THRILL

TECHNOLOGY FOR HIGH-REPETITION-RATE INTENSE LASER LABORATORIES

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About THRILL

The THRILL project deals with providing new schemes and devices for pushing forward the limits of research infrastructures (RI) of European relevance and ESFRI landmarks. To do so, the project partners have identified several technical bottlenecks in high-energy high-repetition-rate laser technology that prevent it from reaching the technical readiness level required to technically specify and build the needed devices, and guaranteeing sustainable and reliable operation of such laser beamlines at the partnering RIs. Advancing the technical readiness of these topics is strategically aligned with the long-term plans and evolution of the ESFRI landmarks FAIR, ELI (-BL) and Eu-XFEL, and RI APOLLON, bringing them to the next level of development and strengthening their leading position.

The project is focused and deliberately restricted to three enabling technologies, which require the most urgent efforts and timely attention by the community: high-energy high-repetition-rate amplification, high-energy beam transport and optical coating resilience for large optics. To reach our goals, the major activity within THRILL will be organized around producing several prototypes demonstrating a high level of technical readiness. Our proposal is addressing not yet explored technical bottlenecks – such as transport over long distances of large-aperture laser beams via relay imaging using all-reflective optics – and aims at proposing concrete steps to increase the performances and effectiveness of the industrial community through the co-development of advanced technologies up to prototyping in operational environments.

The project is not only pushing technology, it is also offering an outstanding opportunity to train a qualified work force for RIs and industry. With this in mind, the structure of THRILL promotes synergetic work, fast transfer to industry and integrated research activities at the European level. Access to the RIs will be granted as in-kind contribution.

Executive summary

This deliverable provides the initial strategy and action plan for the dissemination and exploitation of THRILL's results together with its communication activities. This document gives an overview of the aims of the strategy, following its main goal to raise awareness for the project's activities and results in order to maximise its impact.

This plan is the baseline for the coordination of all activities of the project and its partners in order to generate synergies and ensure an efficient dissemination, exploitation and communication. Its aim is to create a strong awareness for the project and to make THRILL's information available to the target audiences.

The document functions as a guide for all project partners and will be constantly updated throughout the project lifespan.

Abbreviations

Abbreviation	Definition
AO	Adaptive optics
HEHRR	High-energy high-repetition-rate
ICUIL	International Committee on Ultra-High Intensity Lasers
RI	Research infrastructures

1 Introduction

The present "Plan for Dissemination and Exploitation including Communication activities" gives an overview of the aims of THRILL's dissemination, exploitation and communication activities. It will outline the objectives and the project's target groups, define the types of activities and provide criteria for the selection of activities to help define the measures to be implemented while also presenting concrete activities and publications.

This plan aims to achieve the greatest possible visibility, accessibility and promotion of the THRILL project and its results during the grant period and beyond. Therefore, dissemination, exploitation and communication activities will be carried out through a range of tools and methods, which will be further described within this document.

The present plan includes the following specific strategic objectives:

- to identify the target audiences;
- to reach the target audiences and foster their active interest in the project;
- to communicate on the THRILL project and its outcomes;
- to give industry direct access to the technical results of the project in view of ensuring its long term sustainability;
- to engage with the target groups in order to steer the project towards the real needs of the scientific community, thus fully exploiting the potential of the high-energy laser facilities;
- to develop a highly skilled workforce which will be persistent even after the end of the project.

The difference between dissemination, exploitation and communication determines the underlying strategies:

- **Communication** aims to inform, promote and communicate the project's activities and results while reaching out to and engaging with multiple target groups from project start to finish.
- **Dissemination** focuses on making the project's results public in scientific magazines, at conferences or via databases, not only to scientists but to everyone who can learn from the results, as soon as the project delivers results.

- **Exploitation** targets concrete use of the project's results by researchers, the industry or policymakers, as soon as the project has produced exploitable results, which is expected rather during the second half or towards the end of the project.[1]

2 Objectives

2.1 Aim of the dissemination and exploitation strategy

The main and general objectives of the project's dissemination and exploitation activities are to create transparency and visibility of the project results (dissemination) so that all interested parties can make use of the results (exploitation).

To reach the above-mentioned strategic objectives, a set of concrete actions for dissemination and exploitation has been foreseen:

- Given the innovative nature of the research topics, the project results will be published in **scientific journals** and will be also easily available on the website of the project. They will also be disseminated through community-centred media, such as the GSI Target magazine (GSI publisher), the Laserlab Forum and other specific magazines and newsletters.

