Dealii-X
An Exascale Framework for Digital Twins of the Human Body

D4.1 **Communication and Dissemination Plan**

Deliverable information	
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Quality assurance

To ensure the quality and correctness of this deliverable, we implied an internal review and validation process. Partner VPHi drafted the deliverable. All other work package partners contributed to and reviewed the overall draft. Finally, the semi-final version was submitted to internal reviewers, for a final review and validation.

Version	**Date**	**Status**	**Author**	
V1	15/01/2025	First Draft	VPHi	Creation of the document
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1. Summary

1. Executive Summary

The overall objective of Work Package 4 “Dissemination, Communication, and Exploitation” is to achieve a high level of impact for the project and its results. The main goal of the WP is to inform, engage, create awareness, and promote the project. The objective is to disseminate knowledge, share best practices, and foster a robust ecosystem around high-performance computing, particularly in the context of exascale technologies. WP4 is also dedicated to effectively communicating the project's findings, exploiting the developed technologies for broader applications, and disseminating the results to maximise impact. This WP is crucial for ensuring that the advancements made in the project reach and interact with the intended audiences and stakeholders.

This deliverable D4.1 “Communication and Dissemination Plan” outlines the communication strategy the Communication team has designed for dealii-X, along with the action plan that will be implemented to ensure significant engagement with key stakeholders – during the project and beyond.

Primary areas addressed in this plan include a brief definition of the project and communication objectives, the tools that will be implemented for the internal communication strategy, the methods and actions that will be adopted for the external communication strategy and the engagement of the relevant targets properly. The final part of this document addresses how the communication team intends to evaluate and monitor all the dissemination activities and the required obligations and requirements for all the expected communication actions.

2. Introduction

The document is structured in different sections addressing the various aspects that a communication plan may focus on: the basis for proper internal communication between the project partners; the strategy to promote the project to the external audience; the elements needed to evaluate and measure the results of the communication strategy; and the obligations and constraints dictated by the EC regarding communication activities in every Horizon project. Key components of the Communication and Dissemination plan include:

- Identification of communication goals and objectives
- Project Branding and creation of visual identity materials
- Selection of Internal Communication Channels and Tools to establish and foster collaboration between key partners
- Communication Channel Management; Website and Social Media channels implementation and communication strategy
- External Communication strategy with a Stakeholder Analysis and formulation of key messages for each stakeholder group
- Communication and Dissemination monitoring strategy

3. Defining the Communication Objectives

Dissemination activities are a core part of the project. Clear, specific, and measurable objectives are key to the success of any communications strategy.

a. Dealii-X Objectives

"dealii-X: an Exascale Framework for Digital Twins of the Human Body" is a pioneering project aimed at developing a scalable, high-performance computational platform using the deal.II library to create accurate digital twins of human organs, with emphasis on the human brain. This framework will leverage exascale computing capabilities and existing lighthouse applications to simulate complex biological processes in real-time, aiding in personalised medicine and advancing the diagnosis and treatment strategies of neurological disorders. The computational complexity of solving the underlying mathematical models has previously prevented the simulation knowledge from being translated into clinical practice. By integrating cutting-edge HPC technologies with multiphysics and multidisciplinary approaches, dealii-X will deliver unprecedented computational efficiency and fidelity in biological modeling. The project represents a significant leap toward the future of medical diagnostics and treatment planning, offering a robust tool for researchers and clinicians alike.

b. Dealii-X Communication and Dissemination Objectives

The main objectives of the communication strategy of the dealii-X project are:

- Build awareness of the project's aim and potential in a large audience (industry, research institutions, influencers);
- Promote the outcomes of the project to a wide community of scientists, industrial users, HPC users, HPC industry at the European level and beyond;
- Track planned exploitable results and ensure the necessary measures are taken for actual exploitation by the project partners or by third parties.
- Establish and implement strategies for the long-term capitalisation and sustained impact of the dealii-X CoE project outcomes.

WP4 will liaise with and leverage other relevant European-funded initiatives such as the EuroHPC JU Pilots and the Virtual Human Twins (VHT), and projects such as the NextGenerationEU Consortium iNEST Spoke 9 "Models, Methods, Computing Technologies for Digital Twins"

4. Internal Communication Plan

For internal communication among consortium members, we set up a robust collaboration infrastructure using the EU-based platform *Element (https://element.io)*. This matrix-based, end-to-end encrypted messenger and secure collaboration application was specifically chosen to align with the European Union's priorities on digital sovereignty, data security, and compliance with EU regulations such as GDPR. By selecting a platform developed and hosted within the EU, we ensure that sensitive project communications remain protected under European legal frameworks, fostering trust among stakeholders and supporting the European Commission's commitment to advancing secure, transparent, and independent digital ecosystems.

