



D5.2





WILLOW

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

Deliverable D5.2

Communication, Dissemination and Exploitation Plan

Due date of deliverable	Month 03
Actual submission date	2023-12-19
Organization name of lead contractor for this deliverable	Basque Energy Cluster
Dissemination level	PU
Revision	3.0



Authors

Author(s)	Basque Energy Cluster (BEC) Nerea Guinea Marcos Suarez
Contributor(s)	Ainhoa Cortés (CEIT)

DISCLAIMER

Funded by the European Union. Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or European Commission. Neither the European Union nor the granting authority can be held responsible for them.

DRAFT PREPARATION			
Version	Publication date	Content	Author
0.0	24/11/2023	First Draft	Nerea Guinea, Marcos Suarez (BEC)
0.1	28/11/2023	Second Draft	Ainhoa Cortés (CEIT)

HISTORY OF CHANGES		
Version	Publication date	Change
1.0	28/11/2023	First draft of the document
2.0	11/12/2023	Second draft of the document
3.0	19/12/2023	Third draft of the document



EXECUTIVE SUMMARY

The present document constitutes Deliverable D5.2: Communication, Dissemination and Exploitation Plan, 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 definition of the overall strategy and communication, dissemination, and exploitation plan of the project. The plan sets clear communication objectives, identifying target groups, choosing pertinent messages, and using the right media and means, proportionate to the scale of the project.

The content of the document can be summarized as follows:

- Section 1 introduces the definition of the communication and dissemination terms in order to understand the division of the following activities.
- Section 2 gives an overview of the Communication, Dissemination and Exploitation strategy, defining its objectives, target groups and possible collaborations with other projects.
- Section 3 details the Communication Strategy, presenting the main communication tools, channels and activities.
- Section 4, related to the previous one, shows the Monitoring and Management Plan for the Communication Strategy.
- Section 5 details the Dissemination Strategy, presenting the dissemination activities that are going to be carried out.
- Section 6, related to the previous one, shows the Monitoring and Management Plan for the Dissemination Strategy.
- Section 7 details the exploitation Strategy, explaining each of the Key Exploitable Results.



TABLE OF CONTENTS

DISCLAIMER	3
EXECUTIVE SUMMARY	4
TABLE OF CONTENTS	5
LIST OF FIGURES	6
ABBREVIATIONS AND ACRONYMS	7
1 INTRODUCTION AND CONTEXT	8
1.1 ARTICLE 17 OF THE GRANT AGREEMENT	8
1.2 DIFFERENCES BETWEEN COMMUNICATION AND DISSEMINATION	11
2 COMMUNICATION, DISSEMINATION AND EXPLOITATION STRATEGY	13
2.1 OBJECTIVES	13
2.2 TARGET GROUPS.....	14
2.3 COLLABORATION WITH OTHER PROJECTS AND INITIATIVES	15
3 COMMUNICATION STRATEGY	16
3.1 PROJECT IDENTITY.....	16
3.1.1 <i>Project logo</i>	17
3.1.2 <i>Graphical layout guidelines</i>	17
3.1.3 <i>Templates</i>	18
3.2 COMMUNICATION MATERIAL	18
3.2.1 <i>General presentation</i>	19
3.2.2 <i>Infographics</i>	19
3.2.3 <i>Project roll-up</i>	19
3.2.4 <i>Brochure</i>	19
3.2.5 <i>Newsletters</i>	20
3.3 PROJECT WEBSITE	21
3.4 PROJECT VIDEOS.....	23
3.4.1 <i>Introductory video</i>	23
3.4.2 <i>Final video</i>	23
3.5 ARTICLES IN GENERAL MEDIA.....	24
3.6 SOCIAL MEDIA.....	24
3.7 PRESS RELEASES	24
4 COMMUNICATION MONITORING & MANAGEMENT.....	26
4.1 COMMUNICATION MONITORING.....	26
4.2 COMMUNICATION MANAGEMENT.....	27
5 DISSEMINATION STRATEGY	29
5.1 SCIENTIFIC OUTREACH.....	29



5.1.1	Scientific journals	30
5.1.2	Participation in scientific conferences	31
5.2	ADVISORY BOARD	32
5.3	INTERNATIONAL EVENTS	32
5.4	WORKSHOPS	33
5.5	CLUSTERING WITH SIMILAR EU-FUNDED PROJECT AND RELATED INITIATIVES	33
5.6	WEBINARS	34
5.7	WILLOW FINAL EVENT	34
6	DISSEMINATION MONITORING & MANAGEMENT	35
6.1	DISSEMINATION MONITORING	35
6.2	DISSEMINATION MANAGEMENT	35
7	EXPLOITATION STRATEGY	37
7.1	EXPLOITATION PLAN	37
7.2	KEY EXPLOITABLE RESULTS	37
7.2.1	KER1 – Open source data-driven tools	37
7.2.2	KER2 – Digital and physical tools & interoperable frameworks and controls	38
7.2.3	KER3 – Novel Structural Health Monitoring system at turbine level	39
7.2.4	KER4 – New R&D projects	41
7.2.5	KER5 – Training contents	41
7.2.6	KER6 – Standardisation guidelines	41
7.2.7	KER7 – Publications	41

LIST OF FIGURES

FIGURE 1 – KEY DIFFERENCES BETWEEN COMMUNICATION AND DISSEMINATION	12
FIGURE 2 – KEY ELEMENTS OF A CDEP	13
FIGURE 3 – TARGET GROUPS FOR EACH COMMUNICATION ACTIVITY	16
FIGURE 4 – LOGO OF WILLOW	17
FIGURE 5 – WILLOW BRAND COLOURS TYPEFACE AND SOCIAL MEDIA ICON	17
FIGURE 6 – DELIVERABLE TEMPLATE	18
FIGURE 7 – PRESENTATION TEMPLATE	18
FIGURE 8 – WILLOW WEBSITE	22
FIGURE 9 – COMMUNICATION MILESTONES	26
FIGURE 10 – COMMUNICATION MONITORING SCOREBOARD	27
FIGURE 11 – ROLE OF PARTNERS IN COMMUNICATION ACTIVITIES	28
FIGURE 12 – TARGET GROUPS FOR EACH DISSEMINATION ACTIVITY	29
FIGURE 13 – DISSEMINATION MONITORING SCOREBOARD	35



ABBREVIATIONS AND ACRONYMS

Abbreviations / Acronyms	Description
AI	Artificial Intelligence
BEC	Basque Energy Cluster
CDEP	Communication, Dissemination & Exploitation Plan
CDES	Communication, Dissemination & Exploitation Strategy
CINEA	European Climate, Infrastructure and Environment Executive Agency
CL	Consumed Life
EC	European Commission
KER	Key Exploitable Results
KPI	Key Performance Indicator
ML	Machine-Learning
OEM	Original Equipment Manufacturer
O&M	Operation & Maintenance
OWTG	Operating Wind Turbine Generator
RTO	Research & Technology Organisation
RUL	Remaining useful life
SHM	Structural Health Monitoring
VUB	Vrije Universiteit Brussel
WFO	Wind Farm Operator
WP	Work Package



1 Introduction and Context

This document is a deliverable of the WILLOW project, funded by the European Commission (EC) under its call HORIZON-CL5-2022-D3-03 (Sustainable, secure and competitive energy supply). The project aims to design a novel Structural Health Monitoring (SHM) System able to provide high quality data to perform a reliable fleet life assessment using physical models and AI methods which will be used for decision-making and maintenance scheduling.

The document is the second deliverable of Work Package (WP) 5 “Communication, dissemination and exploitation activities” and intends to outline the communication and dissemination activities to be carried out along the project lifecycle to achieve its objectives, as well as the exploitation strategy.