- Presentations and talks on major results will be given at **scientific conferences and targeted workshops** with the aim of disseminating the results within the scientific community. THRILL will maximize as much as possible its use of existing events: user meetings at the different RIs, scientific meetings and conferences regularly planned at the different RIs, as well as other laser-oriented international conferences, such as the ones by the International Committee on Ultra-High Intensity Lasers (ICUIL). It will allow involving the project's stakeholders to widely disseminate the project's outputs while engaging with the main target groups, as well as collecting comments and advices for a further fine-tuning of the project.

- It is important that the industry has direct access to the technical results of the project, to guide manufacturers in answering the needs for the future HEHRR lasers to be procured by the partners. To structure such an action, the consortium has established an **industry board**, whose goal is to monitor progress in the Work Packages and advise the management on the feasibility of technical developments and, in general, on industrialization matters. The industry board is open to any company active in the field and showing an interest in the results. By giving the industry a forum for direct access to the

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[1] https://rea.ec.europa.eu/system/files/2021-11/Communication%2C%20Dissemination%20and%20%20Exploitation-2021.pdf (2 June 2023)

developments and the possibility to give feedback, THRILL will greatly speed up technology transfer.

- End users of the project are clearly identified, being primarily the scientific community pushing for the technical developments and using these installations for research and development. Therefore, a **board of end-users** is created with the role to monitor the results of the consortium and advise the consortium management on the strategic orientation of the work, to ensure that the results take into consideration the different applications and the possible bottlenecks. The board brings together representatives of users, facilitating and fostering their exchanges with the infrastructures and between different scientific areas.

- In addition, the training and development of future generations of RI staff is one of the core objectives of THRILL. The **training activities** are dedicated to the development of a highly skilled workforce, exploiting the complementarities of the different partners in their expertise relevant to the topic, in order to ensure the lasting availability of staff capable of maintaining the developed new technologies for the long-term operation of the facilities. Two summer schools or training events will be organized for existing staff and young scientists hired for implementing the work in the project's technical work packages, in order to increase their knowledge and experience and to develop the knowledge exchange across the WPs. In addition, the exchange between the WPs will comprise **laboratory visits**, short presentations of the participants, and **hands-on training**. In addition to the immediate training of researchers within the topics of their work packages, short-term staff exchanges between the participants in the project will ensure that researchers develop an understanding of all techniques available at other facilities and learn about each other's expertise

2.2 Aim of the communication activities

The overall communication objective is to build a community, facilitating the exchange of information among all consortium partners as well as to identify, address and engage with end-users from academy and industry through targeted communication, mutual support and services.

The specific goals of the communication plan are:

- to ensure a coordinated, regular communication, providing appropriate visibility to all target groups, with the adequate narrative;

- to maximise the impact of the project outcomes;

- to engage all target groups to maximise the visibility of the project's outcomes and impact;

- to describe the marketing activities, including the project's website, the use of social media, the newsletter, promotional materials, etc.

A set of materials for the project (visual identity, PowerPoint presentation templates, and printed items such as a brochure or flyers) has and will be developed to increase the project's visibility from its start, for both internal and external communication use.

3 Methodology and workflow

3.1 Work organisation

This document aims to provide a framework for the dissemination, exploitation and communication of the project's outputs in a unified manner.

Internal communication

Internal communication ensures that the involved staff becomes knowledgeable and able to carry out tasks required to deliver the project, whilst also promoting and informing their colleagues and associates. Day-to-day internal project communication relies on email distribution lists as well as electronic document sharing and archival in a secure cloud system prepared by GSI.

External communication

To ensure the quality and the coherence of the messages shared, as well as their suitability (no confidential information, no information that precludes the possibility to exploit or disseminate results), all non-scientific communications (e.g. press releases) that issue information to the public need to undergo the project's approval process for external communication, see Annex 1.

Role of the consortium partners

All project partners take an active role in the dissemination, exploitation and communication activities. Their contribution will be important and crucial for the success of the strategy.

3.2 Target groups and key messages

Effective dissemination, exploitation and communication can only be realized when the right message at the right time is delivered to the right target audience. Therefore, knowing whom to target with which message and content is essential.