The dealii-X group has been created on Element and the access to the group includes:

- Dedicated rooms for each key topic concerning the project
- A general mailing list "*Project-dealii-X*" that reaches the whole consortium and separate mailing lists for each WP and working group

- Dedicated Google Drive space to exchange files and documents
- A platform that allows chat and conference calls (Element, Elements messaging or Google Meet)

In addition to Element, the internal communication among partners will be managed through a number of mailing lists divided by WPs plus an additional one for the Project Management Office (PMO). This well-partitioned daily communication structure ensures that everyone only gets the emails addressed to them. Also, meetings will be set up and held remotely via the already-mentioned platforms, when needed.

5. External Communication Plan

a. Communication Strategy

Communication means transmitting an idea or message on a larger scale to make it reach a wider audience. All project partners are committed to supporting the WP leader & Dissemination Manager (partner VPHi) in this common effort.

A Dissemination working group will be constituted within the project to foster the involvement of all partners and all Work Packages in dissemination activities.
The dissemination model on which we will base our strategy considers and develops the key communication elements which were first identified by Lasswell in 1948, and subsequently developed by Shannon in what is now known as the *Shannon–Weaver* model of communication. These elements are:

- An information *source*, which produces a message
- A receiver (here it will be called "*target*"), which 'decodes' (reconstructs) the message from the signal
- A *content*, which encodes the message into signals
- A *channel*, to which signals are adapted for transmission

Below, we will detail each of the above components of the project's activities and aims.

i. Sources

The source of all the material, information, and results for dissemination purposes will come from the project consortium members. More specifically, a source can come from:

- CommOffice: communication office operated jointly by partner VPHi
- Consortium: any other partner of dealii-X
- Expert: any other expert that is not a partner of the dealii-X consortium

ii. Targets

We recognize that our target stakeholders are diverse, encompassing various levels of expertise, interests, and preferred methods of communication. To effectively engage with each group, we will develop tailored communication strategies that address the specific needs and preferences of different audiences.
These strategies are detailed in the following table, which outlines our approach for each stakeholder group, ensuring that our communication efforts are as effective and resonant as possible.

These target communities can be categorized into two distinct groups: (A) primary audiences, who will be engaged in the dissemination and utilisation of project results, communication, and feedback collection throughout the project's implementation, through specialized advisory committees and other engagement initiatives during the development of standards and guidelines; and (B) secondary audiences, who will participate in public discussions, citizen science approaches, and general communication.

A) Primary audiences
    a. Medical Community
    b. HPC software community
    c. Supercomputer Centres in Europe
    d. Medical device industry
    e. Pharma Companies
    f. Regulatory authorities, HTA agencies
B) Secondary audiences
    a. Standards committees
    b. Supercomputer centres at large
    c. Mass media
    d. Policymakers
    e. Society at large

For each target, we plan to pursue a specific communication approach and convey tailored messages (see subsection “Key Messages”).

iii. Content

One of the essential steps in any communication exercise is to define the content of the messages to be transmitted, shaped according to the type of target to which they are addressed.
In the context of the dealii-X Centre of Excellence (CoE), communication and dissemination activities are pivotal to maximise the impact of the project by engaging with relevant stakeholders and the general public. To achieve this, we have devised a comprehensive strategic plan, complete with a clear timeline encompassing all necessary activities to engage a broad audience.

After an initial foundational phase (Months 1–6) where the focus will be on establishing mechanisms and tools for dissemination, creating and refining the project identity, developing initial materials and ensuring project visibility, the project will enter a new phase focused on actively engaging our target audience groups and promoting the project more broadly.

In the following list we shall consider the different macro-categories of the content of the dissemination activities to be undertaken during the dealii-X project, also considering their relevance in the different stages of the project development:

- Mission and Vision: This phase will involve targeted outreach and promotional activities designed to bring attention to the work and achievements of the dealii-X CoE, including the organization of workshops, summer schools, and specialized training. The goal is to disseminate the project goals in a strategic development perspective toward key stakeholders. It takes place when the research results comprise possible and plausible strategic scenarios that can be considered relevant and valuable knowledge for key stakeholders in order to plan future developments and investments. This type of content will be disseminated primarily in the initial stage of the project.
- Results: As soon as the first results begin to emerge, our efforts will shift towards the capitalization of the results generated by the dealii-X CoE. In this phase, we will implement mechanisms to ensure sustained visibility and impact of the project's outcomes long after its conclusion toward academic, industrial, and clinical researchers, contributing to collective knowledge development. This long-term strategy is crucial for extending the reach and influence of our work. As the project develops, the contents of type Results will increase as the contents of type “Motivation and Vision” decrease.

The dissemination strategy will be formulated in terms of the percentage of dissemination events per month concerning the total number of events generated in the final year, for each Content type.