The Communication, Dissemination and Exploitation Plan (CDEP) is one of the core documents for WP5 activities. It is key for a good coordination of all the communication and dissemination initiatives and for defining the messages about the project and its results that should be targeted to different audiences. Effective communication and dissemination will enhance the visibility of the project results and encourage interested stakeholders to actively participate, thus achieving successful integration.

Specifically, this CDEP aims to:

- Outline the main objectives of the project communication, dissemination and exploitation strategies.
- Identify the target groups for the communication and dissemination objectives and actions.
- Define the tools and channels to be implemented and the activities required to reach targeted groups.
- Measure the impact and effectiveness of WILLOW communication and dissemination activity through identified KPIs and established target values.
- Establish how the communication and dissemination activities will be managed and administrated.

1.1 Article 17 of the Grant Agreement

Article 17 of the WILLOW Grant Agreement with the European Climate, Infrastructure and Environment Executive Agency (CINEA) covers activities related to “Communication, Dissemination and Visibility”. Due to its relevance for the deployment of the Communication, Dissemination and Exploitation Plan, its text is shown in this chapter and should be considered when developing all communication and dissemination activities. Especially relevant are the instructions regarding the acknowledgement of EU funding.



ARTICLE 17 — COMMUNICATION, DISSEMINATION AND VISIBILITY**17.1 Communication — Dissemination — Promoting the action**

Unless otherwise agreed with the granting authority, the beneficiaries must promote the action and its results by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1 and in a strategic, coherent and effective manner.

Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority.

17.2 Visibility — European flag and funding statement

Unless otherwise agreed with the granting authority, communication activities of the beneficiaries related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge EU support and display the European flag (emblem) and funding statement (translated into local languages, where appropriate):



Funded by the
European Union



Co-funded by the
European Union



Funded by the
European Union



Co-funded by the
European Union

The emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text.

Apart from the emblem, no other visual identity or logo may be used to highlight the EU support.

When displayed in association with other logos (e.g. of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos.



For the purposes of their obligations under this Article, the beneficiaries may use the emblem without first obtaining approval from the granting authority. This does not, however, give them the right to exclusive use. Moreover, they may not appropriate the emblem or any similar trademark or logo, either by registration or by any other means.

17.3 Quality of information — Disclaimer

Any communication or dissemination activity related to the action must use factually accurate information.

Moreover, it must indicate the following disclaimer (translated into local languages where appropriate):

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them.”

17.4 Specific communication, dissemination and visibility rules

Specific communication, dissemination and visibility rules (if any) are set out in Annex 5.

17.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

SPECIFIC RULES

COMMUNICATION, DISSEMINATION, OPEN SCIENCE AND VISIBILITY (— ARTICLE 17)

Open Science

Open science: open access to scientific publications

The beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. In particular, they must ensure that:

- at the latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a trusted repository for scientific publications
- immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g. CC BY-NC, CC BY-ND) and



- information is given via the repository about any research output or any other tools and instruments needed to validate the conclusions of the scientific publication.

Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.

Metadata of deposited publications must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent, in line with the FAIR principles (in particular machineactionable) and provide information at least about the following: publication (author(s), title, date of publication, publication venue); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

Only publication fees in full open access venues for peer-reviewed scientific publications are eligible for reimbursement.

1.2 Differences between Communication and Dissemination

Communication and Dissemination have different goals and targets:

- Communication is 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.
- Dissemination refers to sharing research results with potential users - peers in the research field, industry, other commercial players and policymakers. By sharing research results with the rest of the scientific community, WILLOW aims to contribute to the progress of science in general.

The main differences between both concepts are shown in the following figure extracted from the European Commission's presentation "Dissemination and Exploitation in Horizon 2020" as part of H2020 Coordinators' Day.



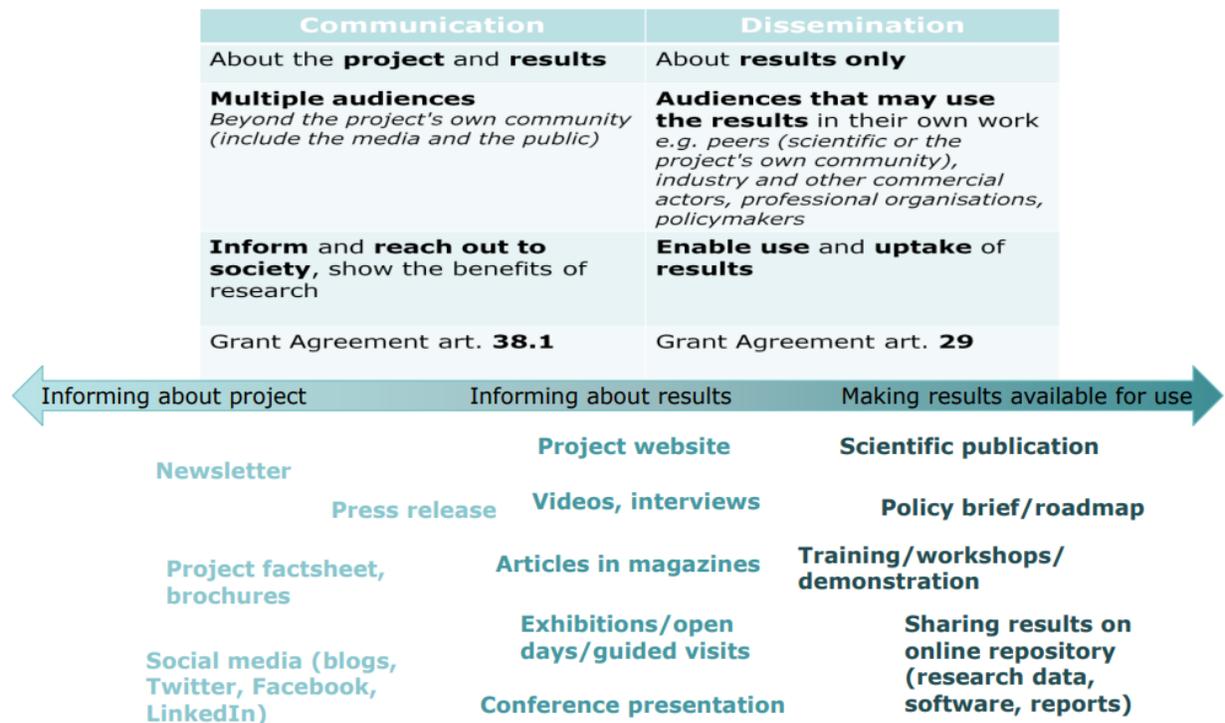


Figure 1 – Key differences between Communication and Dissemination

In any case, it is worth noting that tools, channels and activities will sometimes overlap, having an impact in terms both of communication and dissemination. For example, the project website will be the main point of information about WILLOW for multiple audiences (i.e. communication) but also the way for scientists to access published papers connected to the project (i.e. dissemination).

In this sense, this document includes both Communication Strategy and Dissemination Strategy. Communication Strategy includes all marketing tools generated for the project (identity, website, video, communication material) as well as activities mostly connected to non-specialist audiences (articles in general media, social media, press releases). On the other hand, the Dissemination Strategy includes activities mostly connected to specialist audiences (scientific outreach, EU events, workshops, clustering with similar EU-funded projects and related initiatives, webinars and WILLOW final event).