For THRILL, these target groups are defined as the following:

- **End-user facilities**: Partner RIs and affiliated entities, ESFRI landmarks, ELI-NP for beam transport, CLF (STFC) for laser amplifier cooling, members of the end-user board
- **Industrial users**: E.g. directly involved industry partner (Amplitude), Thales laser, members of the industry board
- **Workforce**: Next generation's scientific staff trained during THRILL, existing staff involved
- **Scientific and academic users** in laser-based science
- **Multipliers**: E.g. scientific associations, networks

Key messages

To complement the core mission of THRILL as the provider of new schemes and devices for pushing forward the limits of research infrastructures of European relevance and ESFRI landmarks, THRILL aims to communicate its benefits to the target groups with the following key messages:

- THRILL prepares the next generation of scientific instruments by laying the basis for a conceptual design, showing the path and recommending technological choices to maximise the cost/performance ratio of the facilities and enable RIs to stay at the forefront of science and technological developments.
- THRILL enables a knowledge exchange across the different RIs and a strong awareness of the technical potential of the different instruments, which will translate in a wider range of applications.
- THRILL trains the next generation of scientific staff and develops a highly skilled workforce for the operation of the laser instruments for new discoveries and applications and for ensuring their long-term sustainability and cost efficiency.
- THRILL enables new discoveries and keeps European RIs at the highest level of excellence in science, while paving the way to innovate solutions to societal challenges and new industrial applications, products and services.

- THRILL enhances global competiveness and technological excellence of Europe in an extremely fast-moving environment through forward-looking technical instruments and tools for European RIs.
- THRILL enhances competiveness of European industry through co-development with industrial actors of advanced RI technologies and technology transfer.

3.3 Gender equality

The project is situated in a field that is notoriously plagued with gender imbalance: only 16.5 percent of the participants of the 2020 EPS conference on plasma physics were women[2]. Given this background, measures will be taken to improve the situation, e.g. through promotion of the presence of women in the consortium activities. One measure will be to conduct interviews of female staff engaged in the project and make their presence visible on the project's website and on social media.

4 Dissemination, exploitation and communication tools and channels

The used dissemination, exploitation and communication tools and channels are the means for transporting specific messages to the before mentioned target groups, with the aim of reaching the objectives of the THRILL project. To maximise the impact of the dissemination, exploitation and communication activities, the different target groups should be reached via the most appropriate channels. These channels vary depending on the expectations of the audience, as well as on the level of complexity, importance and content of the message to be communicated.

In addition to the project's own channels, the consortium partners will use their communication channels, including social media channels, to disseminate key information and news about the project itself or about the obtained results to their staff, to their users, to other researchers, stakeholders, funders, governance bodies and to the general public.

4.1 Visual identity

The visual identity of the THRILL project was developed at the start of the project in order to maximise the impact of the dissemination, exploitation and communication activities. Its overall aim is to create a clearly identifiable and easy to recall image of the project to support the project

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[2] http://fusionwiki.ciemat.es/wiki/Women_in_Plasma_Physics

activities, such as publications and presentations and all types of written as well as visual communication about ongoing and completed research activities.

The project's visual identity consists of the project logo, colours, fonts and templates that are to be used on all dissemination, exploitation and communication materials representing the project.

The design of the logo was guided by the following principles:

- Clear, minimalist and easy-to-identify lettering
- Representation of the (number of) partners in the logo

The final logo (see Figure 1) will be used in all communication materials (press releases, presentations, written deliverables, etc.) to increase the visibility of the project. Depending on where the logo will be used, there are several versions available, as shown in Figure 2 and 3.

Figure 1 – THRILL logo

Figure 2 – THRILL logo if displayed smaller than 6 cm

Figure 3 – THRILL logo square version

The chosen primary colours and corresponding hex codes are indicated in Figure 4. The colours are an important part of the visual identity and support the idea of an easily identifiable logo. Moreover, the primary colours are used in the design of the website and will be used in all communication materials.

#005597   #22b3c9

Figure 4 – THRILL primary colours

4.2 Website

The THRILL website (www.thrill-project.eu) is one of the project's main tools for overall project dissemination, exploitation and communication. It is usually the first point of contact for anyone interested in the project.

The design of the website reflects the main principles of usability, clarity, and simplicity in order to provide the general public, stakeholders and interested end users with easy access to information about the THRILL project. The website operates using WordPress with the Kubio editor, which is a visual drag and drop page builder. It is fully responsive, allowing smooth user navigation from tablets and smartphones. The website will be continuously maintained and updated by LLE, as new results and actions related to the project emerge.

The website provides an overview of the THRILL project, including its objectives, project partners and information on the performed research. Project outputs will also be promoted in the news section of the website. Links to the project's social media channels are provided.

