BD4OPEM

Big Data for OPen innovation Energy Marketplace

Deliverable 8.5

2023

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Abbreviations and Acronyms

Acronym	Description
BDVA	Big Data Value Association
CIRED	International Conference on Electricity Distribution
DOI	Digital Object Identifier
EBDVF	European Big Data Value Forum
EC	European Commission
ESCO	Energy Service Companies
EUSEW	European Sustainable Energy Week
EU	European Union
EV	Electric Vehicle
GA	General Assembly
GAg	Grant Agreement
ICOT	International Conference on Orange Technologies
IEEE	Institute of Electrical and Electronics Engineers
IT	Information Technologies
KPI	Key Performance Indicator
LCA	Life Cycle Analysis
ToC	Table of Content
WP	Work Package
WPL	Work Package Leader

1 Executive summary

BD4OPEM will develop new innovative services to improve the monitoring, operation & maintenance and planning of electrical distribution grids. These services will be available to target audiences looking foran Open Innovation Marketplace.

Dissemination and communication assume a key function in the deployment of research and innovation actions, accompanying the full life cycle of the project and beyond.

After 47 months since the start of the project, this deliverable is complementary to previous deliverables within the scope of WP8 dissemination and communication. This deliverable has been developed to highlight the main deployment with dissemination and communication activities during the scope of the project.

Along with the documented findings, it also assesses the implementations and puts forward main lessons learnt, which can be utilized in future projects.

The actions carried out were strategic, relevant to the project's goals, and effectively executed. Throughout the implementation, the consortium demonstrated adaptability to the project's lifecycle and various contextual challenges, including the unexpected COVID-19 pandemic. These actions successfully addressed two main objectives:

- Increasing the project's visibility, including its developments and outcomes, among relevant stakeholders through traditional knowledge dissemination methods.
- Fostering favourable conditions for knowledge about the BD4OPEM platform by engaging relevant stakeholders, thereby preparing the ground for future utilization of the project's results.
- The dissemination and communication efforts were a collaborative endeavour involving all consortium organizations. Their proactive contributions played a crucial role in achieving the established objectives.

2 Introduction

2.1 Document overview

This deliverable is structured in 5 parts:

- an introductory part referencing the background of the deliverable and briefly presenting the main achievements and implementations.
- a section outlining the practical implementations related to organizational and communication aspects in various areas such as events, publications, community-building initiatives, promotional materials, and more.
- a section addressing the monitoring of performance indicators pertaining to the actions.
- a section presenting lessons learnt and conclusions.

2.2 Scope

This document constitutes the fifth in a series of four deliverables related to the BD4OPEM project's dissemination strategy. It primarily follows the previous deliverables Deliverable 8.1 Dissemination and Communication Strategy[1] which outlined the procedures for the consortium and Deliverable 8.2 Website and Social media strategy[2] which defined the scope and aim for fostering awareness of the BD4OPEM Project on social media to relevant stakeholders. The other previous two are Deliverable 8.3 Project videos first release [3] and Deliverable 8.4 Project Video Final Release[4].

The primary objectives of this deliverable are two:

- To document the activities carried out during the project's duration.
- To evaluate the implemented strategies and document the lessons learned during this period.

2.3 Main highlights of the implementation

1. Successfully performed dissemination actions that extended the communicative reach of the BD4OPEM project to a vast range of stakeholders throughout the duration of the project.
2. 18 scientific contributions with articles, papers, and conference contributions.
3. 9 collaborations with BRIDGE[5] projects which strengthen the initiative and fostered knowledge sharing and collaborations.
4. 12 produced videos that highlighted the key concepts of the BD4OPEM project and interviews from pilot sites and service developers to showcase the importance of the project.
5. Close to 100 different dissemination and communication activities.

3 Implementation of Dissemination and Communication Plan

The dissemination and engagement of stakeholders has been a priority from the inception of the project. The requirements of the dissemination and communication strategy were produced through workshops and input from the project partners.

The implementation of the strategy has been monitored through monthly meetings and documentation in the BD4OPEM repository to ensure that all KPIs and the goals of the strategy were achieved during the project.

3.1 Design brief and graphical identity

The BD4OPEM project developed a design brief to serve as a roadmap, clarifying project objectives, expectations, and constraints. The design brief was also meant to foster effective and coherent communication for all partners when engaging stakeholders in dissemination and communication activities.

The BD4OPEM graphical identity established a visual representation of the project brand to enhance recognition and build trust in the minds of customers and stakeholders.

Following are examples of the design brief and graphical identity:

Figure 1. Graphical Identity Example 1

Figure 2. Graphical Identity Example 2

Figure 3. Graphical Identity Example 3

Figure 4. Graphical Identity Example 4

3.2 Identified key stakeholders

To ensure effective communication done by BD4OPEM partners and result oriented, the project identified key stakeholders through workshops. This happened in order to ensure tailored messaging that was in line with the needs and concerns of those who are influenced or impacted by the project. These stakeholders were:

Stakeholders	Description
Technology providers	Companies (especially small and medium sized enterprises) engineering and realizing software and/or hardware for integration.
Service providers	Creating awareness of the open marketplace and promoting technology and knowledge transfer.
Policy makers	Supporting a shift towards sustainable policy processes and products in the energy sector and providing financial incentives to realize this.
End-users	Creating useful and usable tools and services to meet the needs and expectations of this target group.
Energy clusters	Promoting technology and knowledge transfer between the project and similar relevant clusters (i.e., BRIDGE initiative[5]).
Potential clients/customers	Raising awareness about the Open Marketplace to encourage usage (targeted business modelling).

Stakeholders	Description
Certification and Standardization bodies	Collaborating with certification and standardization bodies to ensure the smooth transfer to new technology found in the open Marketplace.
General Public	Creating awareness of the Open Marketplace platform and how it contributes to their everyday life to their benefit.
ESCOs - Energy Service Companies	Raising awareness of business modelling to provide an effective delivery mechanism to maximize energy efficiency resources.
Environment authorities	Impacting on climate change and new clean energy production strategies.
Academia	Providing input for new areas of research and competencies.
Prosumers	Creating awareness of the Open Marketplace and how it can contribute and benefit their everyday life.

Table 1. Key Stakeholders

3.3 Communication Activities summary

The BD4OPEM consortium made significant contributions to nearly one hundred dissemination initiatives aimed at advancing the BD4OPEM project. These activities encompassed a wide range of formats, including participation in conferences, exhibitions, newsletters, and articles. As such, we provide a consolidated overview of the cumulative participation in these diverse outreaches in Table 2.

Communication Activities summary	
Type	**Number**
Participation in conferences, exhibitions and workshops	26
Social media and website promotion	20
Participation in BRDIGE related activities	19
Video promotions	12
Articles in national and international media	10
Newsletters	6
Local Meetings presenting the Project	5

Table 2. Communication activities summary

3.4 Conferences and exhibitions

The BD4OPEM partners participated and attended specifically the following Conferences and Exhibitions promoting the BD4OPEM project to key identified stakeholders.

No.	Event	Type	Partner	Date	Place
1	2021 IEEE PowerTech Madrid	Conference	UPC	2021-07-30	Online
2	European Big Data Value Forum 2021	Conference	AOTS	2021-11-29	Ljubljana, SI

No.	Event	Type	Partner	Date	Place
3	BDVA DATA Week 2021	Conference	SUST	2021-11-29	Online
4	E-World - Energy and Water	Exhibition	UPC	2022-05-23	Essen, DE
5	BDVA DATA Week 2022	Conference	SUST / UPC / ATOS	2022-05-24	Napels, ITA, AND Online
6	2nd building digital twin international congress	Conference	UPC	2022-05-26	Online
7	CIRED International Conference on Electricity Distribution	Conference	UPC	2022-06-02	Porto, PORT
8	Innogrid 2022	Conference	SUST	2022-06-14	Hybrid/Brussels, BE
9	Power Summit 2022	Exhibition	SUST	2022-06-15	Brussels, BE
10	Innogrid 2022	Conference	SUST	2022-06-29	Online
11	European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases	Conference	UPC	2022-09-19	Grenoble, FR
12	European Sustainable Energy Week (EUSEW) 2022	Conference	WEP	2022-09-26	Brussels, BE
13	European Research and Innovation Days 2022	Conference	SUST, WEP	2022-09-28	Online
14	Smart City World Congress	Exhibition	SUST	2022-11-15	Barcelona, ES
15	European Big Data Value Forum (EBDVF 2022)	Exhibition	SUST	2022-11-21	Prague, CZ
16	Enlit Europe 2022	Exhibition	ATOS: TBC, YES: ODT, SUST, UPC, EyPESA	2022-11-29	Frankfurt, GE
17	Towards Digitalisation of Active Distribution Grids with Mònica Aragüés Peñalba	Conference	UPC	2023-02-08	Online
18	Energy Data Spaces and Statistics.	Conference	Estabanell	2023-03-09	Brussels, BE

No.	Event	Type	Partner	Date	Place
19	ELFACK	Exhibition	SUST	2023-05-09	Gothenburg, SWE
20	16th Conference of Slovenian power system experts CIGRE-CIRED	Conference	Celje	2023-05-16	Bled, SI
21	CIRED Rome	Conference	Celje, ODT	2023-06-12	Rome, IT
22	SMARTER E Europe	Exhibition	UPC	2023-06-14	Munich, DE
23	ENLIT Europe 2023	Exhibition	ATOS, ODT, UPC, EyPESA	2023-11-28	Paris, FR

Table 3. Conferences and exhibitions

3.5 Presentations

BD4OPEM Partners performed the following presentations at conferences and exhibitions promoting the project and the importance of big energy data and its potential to accelerate the green transition.

Number	Event	When	What
1	2021 IEEE PowerTech Madrid	2021-06-27	Invited speaker to Special session "Digitalization Technologies"
2	European Big Data Value Forum 2021	2021-11-29	Participation in the Big Data value forum; Ljubljana (Slovenia), mentioning BD4OPEM during the presentation
3	Guest lecture at Melbourne University	2023-02-20	THE ROLE OF DATA DRIVEN MODELS IN OPTIMAL ENERGY MANAGEMENT OF MICROGRIDS AND ENERGY COMMUNITIES:The BD4OPEM project
4	Presentation of BD4OPEM	2023-03-09	Presentation of BD4OPEM in a conference regarding data spaces for energy
5	Presentation of BD4OPEM	2023-05-25	Pitched BD4OPEM to key energy grid stakeholders
6	Presentation of papers	2023-06-12	Presentation of 3 posters at the CIRED conference including BD4OPEM papers
7	IEEE BDA Tutorial Series: Big Data & Analytics for Power Systems	2023-06-29	Presentation of BD4OPEM
8	Presentation at BDVA	2023-06-13	BD4OPEM Presentation

Number	Event	When	What
9	ENLIT Podcast	2023-11-24	ENLIT Eurozone Podcast interview with BD4OPEM Coordinator

Table 4. Presentations

3.6 Other Activities

3.6.1 Newsletters

The dissemination strategy additionally encompassed the utilization of newsletters as a means to chronicle the evolution and advancement throughout the development of the innovative services and the BD4OPEM marketplace. These newsletters served as a platform for reflection on key insights, as well as for enhancing the prominence of the pilot sites and the presentation of the project's outcomes.