2 Communication, Dissemination and Exploitation Strategy

2.1 Objectives

The Communication, Dissemination and Exploitation Strategy (CDES) is critical for the successful promotion and sustainability of WILLOW results. As such, the main Objectives will be:

- O1. To raise awareness and inform stakeholders of WILLOW results;
- O2. To transfer knowledge to relevant stakeholders;
- O3. To amplify interaction with stakeholders and potential users to obtain feedback to enhance the exploitation opportunities;
- O4. To ensure the broad applicability of the results, considering regulations and standards;
- O5. To guarantee that users have a basic understanding of WILLOW methods and how it operates; and
- O6. To foster exploitation of WILLOW methods beyond project's lifetime based on suitable business models and exploitation pathways.

The Communication, Dissemination, and Exploitation Plan will help achieving these objectives and maximising the impact of the project during its lifetime and beyond. In this regard, the key elements of the CDEP are summarised in the following figure and later described in the document, where the optimal and relevant interactions among these elements are defined.



Figure 2 – Key elements of a CDEP

2.2 Target groups

WILLOW stakeholders are divided into the following target groups:

- A) **Research organisations:** World-leading research institutes and academia in the domain of wind farm monitoring, simulation and control.

Type of information: Research results and general information on development in the field of open-source solutions addressing current pitfalls in state-of-the-art wind farm simulation.

Channels and tools: Scientific conferences. International reference Journals; events and joint events; Guest lectures/ courses

- B) **Potential end users. Wind industry audience:** Wind Farm Operators (WFOs), i.e. EnBW, EDF, Iberdrola, etc.; wind turbine manufacturers (also known as Original Equipment Manufacturers, OEMs); suppliers of structural components (tower, transition piece, foundations); Engineering & Consultancy companies specialised in offshore wind energy projects; Operation & Maintenance (O&M) engineering companies; large metallic structures constructors; companies which provide services such as inspections or monitoring; insurance companies; industry associations.

Type of information: (i) WILLOW results that can help to achieve improved decision support for operation & maintenance activities and decommissioning strategies taking into account loads and lifetime thanks to: 1) solutions that will improve considerably the detection, quantification, classification of damages with the final aim of getting a remote and reliable map of the state of the structure in real-time in order to reduce the O&M costs (earlier detection, controlled repairs, future improvements in the design of the structure) and 2) a modelling framework that can help reaching better grid integration with an increase in the production rate and reduction of the O&M costs. (ii) Thermography and other sensors data (corrosion and coating degradation data).

Channels and tools: Scientific conferences; International reference Journals; International events; webinars; B2B meetings with OEMs.

- C) **EU policy actors and decision makers (sector specific):** EU Relevant DGs: DG Energy, DG RTD, CINEA, national public administrations and decision makers.

Type of information: WILLOW results can support reaching and maintaining the national and EU targets of offshore wind power by better providing insights for feed studies and decision support with respect to decommissioning and lifetime extension studies.

Channels and tools: WILLOW events and other events (conferences, etc.).

- D) **Standardisation and certification bodies:** ISO, Bureau Veritas, CEN, DNV-GL.



Type of information: Standardisation relevant results obtained in WILLOW.

Channels and tools: Presentation at relevant working groups.

- E) **General audience**: Citizens in general; civil society organisations; environmental NGOs; social NGOs.

While all these audiences will be the target of communication activities, only those that could benefit from knowledge about the results of the project will be the focus of the dissemination activities.

2.3 Collaboration with other projects and initiatives

WILLOW will be in close contact with different projects and initiatives that lead to effective collaboration by different means (e.g., synergies regarding wind energy technology development or Structural Health Monitoring).

Some of the initiatives that have been identified to match this profile are:

- FIBREGY (<https://fibregy.eu/>, 2021 – 2023). The overall objective of the FIBREGY project is to enable the extensive use of FRP materials in the structure of the next generation of large Offshore Wind and Tidal Power platforms.
- ROMAIN, (<https://projectromain.org/>, 2022-2025). ROMAIN aims to develop a complete robotic solution for inspection and repair of wind turbine blades, both onshore and offshore.
- CONWIND (2020 – 2023). The main objective of CONWIND is to develop scheduling and operation control algorithms for offshore wind farms that maximise or maintain power production, reduce turbine loads and comply with grid constraints.
- INTEGRIA (2023 – 2025). INTEGRIA's general objective is research into the structural integrity of high added value components, which will enable Basque companies to access the enormous potential market of floating offshore wind energy.
- SUPERSIZED (2020 – 2023). The Supersized 4.0 project aims to develop an integrated methodology to quantify the risks related to underperformance and unscheduled standstill due to failure. The key to realising this is to develop innovative methods using continuous data of each turbine in the wind farm.
- MAXWind (<https://www.owi-lab.be/maxwind>, 2020 – 2024). The global goal is to get a much better estimation of the remaining life of in-service wind turbines and to derive optimized inspection and maintenance plans for a group of similar structures.



3 Communication Strategy

The main objective of the communication activities is to inform target audiences about project objectives and activities and to promote its results to increase awareness and stimulate the interest of multiple stakeholders.

Focused communication activities have been planned and will be carried out through different tools and channels to maximize the project impact on the identified target groups. All the activities related to dissemination and communication will be reported in deliverable D5.4 “Communication & Dissemination activities report” on an annual basis (M12, M24 and M36).

As mentioned before, this chapter describes all marketing tools generated for the project (identity, website, video, communication material) as well as activities mostly connected to non-specialist audiences (articles in general media, social media, press releases).

Key communication activities will be informed to CINEA so that it may use its channels to increase the reach of the project.

Whenever possible, communication material will be published in a repository at the WILLOW project website.

As shown in the following figure, the communication activities planned for WILLOW address all considered target groups.

Communication activity	Target groups				
	Research organisations	Wind industry	EU policy actors and decision makers	Standardisation and certification bodies	General audience
Communication material		√	√		√
Website	√	√	√	√	√
Video		√	√		√
Articles in general media		√			√
Social media	√	√	√	√	√
Press releases		√			√

Figure 3 – Target groups for each communication activity

3.1 Project identity

A dedicated project identity is necessary for a coherent and effective communication. In the case of WILLOW, this identity is composed of three items: logo, graphical layout guidelines and templates.

All components of the project identity will be available by the end of M2.



3.1.1 Project logo

The project logo is the main identifier of the project. It should be clear and reach to the main topics involved in its development. In the case of WILLOW, the consortium selected a logo that was connected to wind energy (turbine), offshore wind (blue colour and the waves) and sustainability (green colour).

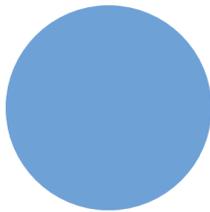


Figure 4 – Logo of WILLOW

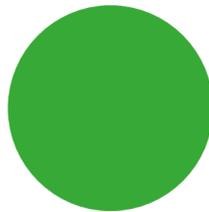
3.1.2 Graphical layout guidelines

Based on the project logo, additional graphical layout guidelines were defined to convey a unified image in all communication materials. As shown below, these mainly refer to brand colours and brand typeface, which is Montserrat, and an additional logo for social media.

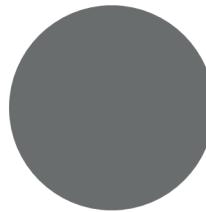
Brand colours



Color_1
RGB: R110 G161 B214
HEX: #6EA1D6



Color_2
RGB: R55 G169 B54
HEX: #37A936



Color_3
RGB: R105 G109 B110
HEX: #696D6E

Brand typeface

Montserrat

Social media & Applications icon



Figure 5 – WILLOW brand colours typeface and social media icon

3.1.3 Templates

Following graphical layout guidelines, templates to be used throughout the project have also been developed for deliverables (Word), minutes (Word), and presentations (PowerPoint).