The look of the THRILL website is currently as shown in Figure 5 and follows the visual identity of the project. The main page provides a brief summary of the THRILL project, including project numbers and an overview of all project partners. It will also display the latest project news.
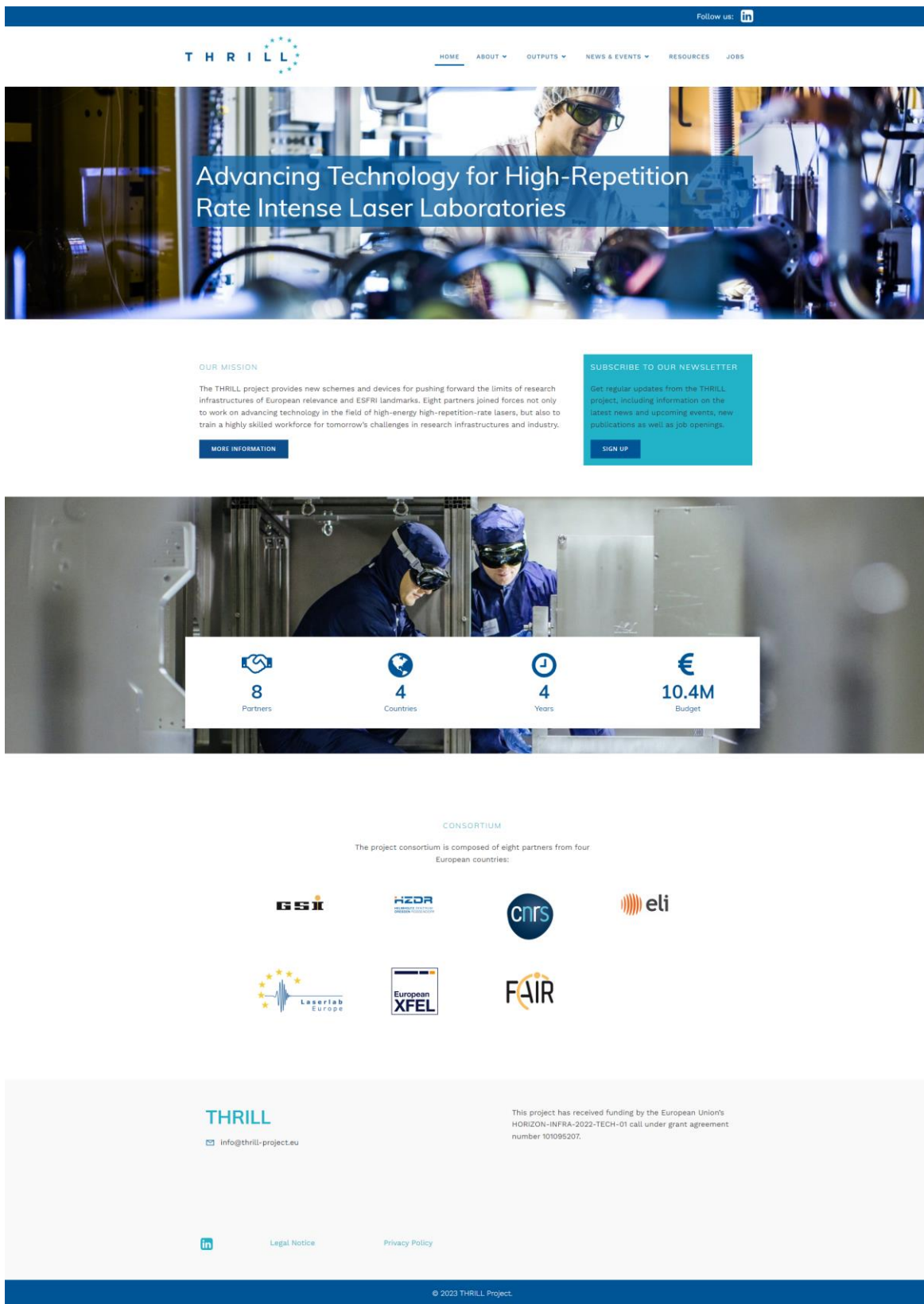
Figure 5 – Screenshot of the front page of the THRILL website

The THRILL website has a number of subpages designed to communicate the different aspects of the project to a wide audience. The subpages are as follows:

- **ABOUT** (Our goals, Work packages, Partners): A general description of the project and its goals are presented here. An overview of the work packages and project partners is given, with links to the partners' websites for further information.

- **OUTPUTS** (Publications, Deliverables): This section will contain all scientific publications, posters and presentations as well as all publicly available deliverables.

- **NEWS+EVENTS** (News, Newsletter, Events): This section will provide any news and events related to the THRILL project. It also includes a form to subscribe to the project's newsletter.