No.	Newsletter
1	Summer '21
2	Winter '21
3	Summer '22
4	Winter '22
5	Summer '23

Table 5. BD4OPEM newsletters

The following figures show a curated selection of screenshot examples from the newsletters:

COLLABORATION WITH EU H2020 PROJECTS – FLEXIGRID AND INTERPRETER

Together with the Horizon 2020 project Flexigrid BD4OPEM organized a webinar about how to forecast and manage energy surplus and congestion. During the technical dialogue on forecasting tools, researchers and developers me to discuss methodologies, libraries, and data.

BD4OPEM also arranged with the Horizon project Interpreter on non-technical losses including researchers and developers to meet and discuss the way each project is working with this topic.

Figure 5. Newsletter Summer 2022

2ND BUILDING DIGITAL TWIN INTERNATIONAL CONGRESS

International Congress, which is dedicated to Digital Twins. "BD4OPEM H2020: a step forward towards grid digital twins" was explained by Mònica Aragüés Peñalba.

Watch the presentation

DATA WEEK & POWER SUMMIT 2022

Global demand for electricity is increasing and energy systems have moved from an analog to an interconnected real-time digital world. Huge amounts of data, mostly unused or underused, are available, offering great potential to develop exciting new services.

The scope of BD4OPEM is to develop 18 new innovative solutions to improve the planning, monitoring, operation, and maintenance of electrical distribution grids. Our approach is to make these services available from a cloud-based open innovation marketplace, which makes us unique among similar projects.

About the events

Figure 6. Newsletter Winter 22

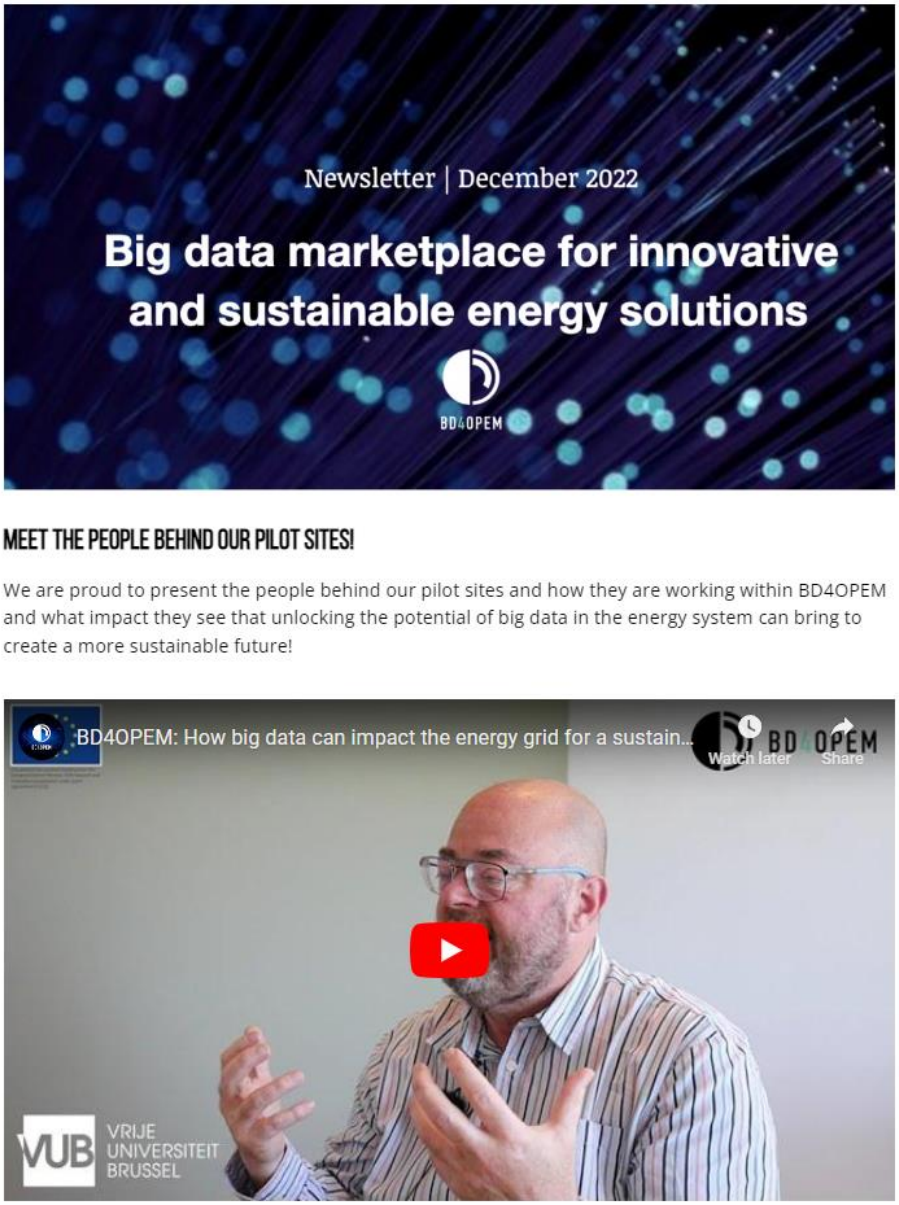


Figure 7. Newsletter Winter 22

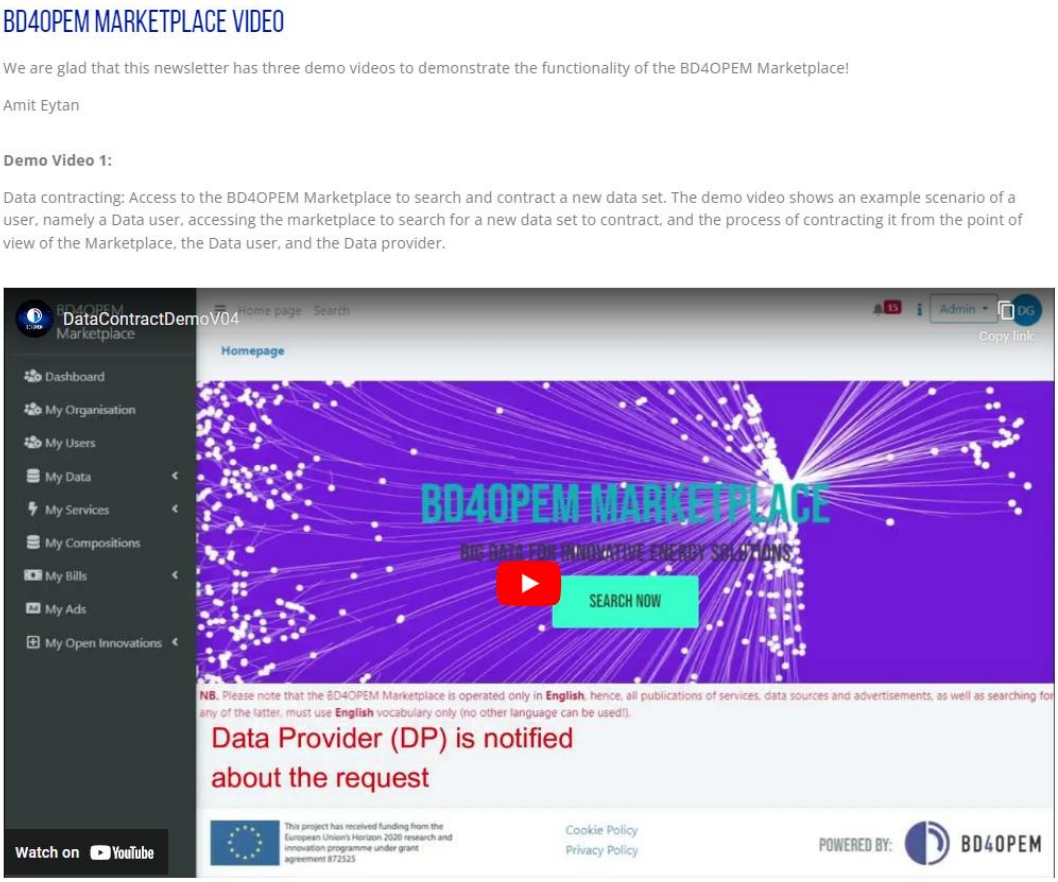


Figure 8. Summer 2023

3.6.2 Collaborations with BRIDGE and BRIDGE projects

The BD4OPEM project has conscientiously engaged in collaborative efforts, offering support to both the BDRIGE initiative, as well as related BRIDGE projects and other pertinent clusters. This collaboration aims to facilitate the exchange of knowledge and experiences, contributing to the ongoing advancement of the field of big energy data and smart energy systems research and innovation.

No.	What	Collaborative partner/platform	Partner
1	Participating BRIDGE Working Group Regulations.	BRIDGE	UPC
2	Participating in BRIDGE Working Group Data Management.	BRIDGE	ICOM
3	Co-leading task in BRIDGE Working Group Business Models.	BRIDGE	SUST
4	Joint closed technical discussion.	SYNERGY	BD4OPEM and SYNERGY service developers.
5	Discussion panel during BRIDGE GA on stakeholder engagement.	BD4NRGY, BRIDGE	All partners
6	Joint final event	SYNERGY	All partners.

No.	What	Collaborative partner/platform	Partner
7	Co-leading working group SOLUTIONS FOR UTILITIES AND ENERGY COMMUNITIES within Flexcommunity	Flexcommunity	ICOM
8	Joint panel discussion during BRIDGE GA on interoperability and data exchange to support the digitalisation of smart energy systems.	SYNERGY, PLATOON, OPEN-DEI	UPC
9	Webinar on How to forecast energy surplus and congestions and how to manage it	Flexigrid, INTERPRETER	UPC

Table 6. List of Clusters and Initiative Collaborations

3.6.3 Joint Final Event with SYNERGY

A final event of BD4OPEM and SYNERGY projects was held at Universitat Politècnica de Catalunya under the topic "Big Data solutions for energy". The sister project shareds the main achievements, challenges and lessons learnt and showing many convergences.

After an Introduction from Stefano Bertolo and Riku Leppänen (European Commission, DG CONNECT) and the general overview of BD4OPEM and SYNERGY, from its project coordinators Monica Aragüés Peñalba, (CITCEA-UPC) and Ugo Stecchi (ETRA), respectively, 4 timely topics were addressed:

"The future of the value of big data for the green transition for the energy sector", by Ramon Gallart Fernández (Estabanell) and Panagiotis Kontogiorgos (Φυσικό Αέριο Ελληνική Εταιρεία Ενέργειας).

"The challenges and opportunities of utilizing big data in developing energy services", by Sara Barja Martínez (CITCEA-UPC) and Sergi Grau Dalmau (ETRA).

"How big data marketplaces for energy can accelerate the green energy transition", by Ioanna Katidioti (Intracom Telecom) and Gregorio Fernández Aznar (CIRCE - Centro Tecnológico).

"Leveraging Big Data Spaces for the acceleration of the green transition in the energy grid", by Silvia Castellvi (International Data Spaces Association (IDSA) and Sonia Jimenez Moreno Jiménez (International Data Spaces Association (IDSA).

The event was closed with a round table enabling interesting discussions, moderated by Andreas Sumper.

3.6.4 Press releases

As a component of the communication and dissemination strategy, the issuance of press releases has served as a complementary tool, with active participation from various project partners. These press releases have played a role in amplifying the project's outreach and impact. They have facilitated the dissemination of the purpose of the project and progression to a broader audience, including stakeholders, industry, researchers, and professionals. This joint effort in press release dissemination underscores the project's ambition to transparent communication and effective knowledge sharing within the realm of big energy data and smart energy systems research and innovation.