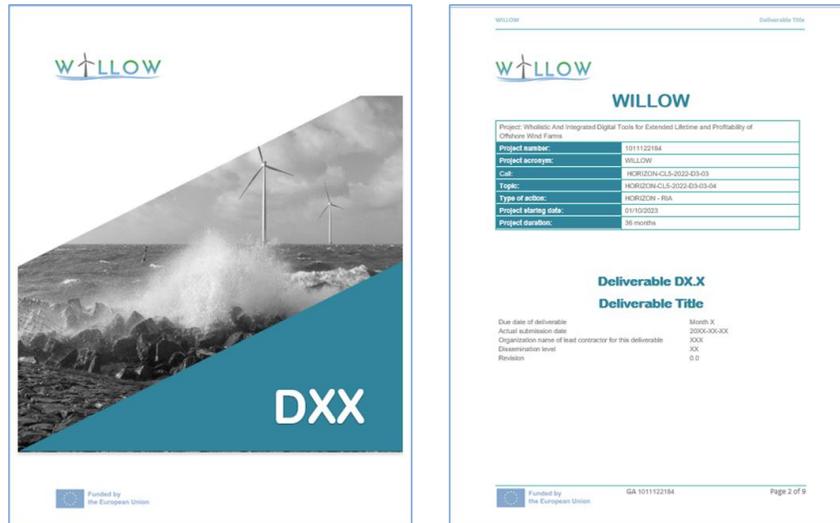


Figure 6 – Deliverable template



Figure 7 – Presentation template

3.2 Communication material

Aim: Promote the project and raise awareness of its objectives, development and results by providing relevant information to potential adopters of its results.

Key messages: Project objectives, why it is necessary (context) and why this project and its foreseen benefits and impact.

The communication material package contains five elements that will be used for communicating general aspects of the project throughout all activities.

3.2.1 General presentation

A general presentation of the project will be used by all partners as a main information deck for all their communication activities.

The presentation will have the following structure:

Project data

Consortium

1. Context & Challenges
2. Objectives
3. Work Packages & Activities
 - a. Use cases
 - b. Offshore test benches
4. Advisory Board
5. Outcomes
6. Expected impacts

The general presentation will be available in M2.

3.2.2 Infographics

In order to communicate complex information effectively and in an eye-catching format four infographics will be developed to demonstrate key concepts, main activities and results.

The first one will be completed by M2, and the rest will be elaborated as the consortium makes relevant progress.

3.2.3 Project roll-up

A roll-up giving the key facts and outputs of the project will be designed and made available in M2 for all consortium members to produce and use themselves.

3.2.4 Brochure

The brochure will demonstrate the most important elements of WILLOW. It will be used to provide additional information on printed material for trade fairs and other events for all partners to distribute individually to potential end-users and other stakeholders.

The brochure will be developed in M3.



3.2.5 Newsletters

Four electronic newsletters according to the project style will be issued to provide information on project progress and results, as well as on stakeholder activity.

The first issue, foreseen in M6, will give visibility to the project by providing an overview of the objectives, presenting the partners involved and outlining the expected results.

The second issue, during the second year of the project (M16), will focus on reporting the activities carried out during the second semester.

The third issue, to be released at the end of the second project year (M26), will focus on the preliminary results emerging from the research activity and the progress on stakeholder engagement.

Finally, the fourth issue, foreseen at the last project year (M36), will highlight the project achievements and the main results from the activity.

The newsletter will be released on the project website and social media in order to improve the project visibility and will also be emailed to consortium partners that will distribute it, when available, to their own contact groups. Some examples are:

- ALERION: Subscription database (~220 contacts), LinkedIn [profile](#) (~2.260 followers).
- BEC: Wind Energy contact list (~150 contacts in Basque organizations connected to wind energy), LinkedIn [profile](#) (~6.000 followers), Twitter [profile](#) (~2.000 followers).
- C-CUBE: LinkedIn [profile](#) (~350 followers).
- CEIT: Subscription database (~1.500 contacts), LinkedIn [profile](#) (~11.000 followers), Twitter [profile](#) (~3.800 followers).
- FLANDERS MAKE: LinkedIn [profile](#) (~13.000 followers), Twitter [profile](#) (~1.000 followers).
- NORTHER: LinkedIn [profile](#) (~2.000 followers), Twitter [profile](#) (~400 followers).
- SINTEF: LinkedIn [profile](#) of SINTEF Energy Research (~16.000 followers) and channel of NorthWind FME Research Center (specifically for offshore wind, with own newsletter and LinkedIn [profile](#) ~1.000 followers).
- SIRRIS: LinkedIn [profile](#) (~8.000 followers), Twitter [profile](#) (~1.800 followers), Pulse nieuwsbrief (~2.000 followers, published on weekly basis) OWI-lab [channel](#).
- TSI: LinkedIn [profile](#) (~5.000 followers), Twitter [profile](#) (~80 followers) and YouTube [channel](#) (~50 subscribers), contact list (~50 contacts).
- 24SEA: LinkedIn [profile](#) (~700 followers).
- VUB: LinkedIn [profile](#) (~104.000 followers), Twitter [profile](#) (~17.800 followers).



- WÖLFEL: LinkedIn [profile](#) (~2.000 followers).

In total, the newsletter is expected to reach over 200.000 people and the aim is to achieve 50 new subscribers per year to newsletter.

3.3 Project website

Aim: Build a community of interested stakeholders to promote interaction and interest in WILLOW framework for the analysis of wind energy systems and sensors and systems for continuous monitoring of coating degradation and pitting corrosion.

Key messages: The characteristics of WILLOW framework and tools and its benefits for wind farm control.

The website (www.willow-project.eu) will be the main communication tool for the project and the primary information source for the WILLOW target groups. Hence, the website address will feature in all project's communication material.

The purpose of the website will be to proactively promote the project and its results by providing targeted information to various audiences within and beyond the project's own community. The specific goals of this communication and dissemination channel are the following:

- To raise awareness about the project objectives, its results, its benefits, use and applicability.
- To recruit and seek the support of interested stakeholders and the general public.
- To build understanding and facilitate adoption of project results.
- To assure that all interested parties are involved, participate and are informed about the status of the project.
- To share the main project outcomes, the calendar of the events, the public documents released by the consortium and a selection of relevant news to the sector related to the project activity.

CEIT will be responsible for the design, creation and hosting of the website. Nevertheless, all partners will be committed to keep the website dynamic by providing content and materials for the different sections (news, events, pictures, documents, publications, etc.). Content management and publishing will be centralized and performed by BEC with CEIT's support.

The website structure will follow the Best Practice Guidelines made by the European Commission [EUWEB]. It will be updated continuously in contents and structure throughout the project duration, being the domain name renewed on a yearly basis.

The graphical layout has been designed by professionals with the aim of promoting the project towards the interested users and attracting potential stakeholders to exchange views and



standpoints on the project, while at the same time assuring an easy and user-friendly navigation experience provided across a wide range of devices (from desktop to smartphones).

The website contains information regarding the main challenges of the project, its specific objectives and technology. Furthermore, the website will allow the dissemination of public deliverables, publications and presentations and will allow fostering the active involvement of the target audience in project activities by providing updated news produced by the consortium or that could impact on the project activities.

At this moment, WILLOW website is fully operative and it was reported and described through the deliverable D5.1 “Project web-site”.