The communication volume will increase throughout the project almost constantly in the first period, with a deceleration last weeks. Year 1 will be dominated by the communication on the motivation and vision of the project; as results come to emerge the content will focus on them. As dissemination and communication is constantly monitored, the strategy can be revised at any moment if relevant deviations from the plan are registered, to ensure it remains well aligned to the needs of the project as this develops.

iv. Channels

The dissemination channels are chosen concerning the type of communication content and the type of target we wish to reach. How we communicate can be as or more important than the message we are communicating, which means communication channels are critical. Implemented channels will be presented in a dedicated section; here, a brief list of dissemination outlets we plan to use is reported:

- Events (conferences presentations, talks, workshops)
- Publications (scientific publications in international peer-reviewed journals)
- Website (posts on the websites, both the project's website and others)
- Social (posts on social networks)
- Media (Media that enrich the project's Media Materials Folder)

These four macro-categories (Sources, Targets, Contents and Channels), and related items, also constitute the monitoring framework that we will use to monitor, report, and revise our communication activities (see section 5).

b. Target Audiences

The target audiences were identified using the "**buyer personas**" model.
Frequently used for marketing purposes, in this model the persona represents the detailed descriptions of someone who represents a target audience. This is not a real customer, but a fictional person who embodies the characteristics of the best potential target. The model requires giving this persona a name, demographic details, interests and behavioural traits, to define their goals, pain points, and buying patterns. This allows crafting communication messages targeted specifically to them, guiding dealii-X tone of voice to communication tools and channels to use.
In the dealii-X project communication the following personas have been identified:

- Clinicians
- Patients
- Researchers (HPC software community)
- Industry
- Pharma Companies
- Regulators
- Standards committees
- Mass media
- Policymakers
- Citizens

For each target, the buyer personas model details a series of information: - Key attributes (age, education level, career level, interests)

- Pain points (problems, barriers)
- Goals and aspirations
- How dealii-X can help
- Engagement (where do they search for information?)
- Communication and information channels used
- Buying process - Influencers, stakeholders, buying teams

The following chart shows the specific analysis the communication team made for the “Researchers” target group. The same analysis has been made for every target specified above.

Target group	Researchers (HPC software community)
Key attributes (socio-demographic)	Education: High level of education (postdoc) Job: Work at universities or other research institutions Interests: in science, technology and medicine Age: between 30 and 75 Spending power: medium
Pain points (problems, barriers)	Lack of funds Lack of right collaborators (“no one does what I do, how do I find people that work in my field") Lack of resources Difficulties to validate their research (“my experiment/model does not work, model not validated”)
Goals, aspiration	Publish papers in peer-reviewed journals Find funds to finance their research Find resources (not economical) Networking Develop and validate their work Reach excellence Be influential and esteemed
How the project can help	Offers resources (white papers, libraries, webinars, publications, data, best practices, standards, etc) Networking opportunities Help with validation and scalability
Engagement (where do they search for information?)	Through conferences Papers in peer-reviewed journals Webinars Working groups Events

Communication and information channels used	Project websites and newsletters LinkedIn Blogs, forums, community European Commission channels Online and Live Events
Buying process – influencers, stakeholders, buying teams	Community of peers Opinion leaders Regulators Scientific societies

The buyer personas analysis was preparatory for the following communication and dissemination plan which contains all the target groups' communication needs and approaches.

c. Key Communication Messages

The Buyer Personas analysis led to specific key messages which have been further developed in different and more specific engagement actions that will constitute the communication strategy plan. As an example, the table below shows part of the strategy for the **Researchers** (HPC software community) target audience, with the related communication approach that will be translated into future concrete actions.

1. **Unmatched Precision in Biological Modeling**

Across the whole communication strategy, we will focus on the fact that dealii-X offers researchers a high-performance computational platform to tackle complex biological problems with unmatched resolution and accuracy.

2. **Advancing Multiphysics and Real-Time Simulations**

Part of the communication strategy will focus on describing how the framework supports multiphysics modeling and real-time simulations, providing new opportunities to advance understanding of the human body.

3. **Game-Changing Tools for Computational Biology**

With integrated cutting-edge solver technologies, dealii-X is a game-changer for computational biology and medical research.