- **RESOURCES:** This menu item provides access to all dissemination materials related to the project (logo, templates, etc.).

- **JOBS:** Job offerings related to the project from the partners will be published here.

The footer is fixed on all pages and displays the LinkedIn icon and contact email address, a link to the privacy policy statement and legal notice as well as a statement and logo acknowledging the funding received from the EU.

4.3 Social Media

Social media play an important role in raising awareness of the THRILL project among target groups and in enabling participation and interaction. To this end, the consortium has decided to focus on the information sharing and interaction on LinkedIn, as this network gathers representatives from the different target groups identified.

The LinkedIn account linkedin.com/company/thrill-project/ will be used to announce news and events as well as job vacancies, thus allowing for further communication of relevant project updates, increasing the public visibility of the project and enabling direct communication with the target audience. In addition to the THRILL LinkedIn account, the Social Media accounts of the project partners will be used to further disseminate the content of the project.
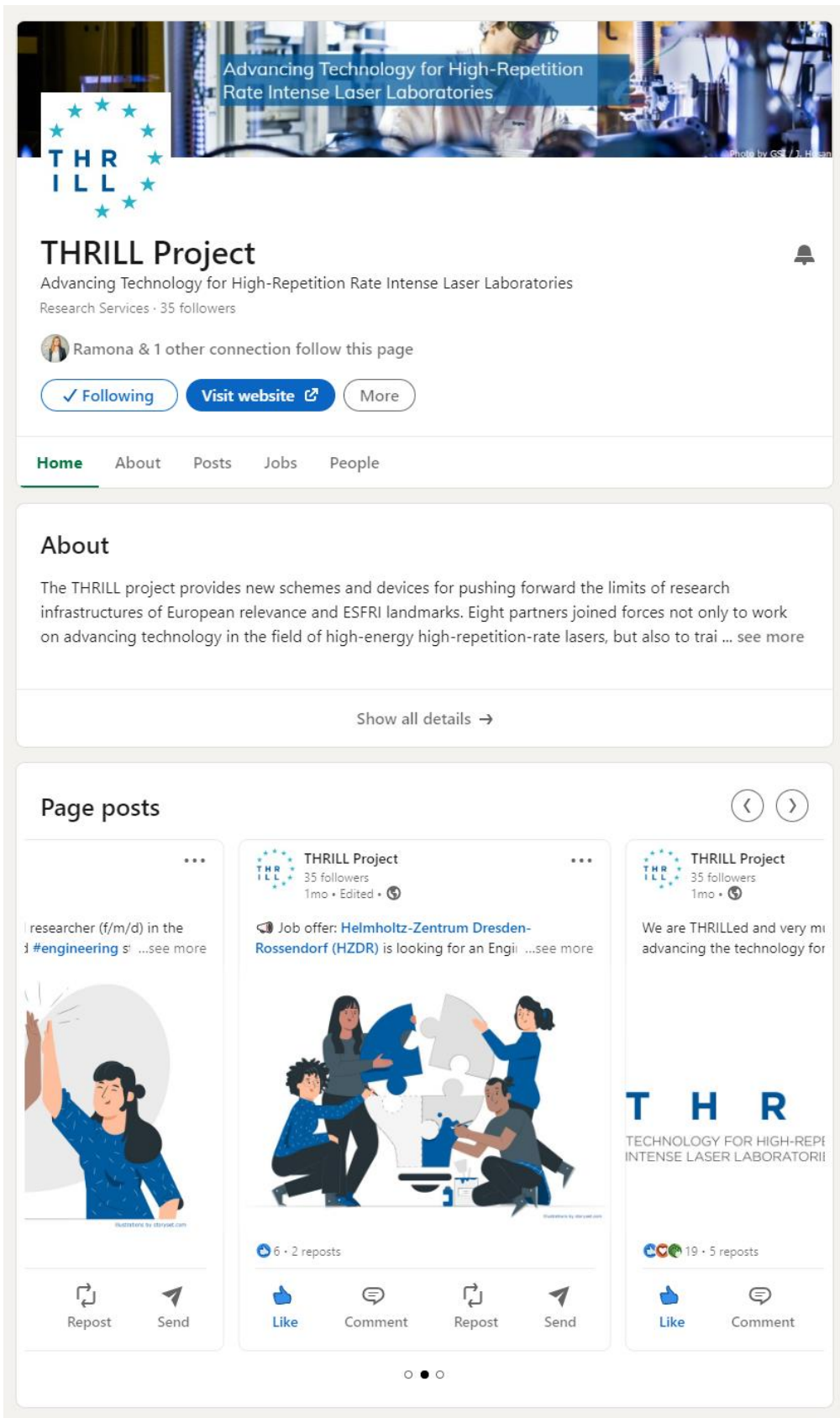
Figure 6 – THRILL LinkedIn profile

The information that are included in the website will also be shared and advertised by the THRILL LinkedIn account as well as by the social media accounts of the consortium partners, also covering additional social networks.