Who	When	What	Link
UPC	2020-02-24	Press release published on the 'UPC' website (www.upc.edu)	https://www.upc.edu/es/sala-de-prensa/noticias/big-data-e-inteligencia-artificial-para-el-nuevo-sistema-electrico
UPC	202-02-24	Press release published on the 'CIT' website as a newsletter (www.cit.upc.edu)	https://cit.upc.edu/es/bd4opem
UPC	2020-02-27	Press release published on 'La razón' website (www.innovadores.larazon.es)	https://innovadores.larazon.es/es/big-data-e-inteligencia-artificial-para-gestionar-las-redes-electricas/
UPC	2020-03-066	Press release published on the 'Enertic' website (www.enertic.org)	https://enertic.org/big-data-e-inteligencia-artificial-para-el-nuevo-sistema-electrico/
UPC	2020-02-2727/2/2020	Press release published on 'Gencat' website http://exteriors.gencat.cat/ca/inici/	http://exteriors.gencat.cat/ca/ambits-dactuacio/afers_exteriors/ue/fons_europeus/detalls/noticia/20200227_bd4opem
UPC	2020-06-05	Press release published in enerTIC	https://enertic.org/soluciones-de-inteligencia-artificial-para-smart-grids/

Table 7. List of Press Releases

3.7 Social Media

3.7.1 Social Media Strategy

In order to maximize the efforts on social media, a strategy was formed in Deliverable 8.2 "Website and Social media strategy" [2] that outlined a number of goals for the dissemination and communication work on social media. They were:

- The overall strategic approach is two-fold: to share news and events from BD4OPEM and to share knowledge within the field in general.
- Generate traffic to BD4OPEM's website.
- Increase BD4OPEM's social media presence and visibility.
- Connect with existing and potential target audiences.

- Keep project partners and those closest informed and engaged.
- Open the door for collaboration and communication with future service & energy providers.
- Create awareness about the Open Innovation Marketplace.
- Demonstrate leadership within Big Data and Open Energy Market issues in order to promote technology and knowledge transfer.

The strategy was also to automate processes and the project employed Hootsuite[6] as the main tool to achieve this. Hootsuite enables automated and scheduled posting across several social media platforms at the same time.

LinkedIn, Twitter and Facebook were chosen as the main social media platforms along with a YouTube account as a repository for videos, but the YouTube account was not considered as a primary platform to promote to drive traffic to or from.

- LinkedIn [8]
- Twitter[9]
- Facebook[10]
- YouTube[11]
- A number of due diligence points were agreed upon among the partners on behaviour on social media and contents posted and provided from project partners:
- BD4OPEM will maintain all content in English. All content that comes from or via BD4OPEM will be in English (however, partners are encouraged to spread social media input from the project in local languages to engage local target audiences).
- All partners are encouraged to participate actively on social media. Whenever a post is made that relates to the projects focus areas, partners should always use the hashtag #BD4OPEM, in order for the Communication & Dissemination team to repost/retweet it from the BD4OPEM accounts.
- Updates on BD4OPEM's events/reports/latest news will be posted in all channels, in order for connections to stay up-to-date.
- All posts with the hashtag #BD4OPEM should respect and consider inclusiveness regarding differences in ethnicity, gender, age, national origin, disability, sexual orientation, education, and religion.
- No offensive comments (misogynist, racist, homophobic, or hateful towards any group or person).
- Gender-neutral language.
- Share multiple voices and perspectives.
- Use diverse stock photos and icons.
- Choose emojis wisely.

3.7.2 Follower and posts Statistics

To assess the effectiveness of the communication executed across the three distinct social media platforms, it was determined that continuous monitoring of followers and statistics guided the social media endeavours. This approach involved pivoting messages and content to maximize project exposure.

3.7.2.1 Followers

Below is an analysis of the number and different types of followers, and benchmarks with other related Horizon 2020 funded big energy data projects. Data regarding the type of followers is only available on LinkedIn and therefore there are no available data from Facebook or Twitter.

Social media type	Number of Followers
LinkedIn	883*
Twitter	279
Facebook	11
Total	**1173**

Table 8. Number of followers social media

* In November 2023, LinkedIn implemented a policy of removing inactive accounts, a process also reflected in Figure 9. Prior to this deletion, the recorded number of followers was 883, which subsequently decreased to 797 post-deletion. For the purpose of this analysis, the initial figure of 883 followers has been selected. This decision is based on the rationale that the higher figure more accurately represents the total follower count over the entire duration of the project. To stay consistent, we opt to display and analyse the pre-deletion numbers, with post-deletion in brackets.

Reviewing (Table 9) the top 3 of the benchmarks (a standard or point of reference against which things may be compared) list both PLATOON and INTERCONNECT provide open calls for funding, which by nature attracts followers through economic incentives. INTEGRIDY is more similar to the BD4OPEM project by nature as a pure Horizon funded energy project. Without access to their data to compare, it is hard to draw any further conclusions as to why the INTEGRIDY project have double the number of followers across their platforms.

Benchmark with other EU projects				
Project	**LinkedIn**	**Twitter**	**Facebook**	**Total**
PLATOON	1972 (1942)	1174	-	3146
INTEGRIDY	726 (-)	840	465	2031
INTERCONNECT	1354 (1506)	394	290	2038
BD4OPEM	**883 (797)**	**279**	**11**	1173
INTERFACE	480 (475)	558	-	1038
COORDINET	742 (742)	112	-	854
MERLON	286 (281)	473	39	798
SYNERGY	405 (438)	431	53	889
FlexiGrid	889 (904)	138	5	1032
RENAISSANCE	400 (401)	302	-	702

Table 9. List of Benchmarking with other EU Projects

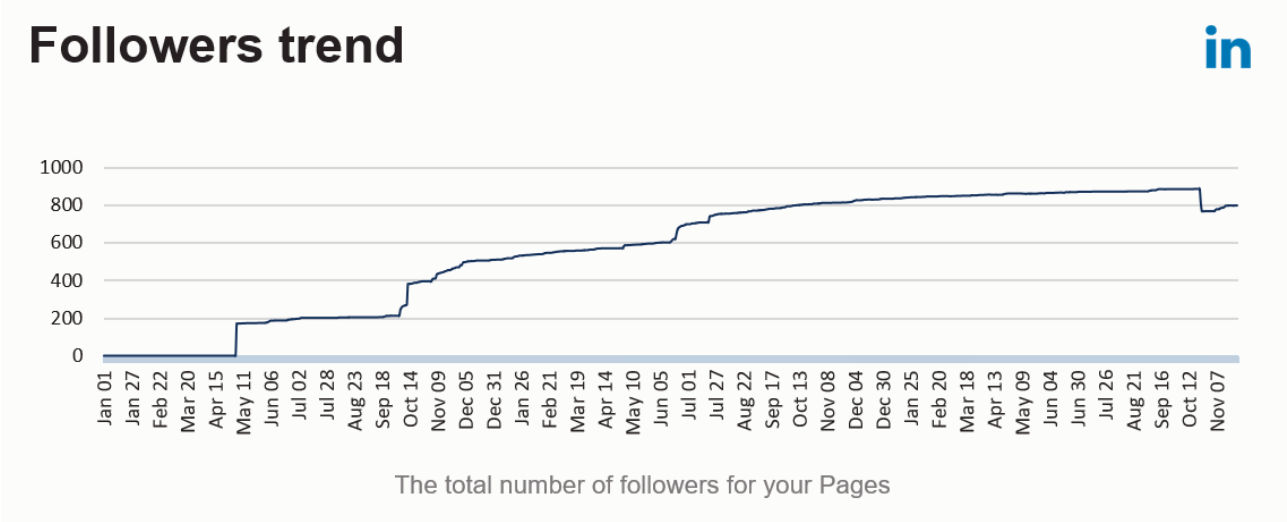


Figure 9. Social Media Followers Trend (LinkedIn)

Figure 9 shows the progression of the number of followers on LinkedIn during the progression of the project, with a steady increase year by year until the end of the analysed period (Nov. 27th, 2023). As previously mentioned, LinkedIn deleted inactive accounts during November 2023 which is reflected in the graph. During the progression of the BD4OPEM, meticulous examination was done of the composition of its attracted followers, primarily leveraging data available exclusively on LinkedIn. It is essential to acknowledge that the quantity of followers on a social media platform may present a misleading metric if the majority of these followers do not align with the project's identified key stakeholders. The project may have a large number of followers or aspire to receive double or triple the current amount, however, if the followers themselves are not relevant to the scope and goals of the project it is a misleading metric. The quality of the type of followers is as, if not more important as the number of followers.

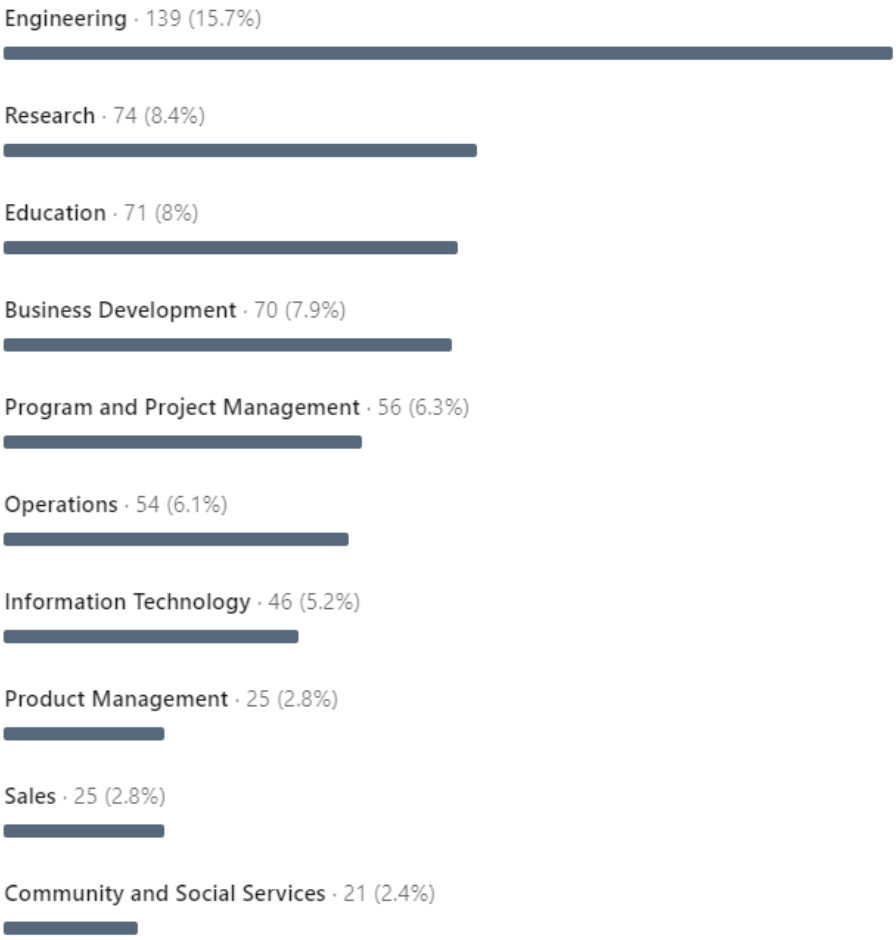


Figure 10. Industry Categorization of Social Media Followers

Figure 9Figure 10 demonstrates the breakdown of the type of industry that the LinkedIn followers have categorized themselves as, with a clear majority related to engineering, research and education. Given the nature of the project this is not surprising and to be expected. This confirms that the social media activities are reaching the stakeholders active within the sphere of engineering and research.