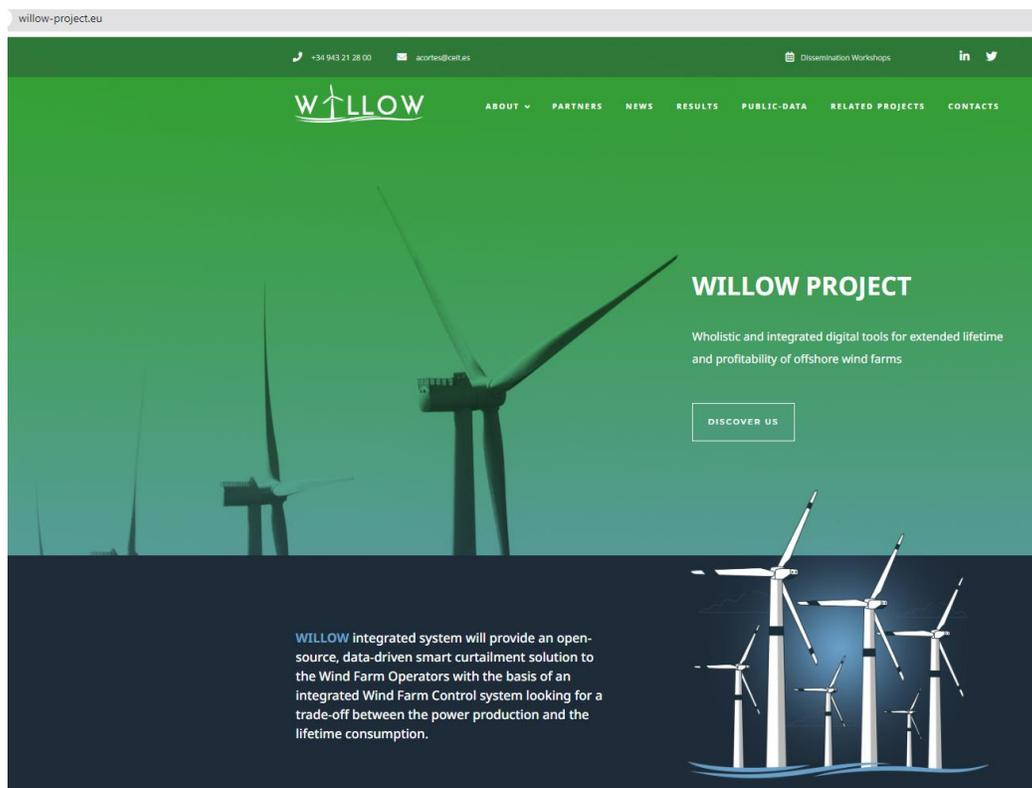


Figure 8 – WILLOW website

To measure the website traffic, gather more information on how visitors find and use the website and determine how to ensure periodic visits, careful monitoring on the website activity will be performed through Google Analytics.

The website is expected to be ready and operational by the end of M3. It will be updated at least every 2 months with sectoral news and events of the project with the aim of obtaining at least 10,000 visits and 2,000 single users (thanks to cross-linking, traffic from WILLOW social media accounts, referencing and SEO).

3.4 Project videos

Aim: Promote the project and raise awareness of its objectives, development and results by providing relevant information to potential adopters of its results.

Key messages: Project objectives, why it is necessary (context) and why this project and its foreseen benefits and impact.

Marketing material will include at least two videos of the project:

- A short introductory video at the beginning of the project providing an overview of its objectives, main challenges, technological approach and the expected results and their benefits.
- A final promotional video showcasing the project results.

YouTube will be used to advertise the videos which also will be featured on the website. Videos are to be used whenever possible in other communication and dissemination activities such as participation in international events, the partners' own websites or the final project conference. The objective is to reach at least 500 video views on YouTube.

3.4.1 Introductory video

The introductory video will be a motion graphics video and is expected to be ready in M5. Its main goal will be to introduce in easy-to-grasp concepts the project. Preliminarily, it will consist of 6 parts of approximately 25 seconds each:

- Context & Challenges.
- Objectives.
- Work packages & Activities
- Outcomes
- Expected Impacts
- Consortium & Advisory Board.

The plot will be elaborated by the Basque Energy Cluster. Duration is expected to be 2 minutes and 30 seconds. Language will be English.

3.4.2 Final video

The final promotional video will be recorded during the last year and is expected to be ready in M30. It will consist mostly of interviews to partners recorder during a Steering Committee meeting as well as other resources recorded in facilities of the hosting partners and during testing activities in offshore windfarms or test sites.



A guide will be elaborated by the Basque Energy Cluster with instructions about how to record and appropriate content. All partners will participate at least once. Duration is expected to be 4 minutes. Language will be English.

3.5 Articles in general media

Aim: (i) Provide information about the project to the general media and (ii) Raise public awareness by providing information about project's activities and how WILLOW framework works.

Key messages: Relevance of WILLOW to (i) reduce the O&M costs (earlier detection, controlled repairs, future improvements in the design of the structure such as tower, transition piece, foundations) and (ii) to help reaching the European and national target of offshore wind power contribution.

Three original journalistic articles (one per year), with an independent view on the project, and a wider view on the project advances will be commissioned and published on the project website and distributed to dedicated magazines (e.g. Wind Energy Network). The articles will also be pitched to local, national, and international mass media.

The aim is to reach with all the articles to more than 3,000 readers.

3.6 Social media

Aim: Build a community of interested stakeholders to promote interaction and interest in WILLOW framework for the analysis of wind energy systems and sensors and systems for continuous monitoring of coating degradation and pitting corrosion.

Key messages: The characteristics of WILLOW framework and tools and its benefits for wind farm control.

WILLOW will build up a community including project posts on relevant and existing social networks, contributing to raise awareness and maintain the visibility on activities and achievements. Twitter will support communication towards general public while LinkedIn will be used for professional exchanges. Furthermore, YouTube will be used to advertise the project videos.

The WILLOW consortium will be using these channels starting in M1 with a goal of at least have 100 followers and 1,500 mentions on the social media accounts.

3.7 Press releases

Aim: (i) Provide information about the project to the general media and (ii) Raise public awareness by providing information about project's activities and how WILLOW framework works.



Key messages: Relevance of WILLOW to (i) reduce the O&M costs (earlier detection, controlled repairs, future improvements in the design of the structure such as tower, transition piece, foundations) and (ii) to help reaching the European and national target of offshore wind power contribution.

Four press releases will be published to showcase the project concept, solutions developed and results. The first one will be produced at the beginning of the project, the second and third ones with relevant milestones and the fourth one at the end of the project. They will be distributed to streamline media, press agencies and information multipliers.



4 Communication Monitoring & Management

4.1 Communication monitoring

All communication activities will be monitored with Key Performance Indicators (KPIs) as shown in the following figures.

Communication activity	Key milestones	Dates
3.1 Project identity	Project identity (logo, guidelines and templates)	M2
3.2 Communication material	General presentation	M2
	Infographics (first one, the rest with relevant progress)	M2
	Roll-up	M2
	Brochure	M3
	Newsletters	M6, M16, M26, M36
3.3 Website	Launch of website	M3
3.4 Videos	Introductory and final video	M5, M30
3.5 Articles in general media	Publications of articles in dedicated magazines	1/year
3.6 Social media	Creation of social media channels (Twitter, LinkedIn)	M2
3.7 Press releases	Publications of press releases	Y1, Y2, Y2, Y3

Figure 9 – Communication milestones



Communication activity	KPI	Target values			
		Year 1	Year 2	Year 3	Total
3.1 Project identity	Logo & Graphical layout guidelines	1	0	0	1
	Templates	3	0	0	3
3.2 Communication material	General presentation	1	0	0	1
	Infographics	1	2	1	4
	Roll-up	1	0	0	1
	Brochure	1	0	0	1
	Newsletters	1	1	2	4
	Number of subscribers to newsletter	50	50	50	150
3.3 Website	Number of visits	2,000	3,000	5,000	10,000
	Number of singles users	500	500	1,000	2,000
3.4 Videos	Number of views	200	50	250	500
3.5 Articles in general media	Number of articles	1	1	1	3
	Number of readers reached	1,000	1,000	1,000	3,000
3.6 Social media	Number of followers	30	30	40	100
	Number of mentions	400	500	600	1,500
3.7 Press releases	Number or press releases	1	2	1	4

Figure 10 – Communication monitoring scoreboard

Basque Energy Cluster, as Work Package Leader, will be responsible for monitoring the impact of the communication strategy in order to apply corrective actions whenever necessary and identify opportunities that can maximize the impact and visibility of the project.