The full target audience key messages analysis can be found in Annex 9.a

The HPC software community represents the most critical target group for the dealii-X project, given their central role in advancing and adopting high-performance computing innovations. To effectively engage these audiences, communication activities should include targeted content on social media channels like LinkedIn and the project's website blog. On LinkedIn, content should focus on short, impactful posts highlighting technical breakthroughs, case studies demonstrating the scalability of the framework, and expert interviews or testimonials from key partners in the HPC software domain or supercomputer centres. The communication will link the audience to more detailed resources, such as webinars, white papers, or tutorials hosted on the project website. For the website blog, articles should provide in-depth analyses of the project's contributions

to exascale computing, explore use cases for digital twins in medicine, and share success stories from collaborations with supercomputing centres and HPC software developers. Additionally, regular updates on technical milestones, conference presentations, and publications can further attract and engage this highly specialized audience. Hosting online Q&A sessions or live discussions on cutting-edge topics in exascale computing can also help build a strong connection with these communities.

d. Communication Media and Channels

The communication channels are chosen in relation to the type of communication content and the type of target we wish to reach. How we communicate can be as or more important than the message we are communicating which means communication channels are critical. In this section, we will present all the dissemination channels we plan to use in the dissemination activities of the project.

- Meeting: small group presentation.
- Conference: ad hoc dissemination event with participants beyond the consortium, or any other conference, public event, congress, etc.
- Paper: Scientific publications in international peer-reviewed journals are one of the most important channels through which we will pursue dissemination to the research community. There are several important and specialised journals, which might be addressed as soon as the technological results are achieved.
- Plenary, Talk, or Poster (conference presentations): to address the potential users' communities, present and discuss results, and drive future exploitation, members of the consortium will submit and contribute to conferences/workshops.
- Website: a strong and highly visible web presence has been established starting from M04. We registered the domains https://dealii-x.org and https://dealii-x.eu/ and collected from all partners stock photos and texts that we will use, to create the project public website.
- Social channels (LinkedIn, YouTube): all short news will be posted on LinkedIn from dedicated accounts. We will create a Promotional Video highlighting some of the core activities of dealii-X that will be part of the VPHi's "Code & Cure" video series available on its YouTube channel. In this phase of the project, the communication team decided not to proceed with the X and Facebook page opening since it is not fully functional to the actual audience, we want to reach at this stage of the project. The dealii-X LinkedIn page can be reached at the following link https://www.linkedin.com/company/dealii-x/

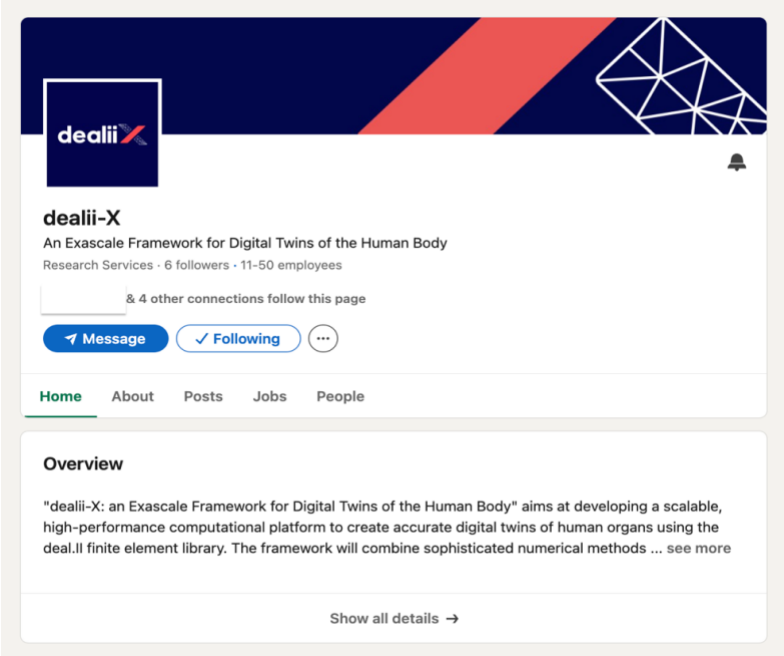

Figure 1 - dealii-X LinkedIn Home Page

- ProNews: includes professional news services and local contacts with the national generalist media. Also, we will create a new broker mailing list, to reach communication officers in all partner institutions, and collaborate with them, especially to reach out to the local media.
- Media Materials: *ad hoc* informative material will be produced to disseminate the aims of the projects and their results as soon as this is relevant. The first important media material will be the visual identity of the project, which is available to all partners. Each partner institution contributed with at least three stock photos. Besides the website, with this media material, we intend to produce: a project flyer, a project public presentation, and press releases to be distributed any time there is a significant achievement.
- Newsletter: the e-newsletter will be created and sent to all the consortium partners and all the new contacts we will collect through social media and all other collateral communication activities. The newsletter will be sent every four months via mailchimp.com and will include all the main news regarding the project and the consortium members. The communication team will also use the VPH Institute channels to disseminate the news.

e. The Community of Practice (VPHi CoP)