LinkedIn position type	
Seniority	**Followers**
Senior	268 (272)
Entry	258 (256)
Director	58 (57)
Manager	50 (51)
CXO	25 (25)
Training	21 (28)
Owner	15 (19)
VP	13 (15)
Partner	7 (6)
Unpaid	3 (3)

Table 10. List of Position type of Social Media Followers

Table 10 shows a breakdown on the seniority of the followers, with an equal split between senior and entry level positions, followed by director and managerial. This is especially interesting. Senior staff, directors and managers have influence, mandate and resources that are relevant for further exploitation of the project results and as such, indicates that the BD4OPEM LinkedIn page is relevant to maintain post-project to promote the project partners exploitation activities.

Industry type (top 15)	
Industry	**Followers**
Research Services	107 (108)
IT Services and IT Consulting	67 (72)
Higher Education	61 (68)
Utilities	49 (56)
Oil and Gas[1]	41 (40)
Software Development	34 (33)
Government Administration	25 (26)
Renewable Energy Semiconductor Manufacturing	22 (9)
Business Consulting and Services	17 (14)
Environmental Services	17 (14)
Motor Vehicle Manufacturing	16 (21)
Appliances, Electrical, and Electronics Manufacturing	15 (18)
Industrial Machinery Manufacturing	14 (13)
Solar Electric Power Generation	12 (12)

Table 11. List of Industry Type Social Media Followers

Table 11 showcases the industry type the followers have assigned to themselves on LinkedIn. It gives us an indication that the BD4OPEM communication have reached the correct type of stakeholders, with relevant representation of research, information technology, utilities, energy, and government administration.

3.7.2.2 Posts

Below is an analysis of posts generated and disseminated across the three social media platforms (re-posts not included). The data was collected from the Hootsuite platform, which only track posts made on through its own platform. However, it is also important to recognize that our project partners posted project updates directly on the BD4OPEM LinkedIn page. Unfortunately, it's difficult to count these extra posts accurately. Our

[1] On LinkedIn, there is currently no specific option available for selecting "Renewable Energy" as sector or industry. Instead, the available choice is "Oil and Gas." Consequently, it remains uncertain whether individuals who align with the renewable energy sector have opted for "Oil and Gas" due to the absence of a more suitable alternative or for other reasons.

It may be inferred that the communication activities and strategy of the BD4OPEM project were effectively executed, given that a substantial proportion of its followers align with the identified stakeholders.

best estimate is that there are around 50 to 70 of these additional posts. Given this, we limit the data presented to that which is available from Hootsuite.

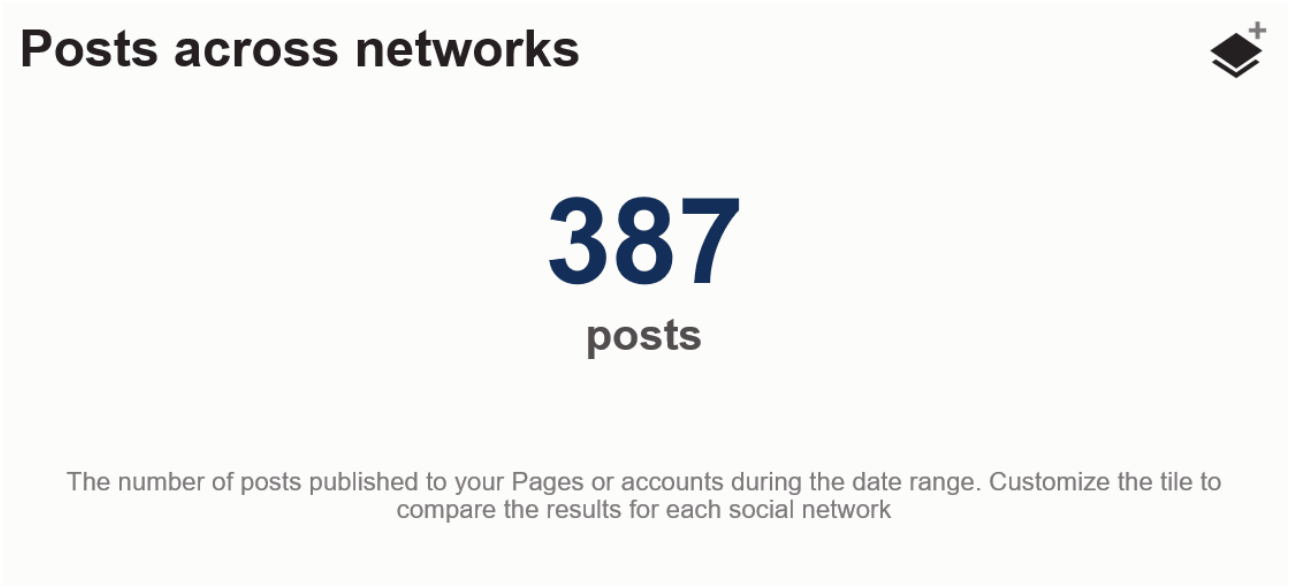


Figure 11. Number of Social Media Posts*

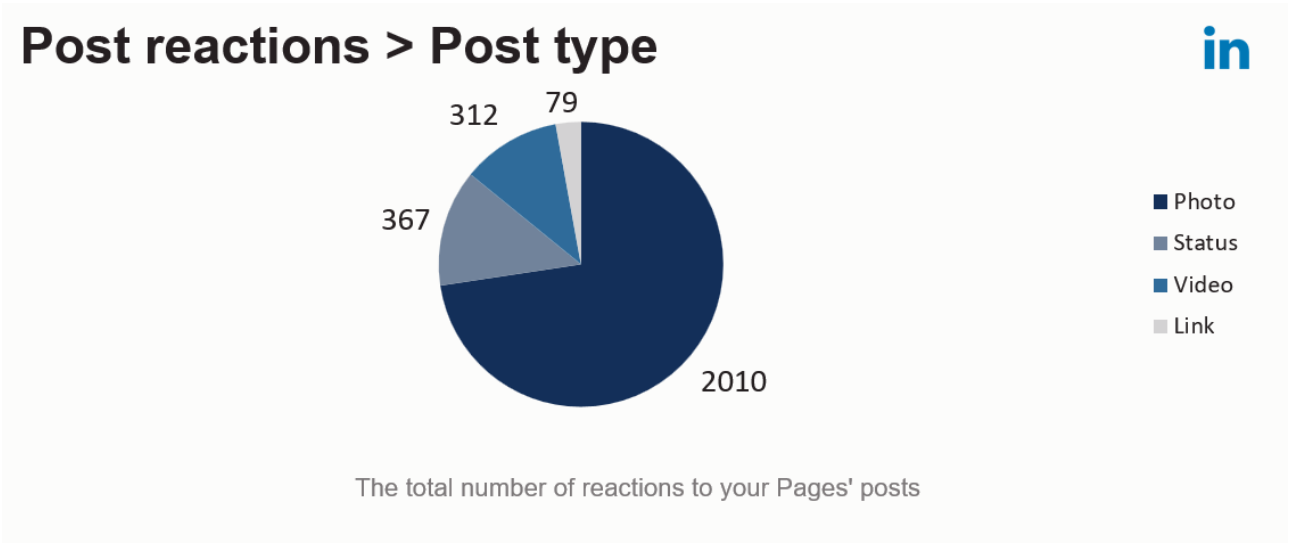


Figure 12. Post reactions LinkedIn

Figure 13. Post Impressions social media Page

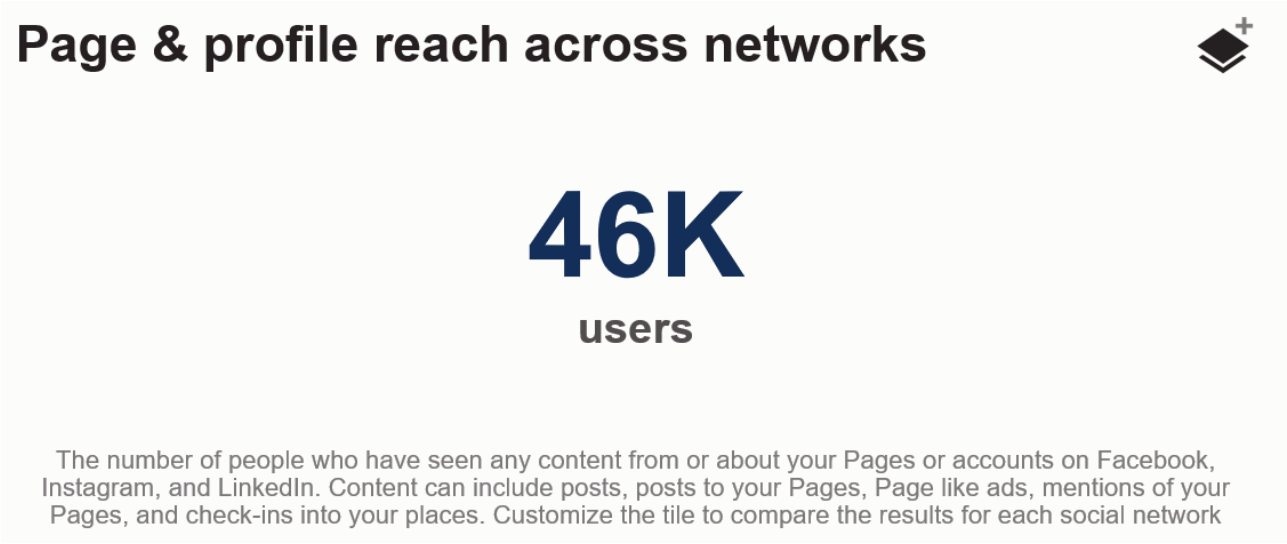


Figure 14. Social Media Reach

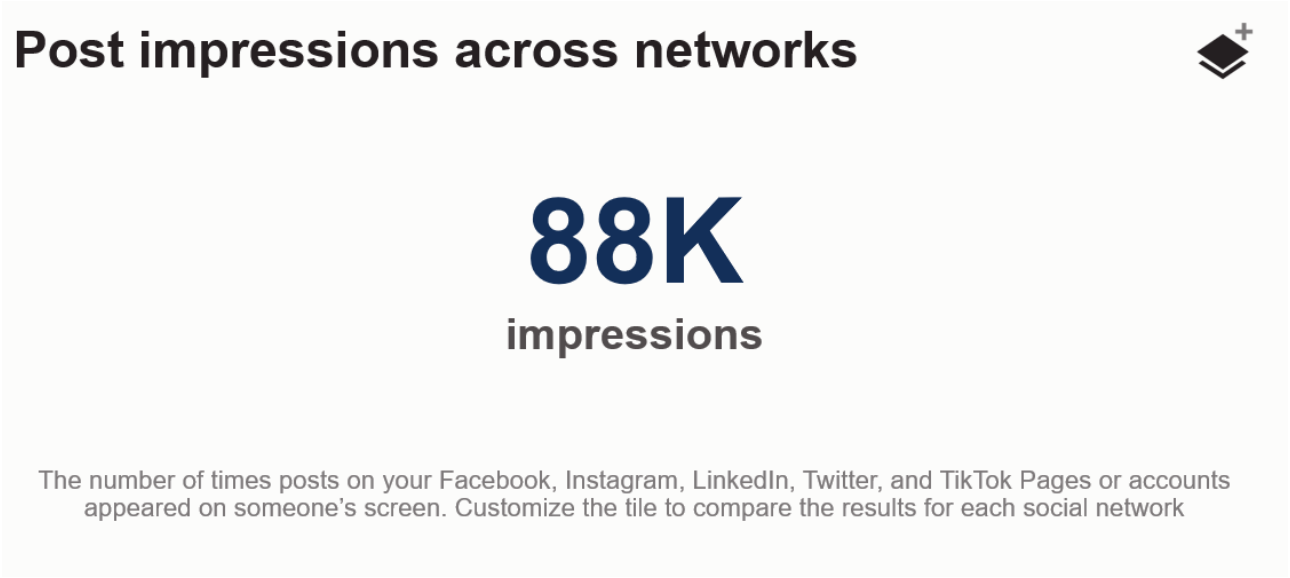


Figure 15. Reactions and Impressions Social Media Posts

3.7.2.3 Engagement

The Post Engagement Rate in the context of social media refers to the percentage of total interactions a single post receives relative to the overall number of followers on the page or profile. It's an indicator of the extent to which followers interact with the content shared on a social media platform. Typically, a greater Post Engagement Rate signals a stronger connection and engagement level of followers with the content. According to Hootsuite[7] the average engagement rate for technology related content on LinkedIn is 1.72%. In the following figures we can see that the project has had a substantially higher engagement rate than average technology related posts.