In each Project Management Board (every 6 months), BEC will inform the rest of the partners about the results and design measures to improve the performance when targets are not achieved.

4.2 Communication management

Communication activities will be managed by the Communication Manager (Basque Energy Cluster), who will work in close coordination with the Project Coordinator. All relevant communications will be checked with all partners prior to its publication.

As a general rule, every communication activity planned by any partner in relation to the project or its contribution to it shall be notified in advance to BEC, in order to keep track of the actions, provide and update the necessary material and ensure coherence with the communication objectives. Once the activity has been carried out, the partner shall briefly report on the result to the Communication Manager.

Moreover, while BEC will be responsible for all communication activities, partners will need to actively contribute to some of them, either supplying BEC with updated information about project



developments or participating directly in the activity. The following table summarizes the expected role of the partners in each communication activity.

Communication activity	Role of other partners
3.1 Project identity	CEIT to elaborate the templates
3.2 Communication material	-
3.3 Website	CEIT to coordinate its elaboration ALL to provide information to update website
3.4 Video	ALL to participate in the final video interviews & recordings
3.5 Articles in general media	ALL to contribute to articles
3.6 Social media	ALL to follow and share posts
3.7 Press releases	ALL to distribute to their media contacts or use in own channels

Figure 11 – Role of partners in communication activities

5 Dissemination Strategy

WILLOW dissemination activities will ensure that results are available for others to be used. In this chapter, what type of knowledge and results will be transferred to each target group and how to reach them is defined.

Focused dissemination activities have been planned and will be carried out through different tools and channels to maximize the project impact on the identified target audiences. All the activities related to dissemination and communication will be reported in deliverable D5.4 “Communication & Dissemination activities report” on an annual basis (M12, M24 and M36).

As mentioned before, this chapter describes activities mostly connected to specialist audiences (scientific outreach, EU events, workshops, clustering with similar EU-funded projects and related initiatives, webinars and WILLOW final event).

Key dissemination activities will be informed to CINEA so that it may use its channels to increase the reach of the project.

Whenever possible, papers, presentations and other dissemination material will be published in a repository at the WILLOW project website.

As shown in the following figure, the dissemination activities planned for WILLOW address consider mainly the first four groups: Research agents, Wind Industry, EU policy actors and decision makers and Standardization and certification bodies.

Dissemination activity	Target groups				
	Research organisations	Wind industry	EU policy actors and decision makers	Standardisation and certification bodies	General audience
Scientific outreach	√	√	√	√	
Advisory Board	√	√	√	√	
International events	√	√	√	√	
Workshops	√	√	√	√	
Clustering with EU-funded projects and initiatives	√	√	√	√	
Webinars	√	√	√	√	√
WILLOW final event	√	√	√	√	√

Figure 12 – Target groups for each dissemination activity

5.1 Scientific outreach

Aim: Transfer knowledge & raise awareness among scientific community & professionals of offshore wind sector.

Scientific Outreach includes all dissemination activities that are focused on the scientific community or in the research units of the industrial community. Two different activities are considered: international scientific journals and participation in scientific conferences.

5.1.1 Scientific journals

In order to share the project progress with the scientific community and other interested stakeholders, the consortium will produce articles and other contributions for the technical literature, dedicated journals and magazines. Such contributions will be mostly written by academic and technology partners, through peer-reviewed journals and magazines and also through papers presented at conferences and other events.

As it is said in the Article 17 of Specific Rules of the WILLOW Grant Agreement (see section 1.1), every partner planning to publish an article for a journal or on a peer-reviewed conference should ensure in advance that the selected journal/conference allows to assure compliance with the EC rules on open access. After this verification, the partner should follow the following steps:

- Contact Dissemination Manager (Basque Energy Cluster, as WP5 leader) and notify its plans for publishing an article about the project.
- Check the journal's policy on open access on www.sherpa.ac.uk/romeo/, <http://doaj.org/> or a similar website (e.g. journal website).
- In case open access is allowed, the partner can proceed with the publication, giving notice at least 45 days in-advance to the consortium, together with sufficient information on the results it will disseminate.

European Commission funding must be acknowledged in all scientific papers. Any dissemination of results must indicate that it reflects only the author's view and that the Agency is not responsible for any use that may be made of the information it contains.

WILLOW partners will produce at least 14 peer-reviewed open access publications – prior approval of the consortium members – about the project and its results for publication in international journals. The expected scientific publication subjects and examples of journals that could be interesting for the dissemination of the project results are:

- (i) Methodology and algorithms for the continuous farm wide corrosion prognosis (ii) Population based novelty detection methods identifying wind farm anomalies using SHM data in different environmental and operational conditions. 2 publications.
- (i) Smart ultrasound approach for pitting detection and quantification. (ii) Smart combination of drone inspections and continuous monitoring approach applying artificial intelligence (AI) and machine-learning (ML). Journal name: Wind MDPI; Advanced Renewables-MDPI; Frontiers in Energy Research. Sensors journal-MDPI. Electronics journal-MDPI. 3 publications.



- Ultrasound system for vibrations and load estimations combined with accelerometers and strain gauges. Journal name: Applied Sciences journal – MDPI. 1 publication.
- (i) Damage mitigation of wind farms in curtailed operation: 1) control algorithms and 2) lifetime analysis (ii) Optimal planning of drone inspections for large structural components of offshore wind turbines (iii) Load/Lifetime driven curtailment strategies for offshore windfarms. (iv) Methodology for farm-wide interface load monitoring based on SCADA and SHM data. (v) Load/Lifetime driven curtailment strategies for offshore windfarms. Journal name: Wind Energy Science (EEWA). 6 publications.
- Methodology/algorithms for data-driven assessment of the remaining useful lifetime (RUL) of bottom fixed foundation based on SCADA and SHM data. Journal name: Structures (Elsevier). 1 publication.
- Calibration and validation of farm-scale synthetic turbulence generation through power fluctuation measurements. Journal name: Wind Energy (Wiley). 1 publication.

In addition, WÖLFEL, C-CUBE and 24SEA plan to elaborate 2 whitepapers including information related to (i) assessment of the remaining useful lifetime of tower and foundation of OWTGs based on measured data from installed SHM Systems and (ii) driven curtailment strategies.

5.1.2 Participation in scientific conferences

Participation in conferences and exhibitions related to wind energy, digitalization, life extension, wind farm control algorithms or SHM will be strongly encouraged within WILLOW consortium in order to increase the project visibility towards a specialist audience.

WILLOW will write scientific papers and related presentation material for high level events. WILLOW partners will participate in at least 6 conferences at national and European levels to involve stakeholders and disseminate project results to foster cooperation, spread best practices, etc. Examples of events that are aligned with the project approach are:

- Wind Energy Science Conference (WESC, 2025/2026),
- EERA Deepwind Conference (2025/2026),
- AWEC (Airborne Wind Energy Conference),
- EUROCORR European Corrosion Congress (2025/2026),
- TORQUE and
- European Academy of Wind Energy (EAWE).