4.4 Newsletter

The newsletter will be a collection of meaningful content for the project's target groups. Its objective is to raise the interest of the target audience to read and inform themselves about the activities of THRILL, and to incite subsequent website visits to obtain regular updates about activities and results. The digital newsletter will be generated at least twice a year, depending on the available information and project results.

Interested parties can sign up for the THRILL newsletter by entering their email address on the website.

This newsletter will inform about

- Scientific news resulting from the project
- Upcoming events organised by THRILL and/or related partners/initiatives
- Job openings in the field of high-energy laser science

4.5 Press releases

The consortium has issued a press release at the project launch, shown in Figure 7. The project will release additional press releases whenever the project has reached a significant milestone or exceptional scientific impact.

All press releases produced will aim at a clear and precise language, giving interesting insights and using a catchy title and language to grab the reader's attention. Press releases use the specific template with the project's logo and visual identity. Their objective is to raise awareness for the project and foster follow-up website visits.

Figure 7 – THRILL's first press release on the project start

4.6 Publications and open access

Given the innovative nature of the research topics, the project findings and results will be published in scientific journals and will also be easily available on the website of the project in order to share the developments within the relevant scientific communities. Outstanding publications will also be promoted through the THRILL social media channel and newsletter.

The results will also be disseminated through community-centred media, such the GSI Target magazine (GSI publisher), the Laserlab Forum and other specific magazines and newsletters.

A THRILL community on the Zenodo repository will be created for centralized access to the results and for ensuring open access to publications.

The project results will also be presented at conferences and networking events.

Open access to the publications and related data will be assured. The project's website will comprise a database for publications resulting from the project, including DOI references for easy access. The THRILL consortium considers open science as a crucial facilitator for accelerating

research impact by ensuring transparency of research, research integrity, and the transfer of knowledge to industry and to society in general. Therefore, THRILL will ensure that the open access requirements are broadly known and will strongly encourage compliance by all partners.

In addition, a suitable data management plan (DMP; Deliverable 2.2) considering the different requirements between infrastructures and user groups was produced. The data management plan considers data ownership, curation, archiving, and open access to data following guidance from projects such as PaNOSC and takes into account FAIR data practices. The existing data policies of the facilities were the basis of the preparation of the DMP.

4.7 Promotional materials

Flyers and brochures

Promotional materials like flyers and brochures will be generated for focused and effective communication, dissemination and engagement outcomes. These will include general information on the THRILL project: a short description of the project, its aims and goals, expected outcomes, and the partners' logos. It will be the main dissemination material to stakeholders and at the project's events.

Presentation

In order to provide a homogeneous image of the project to the external audience, a standard presentation of the project was prepared as part of the presentation template to be used by all partners in internal meetings and external events.