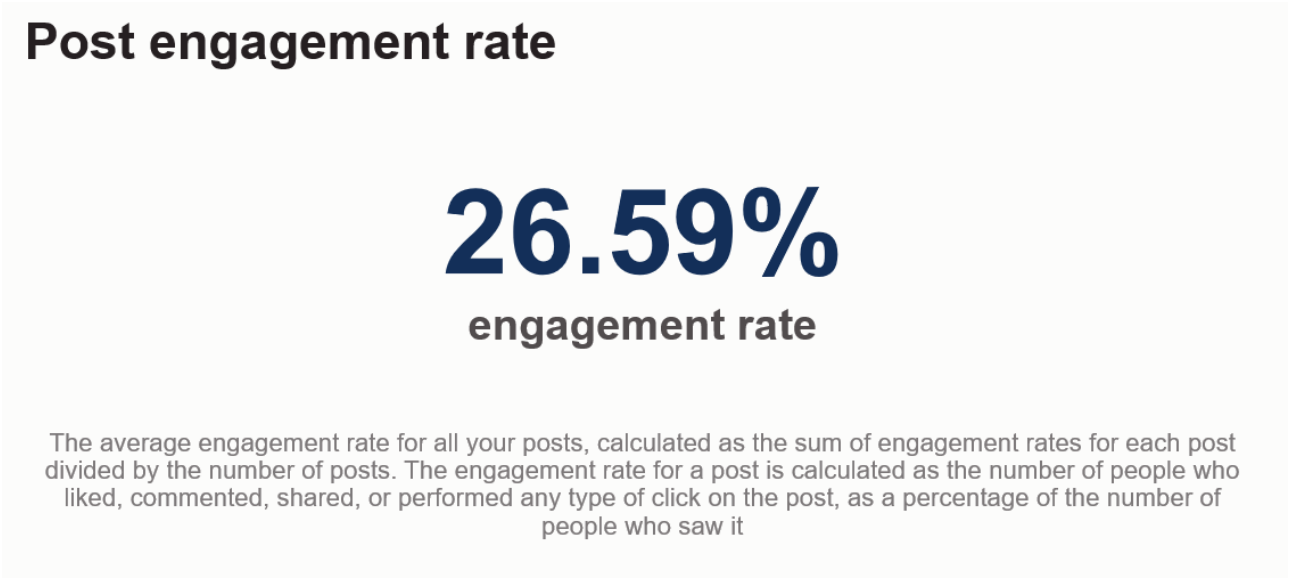


Figure 16. Social Media engagement rate

3.8 Promotion Materials

The BD4OPEM Project produced both printed material and video material in order to showcase the project during exhibitions, conferences and online audiences as a part of stakeholder engagement and outreach.

3.8.1 Printed materials

Staying in line with the communication strategy the BD4OPEM project developed printable brochure and a poster to be used during conferences and exhibitions.

Figure 17. Printed Materials Example 1

Figure 18. Printed Material Example 2

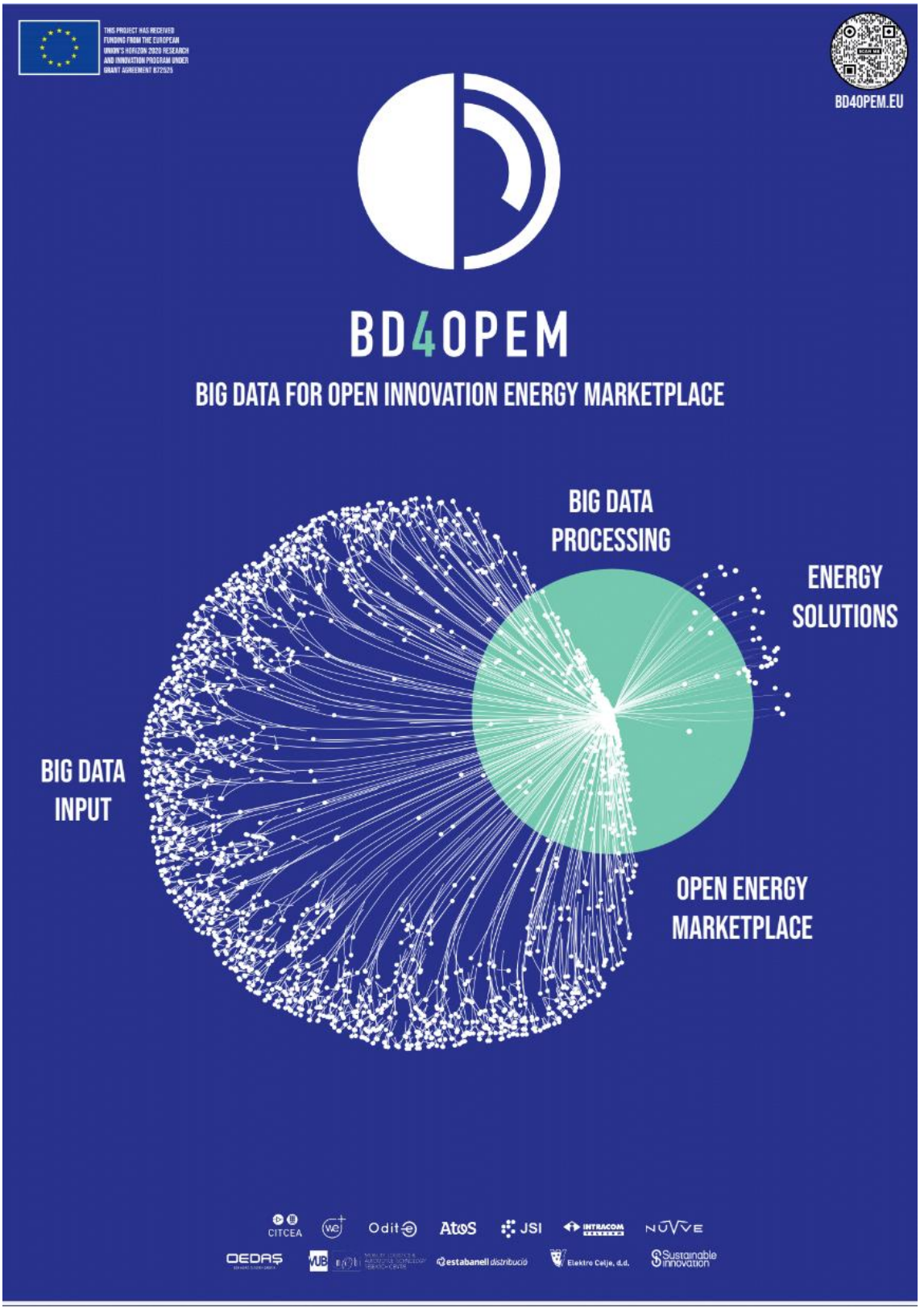


Figure 19. Printed Material Example 3

3.8.2 Videos

Throughout the course of the BD4OPEM project, a series of videos has been crafted to effectively illustrate the transformative potential inherent in the project's innovative

services and the BD4OPEM marketplace. Originally, the project had planned for the creation of two videos; however, the insights gleaned from WP8 led to the recognition of additional video material possibilities.

Numerous interviews were conducted with pilot sites representatives. These interviews were edited into a cohesive video format. Subsequently, these videos underwent a polishing process in post-production, resulting in high-quality separate interviews per pilot site representative.

The primary objective of the interview videos was to illuminate the personal viewpoints associated with the BD4OPEM project. These interviews aimed to underscore that the BD4OPEM project transcends mere technical dimensions; rather, it is a venture steered by passionate individuals who are genuinely committed to making substantive contributions toward advancing innovative services and solutions for the energy grid. This dedication is rooted in a collective aspiration to expedite the transition to a greener energy landscape, thereby combating the pressing issue of climate change.

These video assets have proven to be invaluable tools for enhancing the project's visibility and outreach to a wider audience across various social media platforms.

No.	Video description	Link
1.	Project Description video: "This is BD4OPEM"	https://youtu.be/Aot18oI1L-w?si=sFQ0SoIl4QV5xxiq
2.	Project Description video: "How it works"	https://youtu.be/Xx0CyP-5iUI?si=-Zua0B79MHMUlror
3.	Project interview compilation video: "How big data can impact the energy grid for a sustainable future – pilot site perspectives"	https://youtu.be/egaOrI7xCzg?si=lhZ5NzYp9lKp1d8t
4.	Interview video: Vrije Universiteit Brussel, Thierry Coosemans	https://youtu.be/pF0d_D7ArNk?si=9NhgZV9A5eeS1aWA
5.	Interview video: Vrije Universiteit Brussel, Theo Aslanides	https://youtu.be/kvuLe9ARwlw?si=-O2IGc1_Uc-BKsLw
6.	Interview video: Oedas, Ali Fuat Büyük	https://youtu.be/nPnB0EujNdU?si=VCkz7yHD-ytg2PNL
7.	Interview video: Oedas, Ibrahim Tastan	https://youtu.be/-Azru-MBYw0?si=lwPVtqa2nZc2EbzA
8.	Interview video: Elektro Celje, Kristijan Kozelj	https://youtu.be/L890I8hwMUc?si=vVFX9TcR2u5PEV3F
9.	Interview video: Elektro Celje, Leon Marusa	https://youtu.be/N1pyT0-ilYo?si=448Z06ebVHZXmtci
10.	Interview video: Estabanell, Jordi Jené	https://youtu.be/6I7sZ28bzSI?si=euIBK63zQ1_y3iEF
11.	Interview video: Estabanell, Lluis Canaves	https://youtu.be/JZ0b8EyHkr0?si=8hMsoNRhmVN2-OFA
12.	Interview video: Monica Aragües Peñalba – BD4OPEM General Assembly	https://youtu.be/NGLkLjyXTpM?si=jsBdwHY8D9BDWf-v

Table 12. List of BD4OPEM Videos

Below are excerpts from the various videos:

Figure 20. Project Video Screenshot: "How it works"

Figure 21. Project Video Screenshot "This is BD4OPEM"

Figure 22. Interview Video Screenshot Thierry Coosemans

Figure 23. Interview Video Screenshot Ibrahim Tastan

Figure 24. Interview Video Screenshot Lluis Canaves

3.9 Website

3.9.1 Design development

In the development of website design principles for the project, inspiration was drawn from analogous websites. Collaboration with project stakeholders was instrumental in fostering alignment of objectives. Furthermore, a stakeholder analysis informed the formulation of meticulous design principles, prioritizing user-centricity and project congruence.