European Commission funding must be acknowledged in all scientific papers. Any dissemination of results must indicate that it reflects only the author's view and that the Agency is not responsible for any use that may be made of the information it contains.



5.2 Advisory Board

An Advisory Board will be set up composed of relevant stakeholders to give consolidated advice to the consortium on relevant technical and economic objectives and priorities linked to the project. BEC will manage the interactions with the Advisory Board to ensure the highest potential for innovation and market uptake for all project activities. The contribution from stakeholders will be key for validation and improvement at critical stages of the project lifetime, where checkpoints on the work performed are required.

The Advisory Board members will commit themselves to:

- Assume a key role and accompany the WILLOW project during the project lifetime.
- Be involved from the very beginning by providing advice and guidance to point the activities in the right (industry relevant) direction.
- Contribute to the disseminate and communication of project results using their outreach and industry pertinent networks.
- Play a crucial role in exploitation of results, advising WILLOW partners on the needs and requirements of future end users.

A group of stakeholders (max. 10) will be established to act as a sounding board for project work in progress and findings, to enforce that the project activities and results meet the needs of potential users and to serve as a platform for promoting the future take up of WILLOW outputs. This Advisory Board will be made up primarily of potential end users of WILLOW framework. It will include offshore wind operators, certification companies, companies providing services to WFs (as inspections) and wind turbine manufacturers, among others.

Activities with stakeholders will be reported in deliverables D5.3 “Report on stakeholder engagement and activity” on an annual basis (M12, M24 and M36). Stakeholders mapping will be addressed. To become successful, a dialogue will be established at EU level, involving the relevant transnational organisations.

Apart from the pilot sessions considered for Education & Training in Task 4.7 “Usability & acceptability of WILLOW WF tools by potential end-users” at M27, presence meetings will be held with the Advisory Board at least once a year during the project, in accordance with the needs of the project.

5.3 International events

Aim: Enhance the exploitation opportunities of project results and foster the interest of wind industry sector.



The WILLOW project and its results will be disseminated annually at least in two of the most relevant wind energy international trade fairs. Particularly, it will always be present in the most relevant annual European event, which are:

- Wind Europe Annual event (2024/2025/2026) and
- Wind Energy Hamburg (2024/2026).

Annually, WILLOW consortium will always consider an additional relevant event, either at European or international level. Some examples are:

- International Partnering Forum in the USA (2024/2025/2026) and
- FUKUSHIMA Renewable Energy Industrial Fair in Japan (2024/2025/2026).

The project will always at least be present in the stand of the Basque Energy Cluster by means of brochure, roll-up, infographic in the stand wall or showing the video on a TV screen (depending on the stand design). Besides that, WILLOW will try to maximize its role in the event by participating in the official conference (if selected), in the innovation hub (if available) or taking advantage of presentation opportunities in the exhibition area (if available).

All presentations used in international events will be published in a repository in the project website.

In addition, WILLOW's technology will be presented to industry on sessions for Wind Energy Working Group of the Basque Energy Cluster (Spain, 2024/2025/2026). SIRRIS/OWI-Lab will set up a 1-day seminar on SHM specifically during the Wind Energy Technology summit (Belgium, 2024/2025/2026), as well as a presentation during the Belgian Offshore days.

5.4 Workshops

Aim: Enhance the exploitation opportunities of project results and foster the interest of wind industry sector.

WILLOW project will present its results and technological advances to key stakeholders in three different workshops. Some examples of where those workshops are going to take place are:

- EERA JPwind Workshop on wind farm control (2025/2026) and
- IWSHM (International Workshop on Structural Health Monitoring).

The aim of the consortium is to organise at least 3 workshops with an attendance of minimum 50 people per workshop.

5.5 Clustering with similar EU-funded project and related initiatives

Aim: Exchange of results with relevant actors and projects.



Cooperation foreseen with the projects and initiatives identified in section 2.3 will be based on a discussion and exchange of information between WILLOW representatives and members from the different consortia. The synergies among the projects should not be only found on the basis of strict commonalities identifiable at various levels within the group of WILLOW activities, but also by looking at the differences in terms of targets, goals, emphasis, efforts and approach that external projects may put or have on specific aspects.

WILLOW will participate at least in 2 joint events in cooperation with other EU project(s) funded in the topic with the aim of sharing work in progress and findings of common areas of interest providing access to materials and/or holding workshops on key research topics. The objective is to reach 50 attendees per joint event.

5.6 Webinars

Aim: Explaining WILLOW methods and tools to foster EU-wide replication.

During the project, a series of webinars will be organised which will be dedicated to showing how WILLOW solution works to wind industry potential users and policy makers. The goal of these webinars is to promote the methods, framework and knowledge developed. These webinars will look for synergies with other EU projects that are aimed at a similar audience.

There will be 3 webinars, at least 1 event related to introducing the project and another one related to sharing key results.

5.7 WILLOW final event

Aim: Explaining WILLOW methods and tools to foster EU-wide replication.

A final open event will be organized at the end of project to presents and discusses the project improvements and results and to promote them towards wind energy stakeholders, policy makers, standardization bodies and other public entities at national and EU levels.

The goal will be attracting at least 50 participants. In order to maximize attendance and impact, the event will be probably organized in Brussels and, if possible, in cooperation with another EU-funded project with similar target audiences.



6 Dissemination Monitoring & Management

6.1 Dissemination monitoring

All dissemination activities will be monitored with KPIs as shown in the following figure.

Dissemination activity	KPI	Target values			
		Year 1	Year 2	Year 3	Total
5.1 Scientific outreach	Peer-reviewed open access publications	0	4	10	14
	Whitepapers	0	0	2	2
	Participation in scientific conferences	0	2	4	6
5.2 Advisory Board	Presence meetings	1	1	1	3
5.3 International events	Participation in EU and international events	2	2	2	6
5.4 Workshops	Participants per workshop (1 each year)	50	50	50	150
5.5 Clustering with similar EU-funded projects and related initiatives	Joint events	0	1	1	2
	Number of attendees per event	0	50	50	100
5.6 Webinars	Number of webinars	1	1	1	3
5.7 WILLOW final event	Attendees to the final event	0	0	50	50

Figure 13 – Dissemination monitoring scoreboard

Basque Energy Cluster, as Work Package Leader, will be responsible for monitoring the impact of the dissemination strategy in order to apply corrective actions whenever necessary and identify opportunities that can maximize the impact and visibility of the project.

In each Project Management Board Meeting (every 6 months), BEC will inform the rest of the partners about the results and design measures to improve the performance when targets are not achieved.

6.2 Dissemination management

Dissemination activities will be managed by the Dissemination Manager (Basque Energy Cluster), who will work in close coordination with the Project Coordinator.

As a general rule, every dissemination activity planned by any partner in relation to the project or its contribution to it shall be notified in advance to BEC, in order to keep track of the actions, provide and update the necessary material and ensure coherence with the dissemination objectives. Once the activity has been carried out, the partner shall briefly report on the result to the Dissemination Manager.

When a partner intends to disseminate results that may affect other partners or involve knowledge generated in collaboration or by other partners, it must give advance notice to these other partners



at least 45 days, together with sufficient information on the results it will disseminate. Other partners may object within 30 days of receiving notification if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the dissemination may not take place unless appropriate steps are taken to safeguard these legitimate interests.

While BEC will be responsible for coordinating all dissemination activities, partners will need to actively contribute to some of them, either supplying BEC with updated information about project developments or directly carrying out the activity.