A previous and very successful EU-funded project "In Silico World" established a pre-competitive safe space where professionals working in academia, industry, regulators agencies, research hospitals, software houses, and contract research organisations can exchange information and establish best practices on in silico medicine. The VPHi CoP is the virtual *agora* where experts can meet, interact, engage and set teams to collaboratively work on shared goals. The VPHi CoP is hosted on Slack and is an invitation-only community; the idea is to select the membership to make sure that only people with professional or research interests in in silico medicine get involved. Thus, dealii-X could have its own dedicated channel in this community to share goals and widen its potential reach.

f. Project Visual Identity

As a first communication output, partner VPHi designed a complete visual identity that revolves around the dealii-X logo concept and Pantone colour and includes the following elements:

- The project logo
- Templates for the graphical layout of project documents
- Templates for PowerPoint presentations
- A dissemination toolkit

The logotype with text should be used whenever possible. The isotype (without text) should be used whenever the logo is too small to be able to read the text. The font used in the logo is Poppins.

Figure 2 - dealii-X Logo Instructions

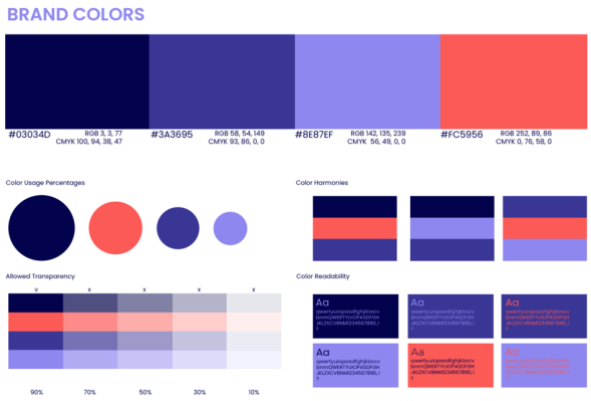

Figure 3 - dealii-X Color Guide

Figure 4 - dealii-X Typography

To achieve effective communication, a set of **templates** has been developed, including templates for meeting minutes, reports, agendas, deliverables, and PowerPoint presentations. All templates can be accessed by all partners from the Google Drive shared repository.

The **Dissemination Toolkit** includes a general PowerPoint presenting the project, its objectives, the consortium and expected results to be used by partners to spread the knowledge about dealii-X.
As the project develops, the Toolkit will include several other dissemination materials, both digital and print, including flyers and brochures, posters and roll-up banners for display at events.

g. *Website*

Link - The official website of the dealii-X project can be found at the following link https://dealii-x.eu/

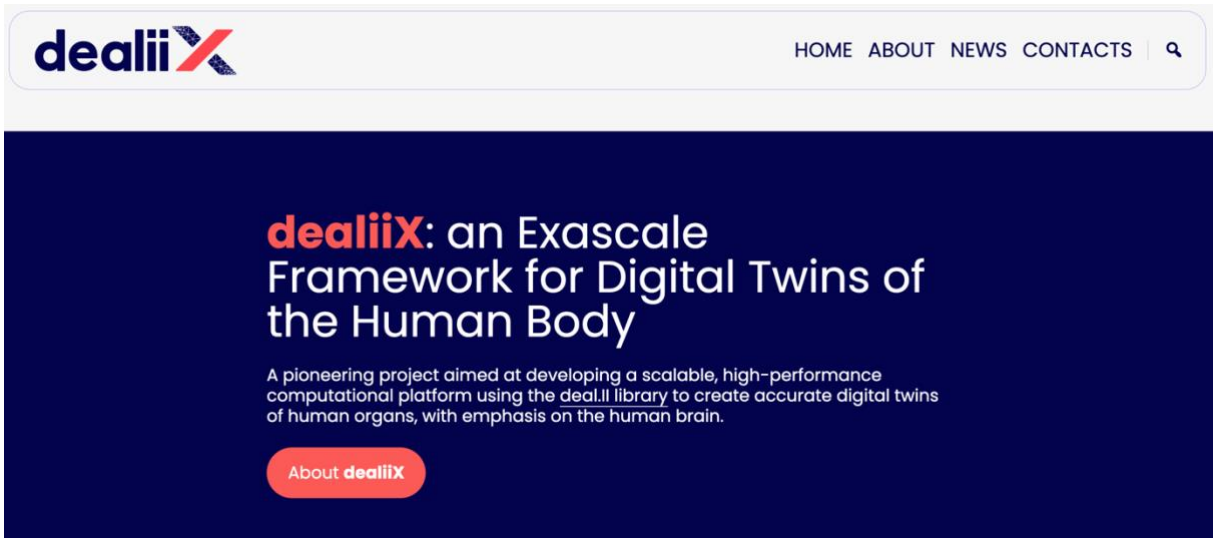

Figure 5 - dealii-X Website Home Page (subject to changes)

Design - The design of the website corresponds with the overall brand identity of the project. The visuals used on the website complement the modern look of the logo and the idea of high-performance computing.