The presentation introduces THRILL's mission and goals as well as the consortium. It also provides all the information to access the project's website and contact details of the project's representative. The presentation will be updated regularly in order to reflect the activities performed and the achieved results.
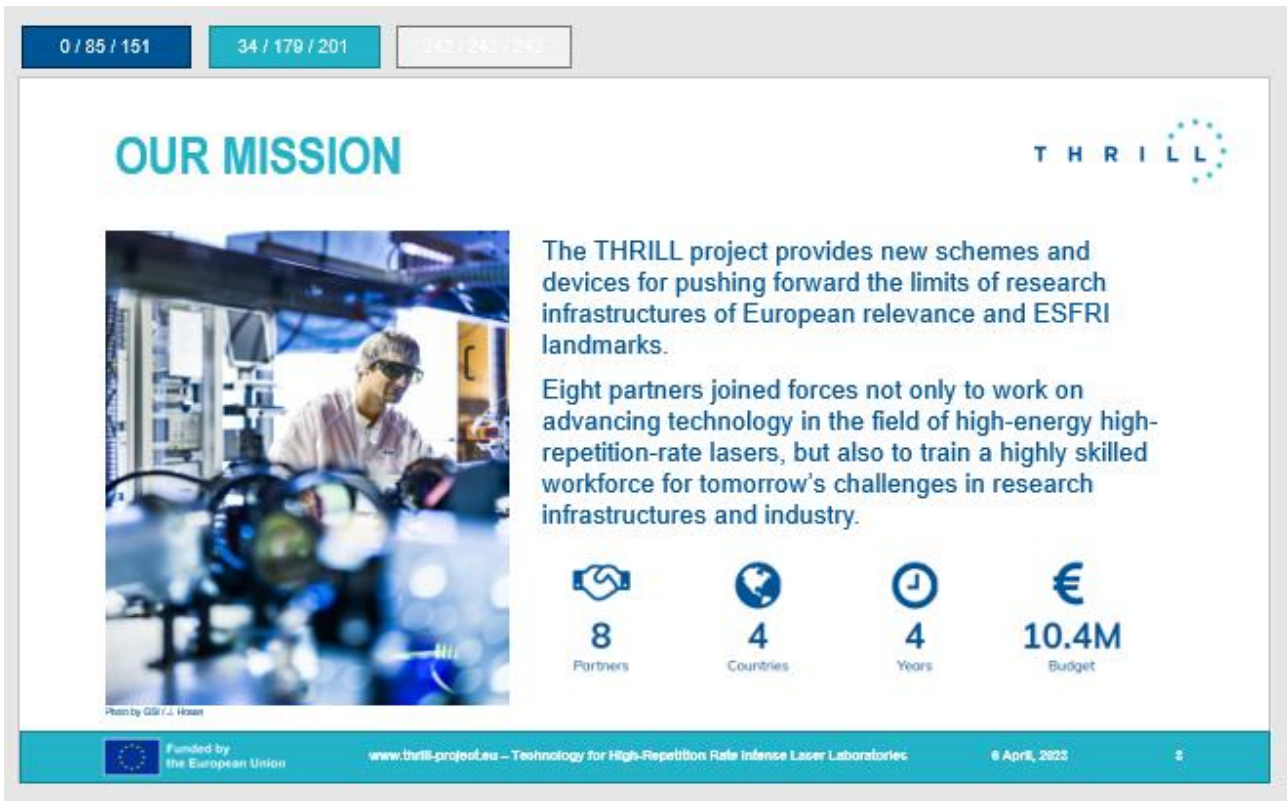
Figure 8 – Screenshot of THRILL's presentation

4.8 Events

Consortium-internal events

The consortium will meet on a yearly basis for its general assembly meeting. Together with the kick-off meeting, five meetings will take place during the project life. These annual consortium meetings will be held at the partners' locations on a revolving manner. These meetings will ensure community building and regular sharing of knowledge and expertise throughout the consortium. Apart from the necessary administrative aspects, the meeting will be the opportunity for the work package leaders to report in front of the end-user and industry boards. The minutes of the technical part of the meeting will be made publicly available, while the recommendations of the end-user and industry board will be communicated to the consortium management.

Scientific events

Scientific events, like conferences or targeted workshops, will be addressed and attended where appropriate by THRILL's partners. There, presentations and talks on major results will be given with the aim of disseminating the results within the scientific community.

THRILL will maximize as much as possible its use of existing events:

- user meetings at the different RIs,
- scientific meetings and conferences regularly planned at the different RIs, as well as
- other laser-oriented international conferences, such as the ICUIL ones.

These actions will allow involving the project's stakeholders to widely disseminate its outputs while engaging with the main target groups, as well as collecting comments and advices for a further fine-tuning of the project.

Example presentation:

24-26 April 2023: SPIE Optics + Optoelectronics 2023 in Prague, Czech Republic. Tomas Tolenis (ELI ERIC): "Investigation of E-field distribution and film material influence on laser-induced contamination"

The website will also include a calendar with the most relevant scientific events in relation to the nature of the project. In addition, new events, where one of THRILL's partners will take part, will be published in this calendar and included in the newsletter.

Training events

THRILL will support hiring PhD students and Postdocs at the partners' laboratories on all activities planned within the project's technical work packages. In order to boost this training, internal training events will be set up to develop and strengthen the skills of the RI staff and contribute to the creation of a highly skilled workforce able to maintain the developed new technologies for the long-term operation of the facilities.

This training will take the form of two summer school or training events for existing staff and hired young scientists in order to increase their knowledge and experience and to develop know-how exchange across the work packages. The events will take place in year 2 and 4 and will consist of lectures on all the topics tackled within the project, from laser materials to optical components and laser architecture. Laboratory visits, short presentations of the participants and hands-on training will also be organized as well as short-term staff exchanges between the partners. These exchanges will ensure that researchers develop understanding of the different techniques available at the facilities and learn about each other's expertise.