7 Exploitation Strategy

7.1 Exploitation Plan

The Exploitation Strategy respond to Task 5.5. of the Grant Agreement “Exploitation plan of WILLOW project”, which will lead BEC with the collaboration of all the partners. This task will be worked during the second and third years of the project, from M13 to M36.

The exploitation of results will be done by the partners according to a work-plan designed to have the highest possible impact, guaranteeing the sustainability of the project itself after the end of the WILLOW implementation with the aim to involve a wide range of key stakeholders.

An initial version of the plan (part of D5.2, see task 7.2) is based on the Key Exploitable Results (KERs) described in the proposal. A subsequent version (D5.9) will detail how individual partners are going to exploit the project outputs (tools, knowledge). Additionally, the three most relevant KERs will be selected.

These three KERs will be analysed and developed in detail in a working session with the involved partners, and there will be the option to develop a full Business Model Plan for one of them. This task may be supported by EU mechanisms such as the Horizon Results Booster.

7.2 Key Exploitable Results

The main project outcomes are identified to define the exploitable results and the exploitation plan. All exploitable results are expected to be available between 1 and 5 years after the project, most of them open access while others protected through patent, copyright, and trade secret.

The identified Key Exploitable Results (KER) are listed and detailed below.

7.2.1 KER1 – Open source data-driven tools

WILLOW’s open-source data-driven tools to decrease energy costs on operation while increasing total wind farm output, taking into account the tools operational risks.

Users: WFOs, Companies and Research & Technology Organisations (RTOs) offering services to WFOs.

This KER includes:

- **KER1.1.** Closed-loop probabilistic decision-making tool for wind farm control based on calculated remaining useful lifetime / damage equivalent loads (SINTEF).

Protection/Route: Open source/Services to industry, new research projects, collaborative development.

Timeline: Up to 5 years after the project.

- **KER1.2.** Open source smart curtailment tool (24SEA).



Protection/Route: Open source. Utility model/Sales: Software as a service: Provision of data analysis and reporting services.

Timeline: 1-2 years after the project.

- **KER1.3.** Multi-objective active power control algorithms complying grid requirements and preventing assets degradation in curtailed operation (SINTEF).

Protection/Route: Open source/Services to industry, new research projects, collaborative development.

Timeline: Up to 5 years after the project.

- **KER1.4.** Curtailed operation forecast scenarios, to assess offshore wind ancillary power reserve service provision versus power maximisation (SINTEF).

Protection/Route: Open source/Services to industry, new research projects, collaborative development.

Timeline: Up to 5 years after the project.

- **KER1.5.** SHM data-driven windfarm-wide expected lifetime consumption matrix for use in wind farm control (Vrije Universiteit Brussel, VUB).

Protection/Route: trade secret.

Timeline: 1 year after the project.

- **KER1.6.** Cybersecurity strategies for WILLOW solution (CEIT).

Protection/Route: License to 3rd parties.

Timeline: 1-2 years after the project.

7.2.2 KER2 – Digital and physical tools & interoperable frameworks and controls

WILLOW's digital and physical tools, as well as interoperable frameworks and controls, for enhanced data collection, analysis, and operation aimed at an improved performance at farm level.

Users: WFOs, Companies and RTOs offering services to WFOs.

This KER includes:

- **KER2.1.** Population based novelty detection methods to identify anomalies within the windfarm (24SEA).

Protection/Route: Trade secret. Utility model/Software as a service: Provision of data analysis and reporting services.

Timeline: 1 year after the project.



- **KER2.2.** Framework and algorithms for the continuous consumed life (CL) + remaining useful life (RUL) monitoring of the monitored structures (VUB).
Protection/Route: License to 3rd parties.
Timeline: up to 5 years after the project.
- **KER2.3.** Methodology and algorithms to identify the interface loads across the entire wind farm (VUB).
Protection/Route: License to 3rd parties.
Timeline: up to 5 years after the project.
- **KER2.4.** Methodology and algorithms for the continuous corrosion prognosis at wind farm level (FMAKE).
Protection/Route: License to 3rd parties.
Timeline: 3 years after the project.
- **KER2.5.** Data collection, data sharing and reporting platform (24SEA).
Protection/Route: Trade secret/Sales: supply of a holistic SHM system and data platform.
Timeline: 1 year after the project.

7.2.3 KER3 – Novel Structural Health Monitoring system at turbine level

WILLOW's novel Structural Health Monitoring system at turbine level.

Users: WFOs, Companies and RTOs offering services to WFOs.

This KER includes:

- **KER3.1.** Virtual sensing and digital twin software tool to determine loads due to waves and current in offshore wind turbine structures (WÖLFEL).
Protection/Route: Trade secret/Licensing of software.
Timeline: 1-2 years after the project.
- **KER3.2.** Novel approach to link vibration modes and structural damages: physical and digital tool (based on ultrasound sensors and accelerometers and related digital developments) to determine mass losses produced by structural damages (by uniform corrosion, by localised cracks) and how this affects the vibration modes of the structure (CEIT, TSI, WÖLFEL).
Protection/Route: (i) CEIT: Ultrasound-based system: License to 3rd parties; (ii) TSI: Sales of accelerometers; (iii) WÖLFEL: Trade secret/Service for assessment of the RUL of tower



and foundation of offshore wind turbines based on measured data from installed SHM systems (acceleration, inclination and strains), digital models and SCADA data.

Timeline: 1-5 years after the project.

- **KER3.3.** Tool (sensors & algorithms) to monitor and forecast coating degradation on the wind turbine foundation/substructure (C-CUBE).

Protection/Route: Trade secret.

Timeline: 1 year after the project.

- **KER3.4.** Corrosion and environmental monitoring system for early detection and tracking of corrosion activity (SIRRIS).

Protection/Route: Open source/Services to industry.

Timeline: 1-2 years after the project.

- **KER3.5.** Models to capture interaction between environmental degradation, cathodic protection and coating degradation (SIRRIS).

Protection/Route: Open source/Services to industry, new research projects, collaborative development.

Timeline: 1-2 years after the project

- **KER3.6.** Innovative solutions to monitor pit initiation and growth: method (physical and digital) based on electrochemical techniques (SIRRIS, C-CUBE).

Protection/Route: Open source/Services to industry, new research projects, collaborative development.

Timeline: 3-5 years after the project

- **KER3.7.** Innovative solutions to monitor pit initiation, depth and growth: acoustic ultrasound system (physical and digital) based on pulse-echo (CEIT).

Protection/Route: Licensing to 3rd parties.

Timeline: up to 5 years after the project

- **KER3.8.** AI/ML approaches with fused information for automatic classification of damages (ALERION, CEIT).

Protection/Route: Patent/New services.

Timeline: up to 5 years after the project.



7.2.4 KER4 – New R&D projects

New individual and collaborative R&D projects will be developed in order to further refine and develop WILLOW's methodologies, and to combine them with other similar projects in the offshore and onshore area, as well as linked to the BRIDGE initiative.

Users: WILLOW partners.

Routes: EU (i.e Horizon Europe) and national funding applications.

Timeline: up to 5 years after the project.

7.2.5 KER5 – Training contents

Training contents based on WILLOW outcomes (CEIT SIRRIS, VUB, SINTEF).

Users: Companies & employees, University students.

Routes: Internships, summer school activities and guidelines.

7.2.6 KER6 – Standardisation guidelines

Standardisation guidelines (CEIT).

Users: Industry & policy makers of wind sector.

Route: Public content.

7.2.7 KER7 – Publications

Publications (RTOs).

Users: Universities, R&D Centres, Industry.

Route: Visibility in the research domain to facilitate further R&D collaborations.