i. Content Plan

The website currently offers the following categories and content:

- **Homepage** – it includes a description of the main goals of the project, a call to action and impact highlights.
- **About** – In this area we list the mission and vision, the partners and the community
- **News** – The news area, with the latest updates on the project, the publications, events, and job openings
- **Code** – A section dedicated to the more technical aspects of the projects, coding, tutorials and demos, use cases and a simulation viewer.
- **Documents** – Here we will collect all the data security documents, the ethical commitments, the downloadable content and other documentation
- **Contacts** – The last page will be a contact form for general inquiries, a team directory and social media channels

The website aims to inform about the dealii-X project and to communicate and attract potential members, e.g., researchers, industry partners, clinicians and in general people that are involved or even just simply interested in high-performance computing.
The focus of the website will shift to the latter goals as the project advances, following the updated communication plan. We will attract visitors by linking posts on social media to our website and vice versa. In addition, by posting and linking to dealii-X on existing communication channels of the consortium, we can draw interested visitors to our website. Best practices for Search Engine Optimization (SEO) will be used in order to make sure that the website is among the first ones retrieved by Google for searches that relate to the main keywords of the project (i.e. exascale, high-performance computing, in silico, etc.).

6. Evaluation and Monitoring of Dissemination Activities

Communication activities will be monitored according to a set of indicators, to assess (1) the performance of communication activities concerning the communication objectives, and (2) the relationship between the outcomes and the efforts made to reach the goals. This analysis will help the project to better understand the

facilitators and barriers to successful communication and will serve to refine the communication activities accordingly.
A set of KPIs has been specifically defined to monitor the successful deployment in terms of efficiency and effectiveness of dissemination activities. These indicators are many and vary based on different channels in use. On one hand, we keep track of the **volume** of different outputs (the list of outputs is extracted from the Dissemination monitoring section on the EC portal):

OUTPUTS	**UNITS**	**% OF TOTAL**	**REACH**
Organized conferences			
Organized workshops			
Attended conferences			
Attended workshops			
Attended other events (others than conferences and workshops)			
Press releases			
Non-scientific and non-peer-reviewed publications			
Exhibitions			
Flyers			
Training events			
Social media			
Website			
Communication campaigns			
Video/Film			
Brokerage event			
Pitch event			
Trade fair			
Activities organised jointly with other EU project(s)			

To these metrics, we will take into account the analysis of data from the Dissemination Log (see next section) and insights from social media and the Website through Google Analytics, which all together represent the Monitoring Framework and contribute to the Dissemination Reports due at M18, M36, and M48.

Monitoring metrics:

- For **social media**, the communication team will take into analysis different metrics.
- For LinkedIn, the main metrics we will take into consideration are: monthly views, followers gained, impressions and engagement rate.
- The **website** statistics are tracked via Google Analytics and in this case, the most important metrics are: the number of sessions and number of users; since it is an informative website, the session duration per page, the bounce rate, the engagement and the provenience of the audience will be also analysed.
- Regarding the **newsletter**, to determine the success of our efforts to date, and improve our results, we will track the content metrics which matter most, such as the bounce rate, the delivery rate, the list growth rate, the open rate, the click-through rate, the unsubscribe rate. All these data will contribute to the final dissemination report.

Further monitoring tools are Google Alerts and similar tools to track dealii-X presence on the web (if and how the project is mentioned in generalist press) and in scientific publications when those are not coming directly from the consortium.

a. Dissemination Log

The Dissemination Log (DL) is an excel document for monitoring partners dissemination activity during the whole project.

B	C	D	E	F	G	H	I	J	K	L
Date	Project Year	Type of dissemination and communication activitie	Title and description of the Activity	Source	Name of Partner/authority	Name of speaker/partecipant	Event/Website/Publication /etc Name	Content	Location	Target
25/01/25	1	Social Media	dealii-X Linkedin page launch	Communication Office	VPHi	Goran Stanic	VPHi LinkedIn Page	Motivation	Online	Researchers/Acaden
28/01/25	1	Social Media	dealii-X website launch	Communication Office	VPHi	Goran Stanic	dealii-X Linkedin page	Motivation	Online	Researchers/Acaden
28/01/25	1	Press release	dealii-X project promotion	Communication Office	VPHi	Goran Stanic	VPHi Blog Section	Motivation	Online	Researchers/Acaden

Figure 6 - Example of Dissemination Log Entries

i. How does the Dissemination Log work?

When a dealii-X partner releases or carries out specific dissemination action (for example, organization of an event, submission of a publication, attendance to a third-party workshop to promote dealii-X, etc.) a new entry on this Excel log must be added including some basic information about the action made (date, specific channel used, location, brief description, number of people reached…), so that periodically (e.g., every month) the dissemination coordinator will check the log and refresh the progress of the specific KPI's (see previous table) in order to make a close monitoring on dissemination efforts.

ii. Who compiles the DL?