Workshops

In addition, workshops will be organised by the consortium

1) to discuss the laser system requirements for the next generation of high-energy systems with end users from ESFRI landmark facilities (ELI, ESRF, Eu-XFEL, FAIR) but also other scientists active in related fields. This workshop is part of WP3 and will be held during the first year of THRILL.

2) to organise the adaptive optics (AO) integration with the community as well as industry. The three main outcomes shall be the initiation of dialogue between the participants, the raising of awareness of this project, and the collection of concepts and approaches proposed by the participants. This workshop is part of WP5 and will take place at the end of the second year.

The following table gives an overview of the meetings and events scheduled in THRILL:

Meeting	Work Package	Frequency
Kick-off meeting	WP1	Once, month 1
Board meetings	WP1	Regularly
Industry board meeting	WP1, WP2	Annually
End-user board meeting	WP1, WP2	Annually
General Assembly	WP1	Annually
End-user workshop	WP1, WP3	2023
Workshop 2	WP5	2024
Summer schools for existing staff and hired young scientists	WP2	Two times (2024, 2026)

Table 1 – List of events

5 Evaluation

The results of the dissemination, exploitation and communication strategy will be constantly monitored in order to assess their effectiveness and progress and identify and formulate change requirements where necessary. The following Key Performance Indicator (KPIs) have been identified:

Tool	KPI
Website	• Number of visitors • Pages visited • Average time spent on the website
Flyer/Brochure	• Number of copies distributed
Newsletter	• Number of newsletters published • Number of subscribers • Number of newsletter openings
Publications	• Number of scientific publications
Articles	• Number of articles
Presentations at conferences	• Number of conferences and workshops attended
Press releases	• Number of press releases
Social Media	• Number of followers on LinkedIn • Number of LinkedIn posts

Table 2 – Key Performance Indicators on communication activities

The project's progress will also be monitored by the industry and end-users board on a regular basis to not delay advices and recommendations to the consortium.

6 Conclusion

In this document, a detailed description of the dissemination, exploitation and communication strategy and plan, methodology and main actions to be developed during the life of the project are described.

Nevertheless, this plan is a living document and will be adapted considering the needs of the project in each phase. As the project evolves, it may be necessary to refine the plan, e.g. by providing more details on planned events, communication channels etc., or to refine the strategy in other ways.

7 Annexes

7.1 Annex 1 – Communication Guidelines

Goal of the guideline

The goal of this guideline is to ensure that the rights for communication of each beneficiary and participating member of THRILL are acknowledged inasmuch as the individual rights are not entering into conflict with the interest of other parties. The rights for communication are:

- Each beneficiary of THRILL is entitled to communicate via non-scientific channels, for example press release or postings on social media
- Each participant of THRILL is entitled to communicate via non-scientific channels like social media about its participation in the project, including published results, in which he has been involved

To ensure that non-scientific communication of a disclosing party does not interfere with the other parties involved in THRILL, the right for communication is associated with duties:

- Non-scientific communication should not enter into conflict with the strategic communication of the beneficiaries. Therefore, the disclosing party shall transparently inform of its plans and give the other beneficiaries enough time to react in case they object.

This guideline does not deal with the topic of scientific communication, which should comply with open science and the guideline for good scientific practice.

Procedure for press release and non-scientific communication

The disclosing party, defining the individual or beneficiary of THRILL, planning to enter into a non-scientific communication via press release, web page or social media channel should give notice to all beneficiaries in advance about the planned action. This should give enough time for all beneficiaries to raise objections.

- The disclosing party should inform the consortium of its plan by:
  - providing a description of the planned action, text, images etc., which it plans to disseminate to the other THRILL participants. This information must be communicated in English, if the non-scientific communication would happen in any other language.
  - this should be sent either to the coordinator:
    - email to XXXX and cc XXXX
  - or, email to the THRILL management board: XXXX

- The beneficiaries have the possibility to notify the disclosing party, **within 10 working days**, after reception of the information.
    - If no written objection is made, the disclosing party is entitled to move forward.
    - Objections must be made within 10 working days, by:
        - written email to the disclosing party
        - AND, cc to the THRILL coordinator

Solving disagreement on non-scientific communication

- Parties are encouraged to solve issues in non-scientific communication directly
- If parties are not able to solve issues by themselves, they may involve mediation from the coordinator
- if mediation is not successful, the THRILL management board may decide on the issue using its standard voting rules