Following are excerpts from the inspirational material based on a number of branding key words: simple, data management, big data, AI, innovative, actionable, tech, energy, digital, engaging, business. An information site with good accessibility and usability characteristics.

Figure 25. Website Inspiration image 1

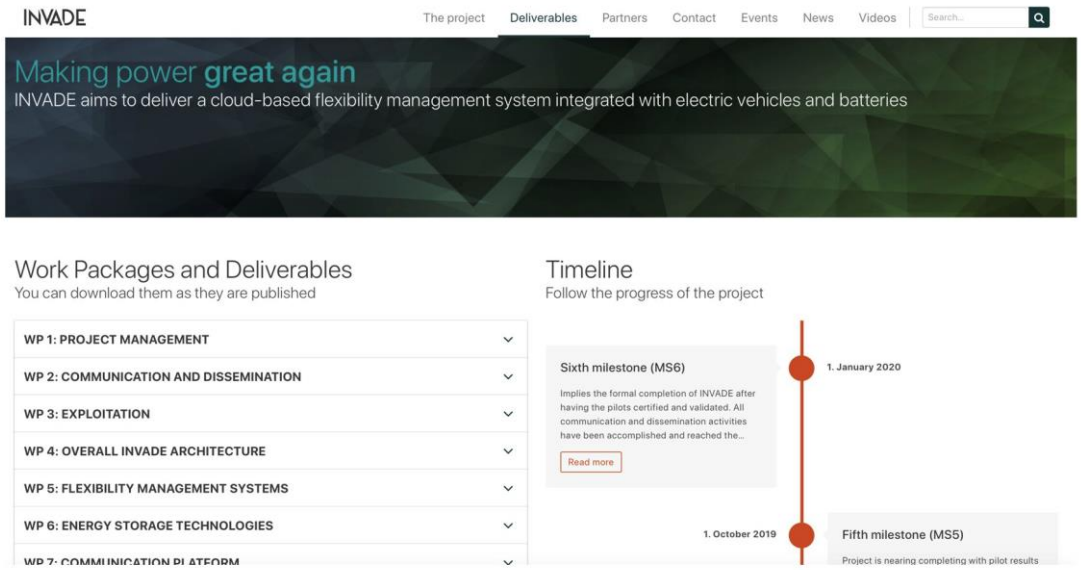


Figure 26. Website Inspiration Image 2

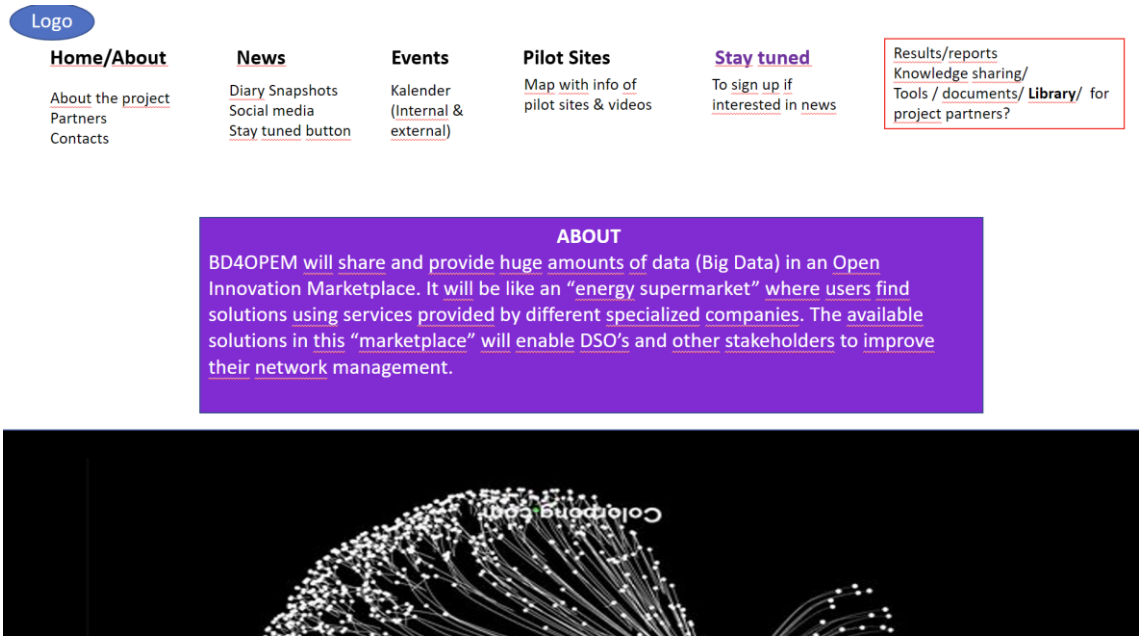
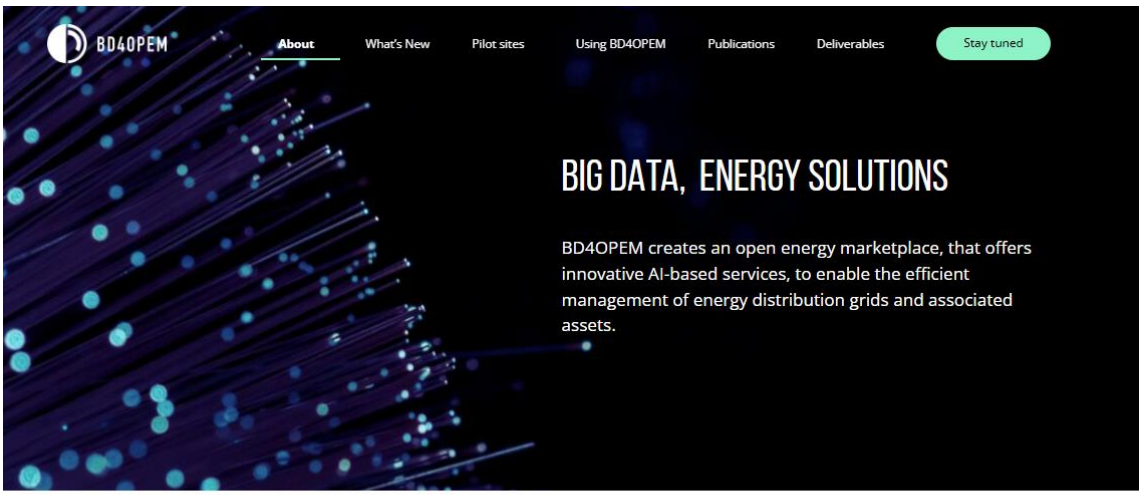


Figure 27. Website Inspiration image 3

The outcome comprised a minimalist yet highly effective, user-friendly design. This design prioritized essential components to effectively communicate the purpose, objectives, and evolution of the BD4OPEM project.

Following are excerpts from the final BD4OPEM.eu website:



BIG DATA FOR INNOVATIVE AND SUSTAINABLE ENERGY SOLUTIONS

Global demand for electricity is increasing and energy systems have moved from an analogue to an interconnected real-time digital world. Huge amounts of data, mostly unused or underused, are available, offering great potential to develop exciting new services.

BD4OPEM will develop products and services to improve the planning, monitoring, operation and maintenance of electrical distribution grids, all made available at an open innovation marketplace.

THE OPEN INNOVATION MARKETPLACE

BD4OPEM will create a seamless link between energy stakeholders and solutions developed. The Marketplace will ensure secure data flows between data providers and solution providers, resulting in new data-driven business models, enhanced asset management and consumer participation in energy balancing. Target user groups will be able to find relevant solutions provided by different specialized companies.

The process will be demonstrated at five pilot sites (Spain, Turkey, Slovenia, Belgium and Denmark), who provide the initial input data and who will also trial and validate the usefulness and the usability of the services being developed.

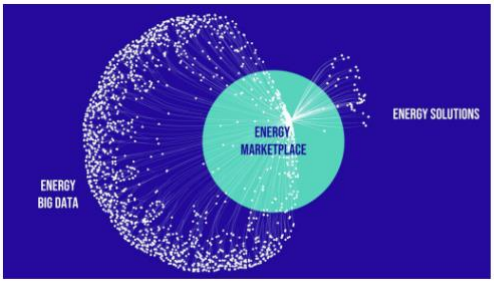
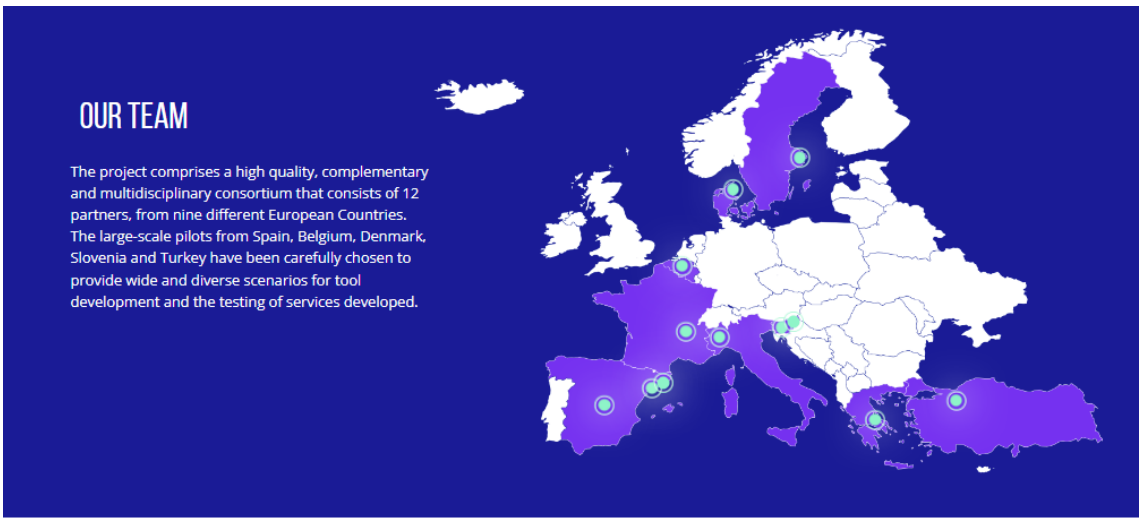