The file is compiled by the dissemination team, but for them to do so it is crucial that each partner timely communicates about every activity related to the project by sending an email to [mail address] indicating:

- Type of activity (conference, talk, poster, paper, event, webinar...)
- Title
- Brief description
- Partner(s) involved
- Type of audience (researchers, general public, clinicians…)
- Approx. number of people reached
- Other details (URL, flyer, invitation, media material…)

All partners are invited to include as much information as possible. The collaboration of all partners on this task is very important to have reliable real-time dissemination monitoring and for reporting to the EC in due time. It is also crucial for the calendarization of social media and blog posts (see next section).

iii. When do I send the information?

All the dissemination and communication activities coming from our members and related to dealii-X will feed our editorial plan on our website and social media, so we encourage our partners to send to the Communication and Dissemination Team all the info at their earliest convenience (i.e., as soon as they organize events or receive invitations to events) and anyway **in advance of the event**. For immediate publication of your pictures of live events, please send them directly to *(mail address)*.

If the activities concern private events, closed-door meetings or events restricted to certain groups and thus are not meant to be published or disseminated online, the partners still have to send the information for the monitoring log, but it is less time-sensitive.

7. Obligations and Requirements for Communication Actions

a. Information on EU funding — Obligation and right to use the EU emblem

Unless it is impossible, any dissemination material on any media must indicate that the project received funding from the European Union's Horizon EuroHCP programme by including the European Union flag and the following text:

"dealii-X has received funding from the European High-Performance Computing Joint Undertaking Programme under grant agreement n 101172493"

OR

This study was supported by the European Commission through the High-Performance Computing Joint Undertaking Programme project "dealii-X an Exascale Framework for Digital Twins of the Human Body" (grant n 101172493)

When displayed together with another logo, the EU emblem must have appropriate prominence.

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 European HPC JU. Neither the European Union nor the granting authority can be held responsible for them."

b. Disclaimer excluding Agency and Commission responsibility

Any communication activity related to the action must indicate that it reflects only the author's view and that the Commission is not responsible for any use that may be made of the information it contains: "This communication/publication reflects only the author's view. It does not represent the view of the European Commission and the European Commission is not responsible for any use that may be made of the information it contains."

c. *Obligations and Requirements for Scientific Publications*

The dealii-X Dissemination and Communication team will disseminate the results provided by the consortium. When dissemination is initiated by Consortium partners, they must inform the Dissemination and Communication Team in advance before any dissemination activity, including but not limited to the following list:

- newsletters, brochures, flyers, posters, web content by their organisation
- presentations of results at external events
- presenting dealii-X results
- papers or articles in scientific, technical or general publications
- written press or audio-visual media releases

Especially regarding the dissemination of results through scientific publications to be submitted to journals and/or conferences, the beneficiary that intends to disseminate his/her results must give advance notice to the other beneficiaries at least 15 calendar days before the intended date of submission of publication.
Any other beneficiary may object within 15 calendar days of receiving notification. If no objection is made within this time limit, the publication is permitted.
Thus, the Dissemination and Communication team establishes the following procedure:

- The beneficiary that intends to submit a publication must send an email to the Communication Team using the proper email address including:
  - Title of the publication
  - List of authors
  - Abstract
- The Communication Team will send the information to all the other partners for feedback and approval, with a silence-is-agreement clause
- After 15 calendar days, if no objections are raised, the publication is considered approved by the whole consortium.

8. Conclusions

This document summarizes all the Dissemination and Communication activities that are planned for the whole duration of the project, divided into actions towards the partners and the consortium as a whole (internal communication) and actions towards all the relevant stakeholders (external communication), as they have been identified by using different analytical models.
Based on the data we plan to generate and collect with the dissemination and communication activities, a monitoring framework is set up for future use in the Dissemination Reports, that will take into account all the channels, messages, sources and targets of the communication.

9. Annexes

a. Key messages analysis

GENERAL

- **Revolutionizing Medical Diagnostics with Exascale Computing**

dealii-X utilizes exascale computing to deliver real-time, high-resolution digital twins of human organs, transforming personalized medicine.

- **Bridging the Gap Between Simulation and Clinical Application**

By overcoming computational challenges, dealii-X translates advanced simulation technology into tools accessible for medical diagnostics and treatment planning.

- **Scalable and Unified Framework for Digital Twin Development**

A robust platform powered by deal.II integrates cutting-edge solver technologies, optimizing for excellent computational efficiency in medical applications.

- **Empowering Researchers and Clinicians**

dealii-X's low-code interface democratizes the creation of digital twins, enabling clinicians and researchers to tackle complex medical challenges with ease.

