	24SEA	36
D4.1	Life consumption matrix of offshore wind turbine foundations for use in wind farm control	VUB	24
D4.2	Occurrence quantification of wind farm curtailment in future wind-dominated grids	SINTEF	18
D4.3	Active power dispatch algorithms for curtailed wind farms	SINTEF	24

Figure 5 “RESULTS” Section of the WILLOW website

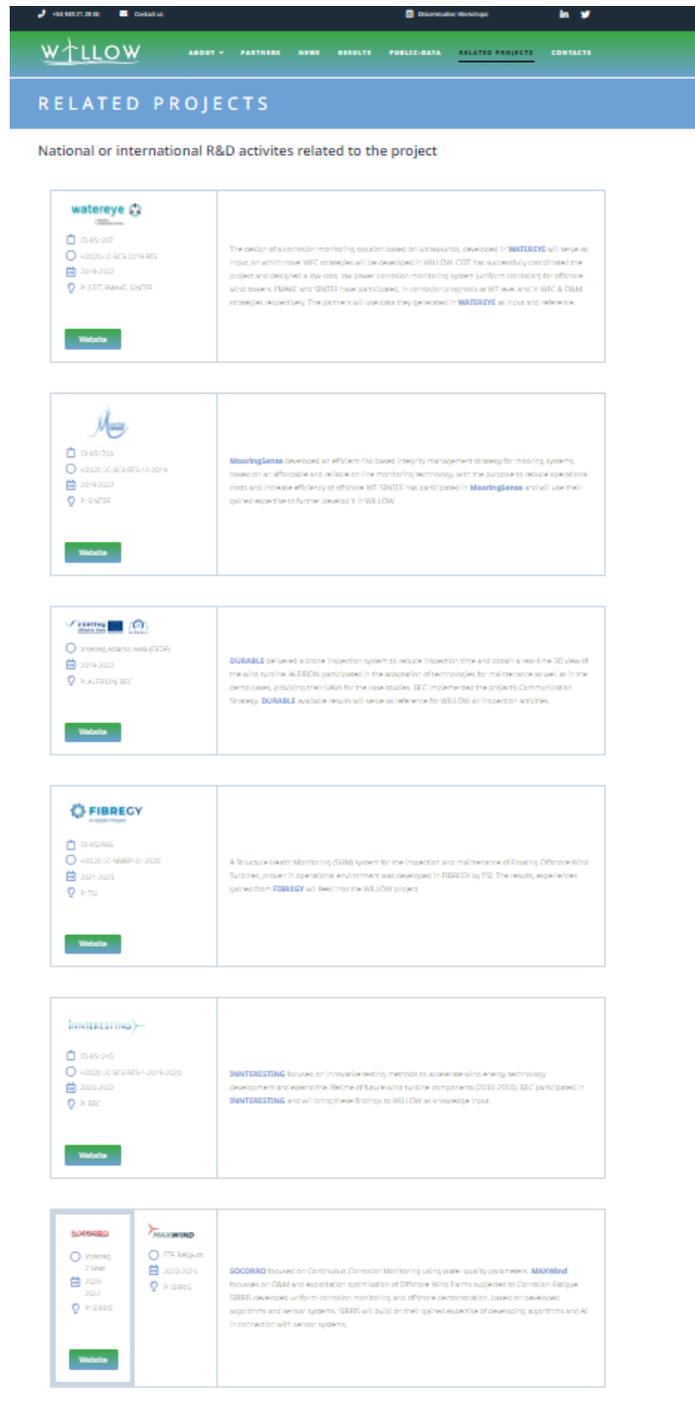


Figure 6 “RELATED PROJECTS” Section of the WILLOW website

+34 943 21 28 00
Dissemination Workshops

WILLOW

[ABOUT](#)
[PARTNERS](#)
[NEWS](#)
[RESULTS](#)
[PUBLIC-DATA](#)
[RELATED PROJECTS](#)
[CONTACTS](#)