Figure 28. Website Front Page 1/2



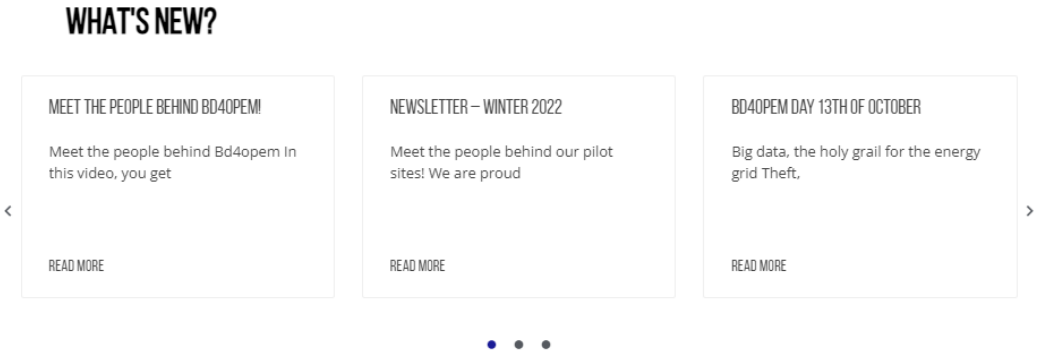
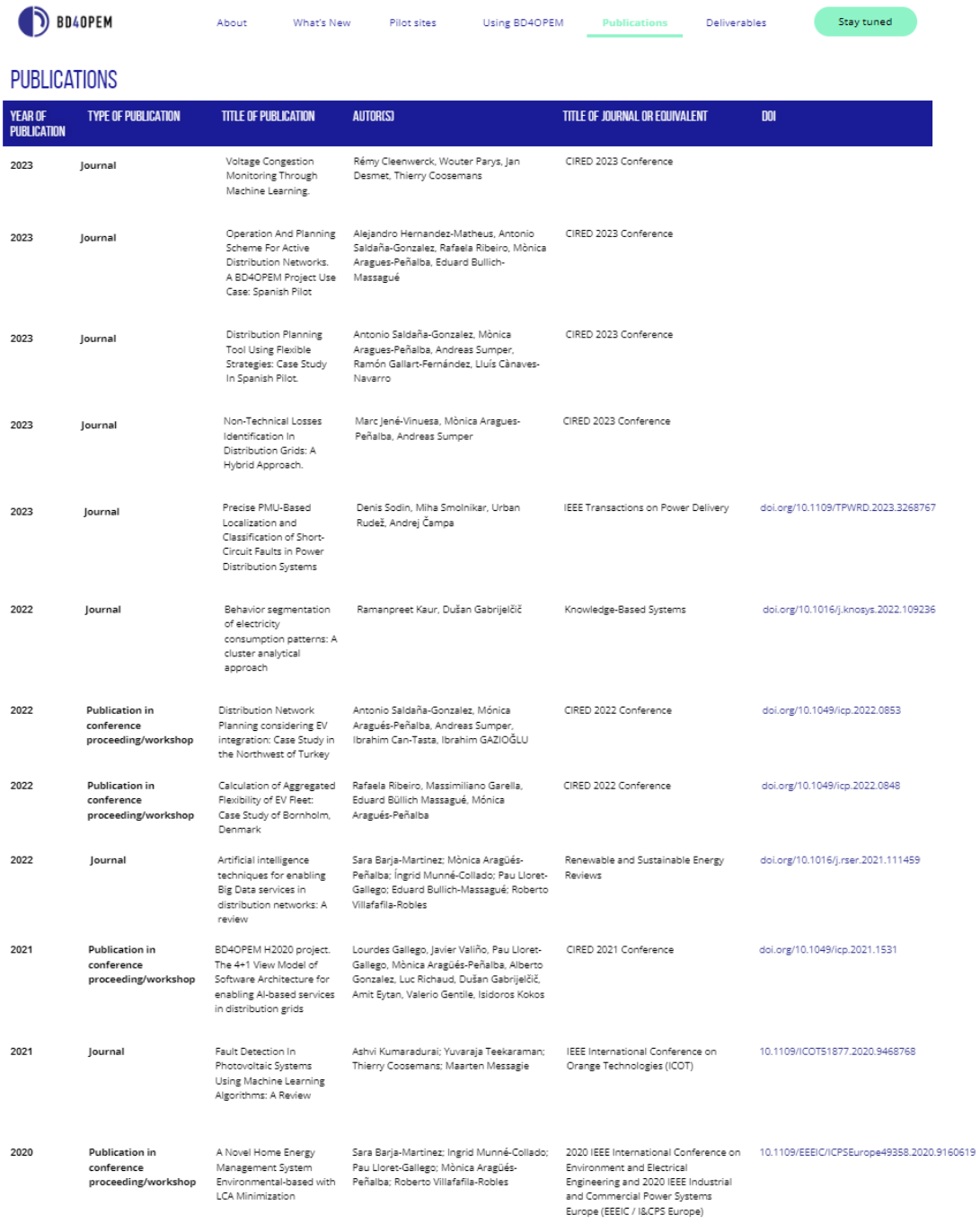


Figure 29. Website Front Page 2/2



BD4OPEM

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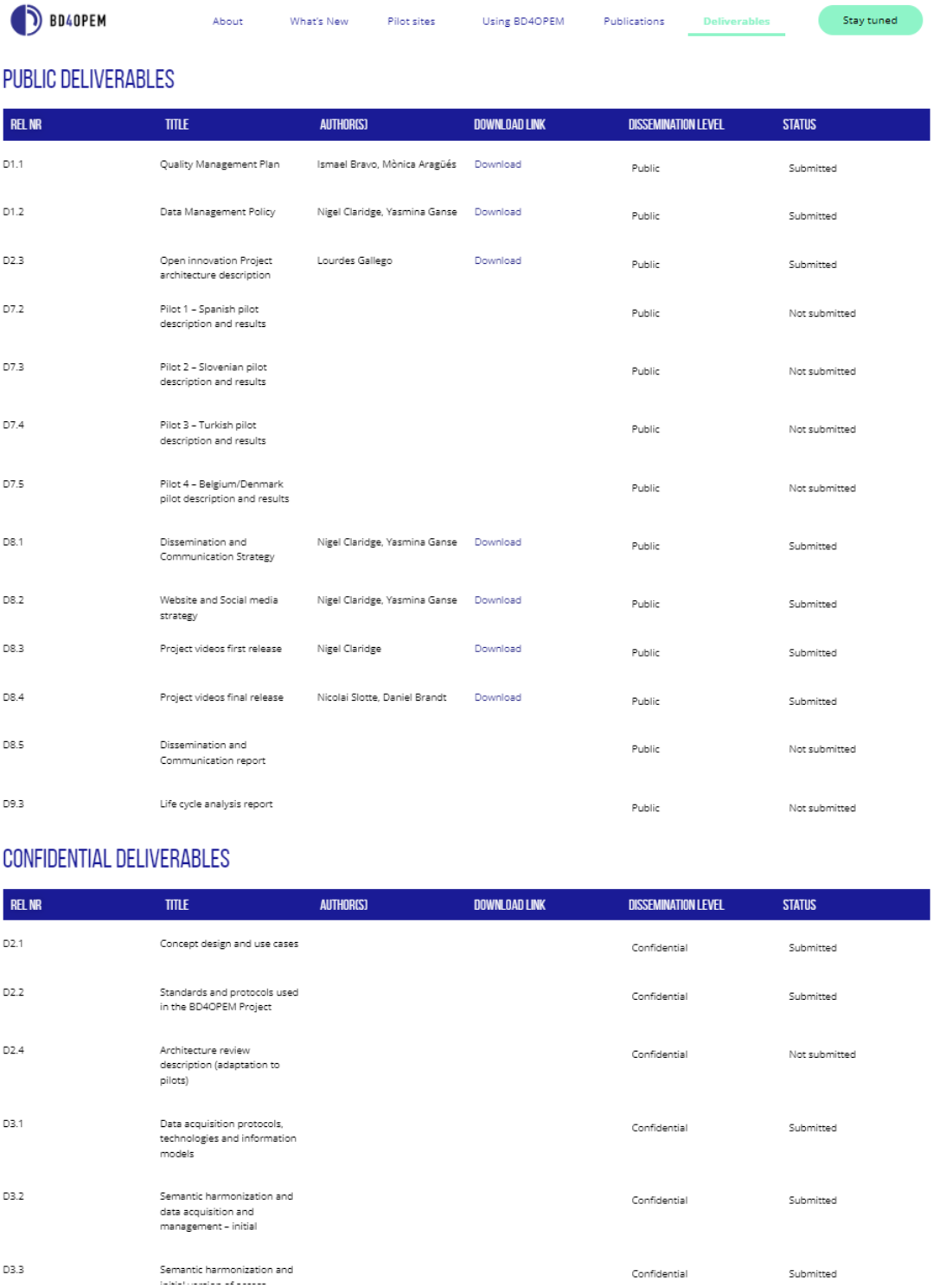
PUBLICATIONS

YEAR OF PUBLICATION	TYPE OF PUBLICATION	TITLE OF PUBLICATION	AUTOR(S)	TITLE OF JOURNAL OR EQUIVALENT	DOI
2023	Journal	Voltage Congestion Monitoring Through Machine Learning.	Rémy Cleenwerck, Wouter Parys, Jan Desmet, Thierry Coosemans	CIRED 2023 Conference	
2023	Journal	Operation And Planning Scheme For Active Distribution Networks. A BD4OPEM Project Use Case: Spanish Pilot	Alejandro Hernandez-Matheus, Antonio Saldaña-Gonzalez, Rafaela Ribeiro, Mònica Aragues-Peñalba, Eduard Bullich-Massagué	CIRED 2023 Conference	
2023	Journal	Distribution Planning Tool Using Flexible Strategies: Case Study In Spanish Pilot.	Antonio Saldaña-Gonzalez, Mònica Aragues-Peñalba, Andreas Sumper, Ramón Gallart-Fernández, Lluís Cànaves-Navarro	CIRED 2023 Conference	
2023	Journal	Non-Technical Losses Identification In Distribution Grids: A Hybrid Approach.	Marc Jené-Vinuesa, Mònica Aragues-Peñalba, Andreas Sumper	CIRED 2023 Conference	
2023	Journal	Precise PMU-Based Localization and Classification of Short-Circuit Faults in Power Distribution Systems	Denis Sodin, Miha Smolnikar, Urban Rudež, Andrej Čampa	IEEE Transactions on Power Delivery	doi.org/10.1109/TPWRD.2023.3268767
2022	Journal	Behavior segmentation of electricity consumption patterns: A cluster analytical approach	Ramanpreet Kaur, Dušan Gabrijelčič	Knowledge-Based Systems	doi.org/10.1016/j.knosys.2022.109236
2022	Publication in conference proceeding/workshop	Distribution Network Planning considering EV integration: Case Study in the Northwest of Turkey	Antonio Saldaña-Gonzalez, Mónica Aragués-Peñalba, Andreas Sumper, Ibrahim Can-Tasta, Ibrahim GAZIOĞLU	CIRED 2022 Conference	doi.org/10.1049/icp.2022.0853
2022	Publication in conference proceeding/workshop	Calculation of Aggregated Flexibility of EV Fleet: Case Study of Bornholm, Denmark	Rafaela Ribeiro, Massimiliano Garella, Eduard Büllich Massagué, Mónica Aragués-Peñalba	CIRED 2022 Conference	doi.org/10.1049/icp.2022.0848
2022	Journal	Artificial intelligence techniques for enabling Big Data services in distribution networks: A review	Sara Barja-Martinez; Mònica Aragüés-Peñalba; Íngrid Munné-Collado; Pau Lloret-Gallego; Eduard Bullich-Massagué; Roberto Villafafila-Robles	Renewable and Sustainable Energy Reviews	doi.org/10.1016/j.rser.2021.111459
2021	Publication in conference proceeding/workshop	BD4OPEM H2020 project. The 4+1 View Model of Software Architecture for enabling AI-based services in distribution grids	Lourdes Gallego, Javier Valiño, Pau Lloret-Gallego, Mònica Aragüés-Peñalba, Alberto Gonzalez, Luc Richaud, Dušan Gabrijelčič, Amit Eytan, Valerio Gentile, Isidoros Kokos	CIRED 2021 Conference	doi.org/10.1049/icp.2021.1531
2021	Journal	Fault Detection In Photovoltaic Systems Using Machine Learning Algorithms: A Review	Ashvi Kumaradural; Yuvaraja Teekaraman; Thierry Coosemans; Maarten Messagie	IEEE International Conference on Orange Technologies (ICOT)	10.1109/ICOT51877.2020.9468768
2020	Publication in conference proceeding/workshop	A Novel Home Energy Management System Environmental-based with LCA Minimization	Sara Barja-Martinez; Ingrid Munné-Collado; Pau Lloret-Gallego; Mònica Aragüés-Peñalba; Roberto Villafafila-Robles	2020 IEEE International Conference on Environment and Electrical Engineering and 2020 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)	10.1109/EEEIC/ICPSEurope49358.2020.9160619