- **Driving European Leadership in HPC and Computational Medicine**

By advancing deal.II and fostering a thriving user community, dealii-X solidifies Europe's position at the forefront of high-performance computing innovation.

MEDICAL COMMUNITY

- dealii-X will empower clinicians with real-time, highly accurate digital twins of human organs, enhancing precision diagnostics and enabling personalized treatment planning for neurological disorders.
- The project bridges the gap between cutting-edge computational modeling and clinical application, enabling better insights into neurological disorders.
- With dealii-X, you'll gain access to advanced tools that improve treatment planning, offering patients more effective and tailored care.

PATIENTS

- The dealii-X Project aims to revolutionize medical care by delivering faster, more accurate diagnoses and personalized treatments for complex conditions, bringing hope for better health outcomes.
- Through advanced simulations, dealii-X helps target treatments to individual needs, reducing trial-and-error in therapies.
- The project is a major step toward improved healthcare, addressing complex conditions like neurological disorders with unprecedented precision.

RESEARCHERS

- dealii-X offers researchers a high-performance computational platform to tackle complex biological problems with unmatched resolution and accuracy.
- The framework supports Multiphysics modeling and real-time simulations, providing new opportunities to advance understanding of the human body.
- With integrated cutting-edge solver technologies, dealii-X is a game-changer for computational biology and medical research.

HPC SOFTWARE COMMUNITY

- dealii-X contributes to the HPC software community by advancing the deal.II library, integrating cutting-edge solutions, and enabling exascale scalability for broader applications.
- The project fosters collaboration within th HCP community, promoting knowledge sharing, algorithm development, and integration of exascale technologies.
- dealii-X sets new standards for performance, interoperability, and usability, offering reusable frameworks to accelerate innovation in HPC software.

INDUSTRY

- Through cutting-edge HPC and scalable algorithms, dealii-X unlocks new opportunities in biotech, medical devices, and AI-driven healthcare innovations, paving the way for transformative advancements in the industry.
- The framework's scalability and precision drive the development of advanced tools, supporting R&D and market growth in healthcare.
- By fostering collaboration with developers and users, dealii-X supports industry-wide advancements in computational tools and applications.

PHARMA COMPANIES

- dealii-X could offer pharmaceutical companies a powerful tool to simulate organ-level responses, reducing reliance on physical trials and accelerating the drug development process.
- With unprecedented resolutions and real-time modeling, dealii-X enables pharma companies to design and test personalised therapies with greater accuracy and confidence.
- By leveraging exascale computing, dealii-X provides a scalable framework to analyse complex biological processes, opening new frontiers in computational pharmaceutical biotech innovation.

REGULATORS

- dealii-X is at the forefront of computational healthcare, creating robust, validated tools that meet stringent safety and efficacy standards, ensuring reliable implementation in clinical settings.
- The project demonstrates compliance with state-of-the-art practices, offering trustworthy tools for healthcare innovation.
- By enhancing modeling accuracy and predictability, dealii-X supports informed regulatory decisions in advanced medical technologies.

STANDARD COMMITTEES

- dealii-X establishes protocols for scalable, high-performance simulations, setting new benchmarks for digital twin technology.
- The project's unified framework ensures compatibility and interoperability across diverse applications, adhering to global standards.

- dealii-X promotes collaboration in defining technical guidelines for exascale computing in biomedical applications.

SUPERCOMPUTERS CENTRES IN EUROPE

- dealii-X ensures optimal use of Europe's exascale supercomputers, pushing the boundaries of computational capabilities for healthcare applications.
- The project highlights European, expertise in combining high-performance computing with medical research, strenghtening the position in global HPC innovation.
- Through scalable algorithms and real-time simulations, dealii-X demonstrates practical and impactful uses of supercomputing resources in medicine.

MASS MEDIA

- dealii-X is a transformative project that combines supercomputing with medical science to create "digital twins" of human organs, offering a glimpse into the future of personalized medicine.
- This groundbreaking project combines supercomputing and medical science to address complex health challenges, including neurological disorders.
- dealii-X exemplifies how advanced technology can translate into better health outcomes for millions of patients worldwide.

POLICY MAKER

- The dealii-X Project represents a major leap in healthcare innovation, aligning with policy goals to improve public health through cutting-edge technology and personalized medicine.
- The project leverages European expertise in high-performance computing, supporting leadership in global healthcare innovation.
- By addressing critical healthcare challenges with technology, dealii-X contributes to better health systems and societal well-being.

CITIZENS

- dealii-X is working to improve healthcare for everyone by using advanced computing to deliver faster and more accurate diagnoses.
- The project promises a future where treatments are more effective and personalized, reducing risks and improving quality of life.
- By integrating technology and medicine, dealii-X aims to make cutting-edge healthcare solutions accessible to all.