CONTACTS



**WILLOW** is conducted  
by a consortium of research groups and companies led by **Ceit**.

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**Should you need more information about the WILLOW project, please contact us:**  
Ainhoa Cortés, Project Coordinator. [scortes@ceit.es](mailto:scortes@ceit.es)

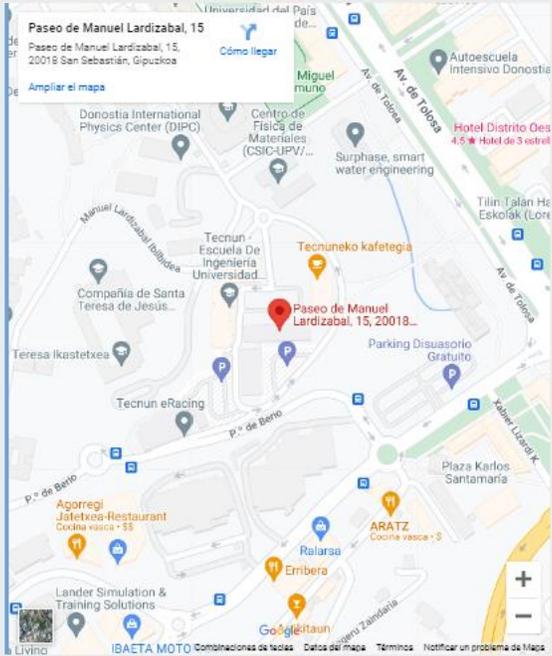


Figure 7 “CONTACT” Section of the WILLOW website

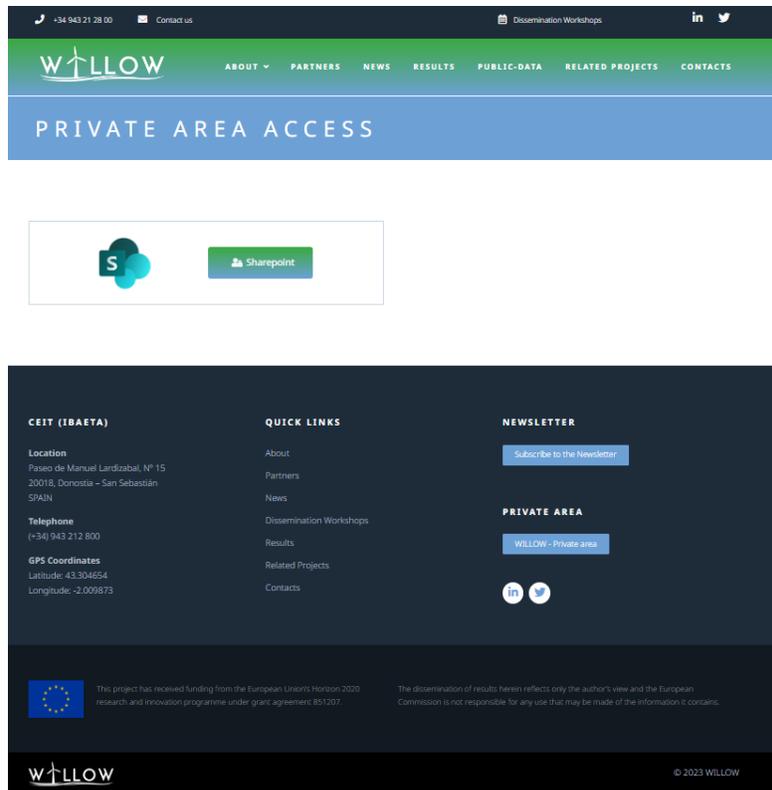


Figure 8 “PRIVATE AREA” Section of the WILLOW website

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## 2 CONCLUSIONS

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This deliverable presents the design of the website that has been built and adapted to the WILLOW project, as part of the communication and dissemination tools. The purpose of this webpage is to increase the visibility of the WILLOW project presenting the most important outcomes and achievements of the project.