Figure 30. Website Publication Page



BD4OPEM About What's New Pilot sites Using BD4OPEM Publications Deliverables Stay tuned

PUBLIC DELIVERABLES

REL NR	TITLE	AUTHOR(S)	DOWNLOAD LINK	DISSEMINATION LEVEL	STATUS
D1.1	Quality Management Plan	Ismael Bravo, Mònica Aragüés	Download	Public	Submitted
D1.2	Data Management Policy	Nigel Claridge, Yasmina Ganse	Download	Public	Submitted
D2.3	Open innovation Project architecture description	Lourdes Gallego	Download	Public	Submitted
D7.2	Pilot 1 – Spanish pilot description and results			Public	Not submitted
D7.3	Pilot 2 – Slovenian pilot description and results			Public	Not submitted
D7.4	Pilot 3 – Turkish pilot description and results			Public	Not submitted
D7.5	Pilot 4 – Belgium/Denmark pilot description and results			Public	Not submitted
D8.1	Dissemination and Communication Strategy	Nigel Claridge, Yasmina Ganse	Download	Public	Submitted
D8.2	Website and Social media strategy	Nigel Claridge, Yasmina Ganse	Download	Public	Submitted
D8.3	Project videos first release	Nigel Claridge	Download	Public	Submitted
D8.4	Project videos final release	Nicolai Slotte, Daniel Brandt	Download	Public	Submitted
D8.5	Dissemination and Communication report			Public	Not submitted
D9.3	Life cycle analysis report			Public	Not submitted

CONFIDENTIAL DELIVERABLES

REL NR	TITLE	AUTHOR(S)	DOWNLOAD LINK	DISSEMINATION LEVEL	STATUS
D2.1	Concept design and use cases			Confidential	Submitted
D2.2	Standards and protocols used in the BD4OPEM Project			Confidential	Submitted
D2.4	Architecture review description (adaptation to pilots)			Confidential	Not submitted
D3.1	Data acquisition protocols, technologies and information models			Confidential	Submitted
D3.2	Semantic harmonization and data acquisition and management – initial			Confidential	Submitted
D3.3	Semantic harmonization and			Confidential	Submitted

Figure 31. Website Deliverables Page

3.10 Publications and scientific contributions

The BD4OPEM project has contributed to several peer-reviewed articles from the project partners during the project lifespan.

3.10.1 List of publications and contributions

Date	Type of publication	Title	Author(s)	Title of journal of equivalent	DOI
2023	**Abstract in conference proceeding/workshop**	Environmental consequences of vehicle-to-grid for a future energy system: a case study of eastern Denmark	Dominik Huber, Maeva Lavigne Philippot, Maarten Messagie	Life Cycle Management 2023	
2023	**Journal**	Self-Adaptive Ageing Models for Optimal Management and Planning of Assets in Microgrids	Thierry Coosemans, Wouter Parys, Cedric De Cauwer, Maitane Berecibar & Maarten Messagie	Future Energy	
2023	**Journal**	Voltage Congestion Monitoring Through Machine Learning.	Rémy Cleenwerck, Wouter Parys, Jan Desmet, Thierry Coosemans	CIRED 2023 Conference	
2023	**Journal**	Operation And Planning Scheme For Active Distribution Networks. A BD4OPEM Project Use Case: Spanish Pilot	Alejandro Hernandez-Matheus, Antonio Saldaña-Gonzalez, Rafaela Ribeiro, Mònica Aragues-Peñalba, Eduard Bullich-Massagué	CIRED 2023 Conference	

Date	Type of publication	Title	Author(s)	Title of journal of equivalent	DOI
2023	**Journal**	Distribution Planning Tool Using Flexible Strategies: Case Study In Spanish Pilot.	Antonio Saldaña-Gonzalez, Mònica Aragues-Peñalba, Andreas Sumper, Ramón Gallart-Fernández, Lluís Cànaves-Navarro	CIRED 2023 Conference	
2023	**Journal**	Non-Technical Losses Identification In Distribution Grids: A Hybrid Approach.	Marc Jené-Vinuesa, Mònica Aragues-Peñalba, Andreas Sumper	CIRED 2023 Conference	
2023	**Journal**	Precise PMU-Based Localization and Classification of Short-Circuit Faults in Power Distribution Systems	Denis Sodin, Miha Smolnikar, Urban Rudež, Andrej Čampa	IEEE Transactions on Power Delivery	doi.org/10.1109/TPWRD.2023.3268767
2022	**Journal**	Behaviour segmentation of electricity consumption patterns: A cluster analytical approach	Ramanpreet Kaur, Dušan Gabrijelčič	Knowledge-Based Systems	doi.org/10.1016/j.knosys.2022.109236
2022	**Publication in conference proceeding/work shop**	Distribution Network Planning considering EV integration: Case Study in the Northwest of Turkey	Antonio Saldaña-Gonzalez, Mónica Aragués-Peñalba, Andreas Sumper, Ibrahim Can-Tasta, Ibrahim GAZIOĞLU	CIRED 2022 Conference	doi.org/10.1049/icp.2022.0853

Date	Type of publication	Title	Author(s)	Title of journal of equivalent	DOI
2022	**Publication in conference proceeding/workshop**	Calculation of Aggregated Flexibility of EV Fleet: Case Study of Bornholm, Denmark	Rafaela Ribeiro, Massimiliano Garella, Eduard Büllich Massagué, Mónica Aragués-Peñalba	CIRED 2022 Conference	doi.org/10.1049/icp.2022.0848
2022	**Journal**	Artificial intelligence techniques for enabling Big Data services in distribution networks: A review	Renewable and Sustainable Energy Reviews	Renewable and Sustainable Energy Reviews	doi.org/10.1016/j.rser.2021.111459
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2021	**Journal**	Fault Detection In Photovoltaic Systems Using Machine Learning Algorithms: A Review	Ashvi Kumaradurai; Yuvaraja Teekaraman; Thierry Coosemans; Maarten Messagie	IEEE International Conference on Orange Technologies (ICOT)	10.1109/ICOT51877.2020.9468768

Date	Type of publication	Title	Author(s)	Title of journal of equivalent	DOI
2020	**Publication in conference proceeding/workshop**	A Novel Home Energy Management System Environmental-based with LCA Minimization	Sara Barja-Martinez; Ingrid Munné-Collado; Pau Lloret-Gallego; Mònica Aragüés-Peñalba; Roberto Villafafila-Robles	2020 IEEE International Conference on Environment and Electrical Engineering and 2020 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)	10.1109/EEEIC/ICPSEurope49358.2020.9160619
2022	**Publication in conference proceeding/workshop**	Calculation of Aggregated Flexibility of EV Fleet: Case Study of Bornholm, Denmark	Rafaela Ribeiro, Massimiliano Garella, Eduard Büllich Massagué, Mónica Aragués-Peñalba	CIRED 2022 Conference	doi.org/10.1049/icp.2022.0848
2022	**Journal**	Artificial intelligence techniques for enabling Big Data services in distribution networks: A review	Renewable and Sustainable Energy Reviews	Renewable and Sustainable Energy Reviews	doi.org/10.1016/j.rser.2021.111459

Date	Type of publication	Title	Author(s)	Title of journal of equivalent	DOI
2021	**Publication in conference proceeding/workshop**	BD4OPEM H2020 project. The 4+1 View Model of Software Architecture for enabling AI-based services in distribution grids	Lourdes Gallego, Javier Valiño, Pau Lloret-Gallego, Mònica Aragüés-Peñalba, Alberto Gonzalez, Luc Richaud, Dušan Gabrijelčič, Amit Eytan, Valerio Gentile, Isidoros Kokos	CIRED 2021 Conference	doi.org/10.1049/icp.2021.1531
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Table 13. List of Publications

4 KPIs

The BD4OPEM project, as outlined in its proposal, established specific Key Performance Indicators (KPIs) which were not only met, but exceeded.

KPIs	Expected	Achieved
Pilot site Visits	5 Pilot Site Visits	4/7
Conference - Launch Event + Final Conference	2 Conferences	2/2
Project video	3 Project Videos	12/3
Advisory Board	4 Meetings	4/4
Attending Conferences	6 Conferences	9/6
Attending Exhibitions/Trade Fairs	6 Exhibitions	6/6
Newsletter	6 Newsletters	6/6
Collaboration with H2020 Projects	5 Projects	5/5
Press Releases	7 Press releases	7/7
Scientific publication	4 Publications	8/4
Demonstrating results via pilots' sites via national presentations	12 Presentations	12/12

Table 14. List of KPIs for Dissemination

5 Conclusions

The BD4OPEM project effectively realized its communication and dissemination objectives, effectively raising awareness of the project and advocating for the significance of leveraging big energy data as a catalyst for expediting the transition to environmentally sustainable practices and encouraging innovation within the energy grid.

The project acknowledges the significance of monitoring Key Performance Indicators that extend beyond mere social media follower counts. It emphasizes the importance of in-depth analysis of follower data to assess the resonance of the project's messaging among its designated key stakeholders. For future projects, it is advisable to shift away from the notion that a substantial overall follower count serves as a relevant indicator. Instead, projects should pinpoint key stakeholders and meticulously track the communication's reach within this specific audience, as well as the growth of followers within this target demographic.

Regarding video production, a diligent evaluation of the scope and appropriateness of projects in alignment with their targeted platforms is essential to ensure judicious allocation of time, resources, and effort. For instance, considerable production expenditures for videos primarily intended for social media dissemination may be more prudently invested in creating a greater quantity of shorter, cost-effective videos.

For intricate subjects like the energy grid, it is imperative to introduce the project's 'ambassadors' or key personnel, thereby humanizing the project and illustrating that, despite its intricacies, it profoundly impacts all individuals.

Pilot site visits have proven to be advantageous in enhancing the dissemination and communication efforts of the project. They have yielded profound insights into the motivations and incentives that drive the pilot sites' involvement in the BD4OPEM project, while also facilitating valuable interview opportunities. It also improves the understanding of how to approach external stakeholders and their needs.

Participating in exhibitions has proven to be pivotal for fostering face-to-face stakeholder engagement, as it serves to promote and substantiate the project's necessity. To this extent, it is advisable that, in the context of general exhibitions within pertinent domains for any project, the practice of setting up a booth be reconsidered. Instead, it is recommended that project participants attend these exhibitions and proactively engage with stakeholders by introducing themselves and presenting their projects directly. It is noteworthy that stakeholders who have set up booths at exhibitions have done so with the explicit intent of being approached by other interested parties.

6 References

[1] Yasmina Ganse, Deliverable 8.1 Dissemination and Communication Strategy, 2020.

[2] Yasmina Ganse, Deliverable 8.2 Website and Social media strategy, 2020

[3] Nigel Claridge, Deliverable 8.3 Project Video First Release, 2021

[4] Nicolai Slotte, Deliverable 8.4 Project Video Final Release, 2022

[5] Home | Bridge (europa.eu)

[6] Social Media Marketing and Management Tool (hootsuite.com)

[7] 2023 Average Engagement Rates for 13 Industries [STATS] (hootsuite.com)

[8] https://www.linkedin.com/company/bd4opem

[9] https://www.twitter.com/Bd4Opem

[10]https://www.facebook.com/BD4OPEM-110061023960848

[11]https://www.youtube.com/@BDOPEMH

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