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D6.1 Plan for the Exploitation and Dissemination of Results (PEDR)

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Document Summary

The deliverable outlines the objectives pursued and the approach used for the implementation of the dissemination and exploitation activities of the Anselmus (Advanced Nuclear Safety Evaluation of Liquid Metal Using Systems) project. These activities aim at promotion, transfer, uptake and further use of the generated results of the project.

The main purpose of elaborating a Plan for the dissemination and exploitation of the results is to define a practical guideline for efficiently implement the exploitation and dissemination activities at project level. The document aims to support the achievement of the project objectives and in the same time, to facilitate the measures for the exploitation and dissemination of project outcomes.

The document summarizes the main elements for the exploitation and dissemination activities of the ANSELMUS project, including the following:

- Strategic vision (objective, targeted audience, methodology) on exploitation and dissemination activities of the project;
- Suitable tools for dissemination and exploitation activities;
- Intellectual property rights and their management in project;
- Implementation plan for exploitation of the results;
- Dissemination plan for the overall project;
- Key performance indicators for monitoring the dissemination activities.

This plan is a live document that will be reviewed and updated in accordance to the project needs throughout the project lifetime.

Document Revision History

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List of Terms and Abbreviations

Abbreviation	Definition
ADS	Accelerator-driven systems
ALFRED	Advanced Lead Fast Reactor European Demonstrator
ANSELMUS	Advanced Nuclear Safety Evaluation of Liquid Metal Using Systems
APC	Article processing charge
CA	Consortium Agreement
EC	European Commission
EDM	Exploitation and Dissemination Manager
ERF	Exploitable Results Form
ESNII	European Sustainable Nuclear Industrial Initiative
GA	Grant Agreement
GIF	Generation IV International Forum
H2020	Horizon 2020 programme - EC funding programme for research and innovation, running from 2014 to 2020
HEU	Horizon Europe – EC Research and innovation funding programme until 2027
HLM	Heavy-liquid-metal
KPI	Key Performance Indicators
IAEA	International Atomic Energy Agency
ICAPP	International Congress on Advances in Nuclear Power Plants
ICONE	International Conference on Nuclear Engineering
INNUMAT	Innovative Structural Materials for Fission and Fusion
IPR	Intellectual Property Rights
ISI	In-service Inspection
JRC	Joint Research Center
LFR	Lead-cooled fast reactor
LF	Load-following
MYRRHA	Multi-purpose hYbrid Research Reactor for High-tech Applications
NEA	Nuclear Energy Agency
OECD	Organisation for Economic Co-operation and Development
PASCAL	Proof of Augmented Safety Conditions in Advanced Liquid-Metal-Cooled Systems
PATRICIA	Partitioning And Transmuter Research Initiative in a Collaborative Innovation Action



PEDR	Plan for Dissemination and Exploitation of the Results
PIRT	Phenomena Identification and Ranking Tables
RATEN	Regia Autonoma Tehnologii pentru Energia Nucleara
R&D	Research and Development
SCK CEN	Belgian Nuclear Research Centre
SNETP	Sustainable Nuclear Energy Technology Platform
SSC	System, Structures and Components
TRL	Technology Readiness Level
TRL3	Technological concepts that have individually been proven experimentally
TRL5	Technology demonstrated in relevant environment
TSO	Technical Support Organizations
UT	Ultrasonic testing
VKI	von Karman Institute for Fluid Dynamics
V&V	Validation and Verification
WP	Work Package

1) Introduction

Dissemination and exploitation are indispensable activities when it comes to creating, promoting and maximizing the achievements of EU research projects. These activities aim at promotion, transfer, uptake and further use of the project generated results.

The dissemination activities intend to make the results available for use, enabling their use and uptake by specific stakeholders (e.g. scientific community, industrial or other parties, like policy makers).

The main goals of the dissemination, exploitation and communication activities are as follows:

- To raise public awareness and increase project visibility;
- To foster knowledge transfer to, and engagement of key stakeholders (research organisations, regulators, technical support organizations, industry, universities, and others);
- To enhance the potential exploitation of the project findings.

ANSELMUS (Advanced Nuclear Safety Evaluation of Liquid Metal Using Systems) Work Package WP6 activities aim to:

- prepare comprehensive dissemination and exploitation plan
- create and raise awareness about the project’s vision through electronic and non-electronic means, as well as through interactive and non-interactive activities
- create synergies with project and initiatives with similar topics
- attract potential supporters, help foster acceptance of the project’s outcomes
- prepare the ground for exploitation activities.

The Task 6.1 “Dissemination and exploitation of the results” role is to ensure that the obtained results are widely disseminated to stakeholders and the wider nuclear community, while ensuring that its key findings will be exploited for further use.

The plan for the dissemination and exploitation of the results (PEDR) will act as a practical guideline for efficiently implementing exploitation and dissemination activities at project level.

The dissemination plan sets out a strategy to maximize the impact of the project, to increase its visibility, and to ensure that project outputs reach a wide audience of relevant stakeholders.

The PEDR has been formulated taking under consideration the rules governing European Commission (EC) funded projects as well as established dissemination practices in order to accommodate the following objectives:

- ✓ to diffuse the scientific and technical knowledge generated by the project;
- ✓ to maximise the visibility of ANSELMUS assets;
- ✓ to establish a scientific community that could help validate project results and assist in further use of the results.

The strategy adopted by the project for dissemination and exploitation is considering the following main steps: elaboration, implementation, and monitoring of dissemination and exploitation actions (see figure 1).

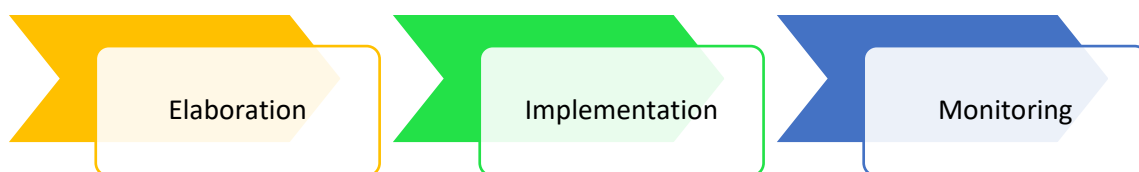


Figure 1: Steps of exploitation and dissemination strategy



The exploitation and dissemination activities that will be implemented by the project partners have two specific objectives:

- ✓ To disseminate project related outputs and results specifically to target groups, for maximizing the project’s impact and fostering synergies also beyond the project’s lifetime;
- ✓ To exploit the results generated by the project by ensuring a smooth transfer to all potential beneficiaries and pursuing the potential of “valorisation” of project results (either commercially or scientifically) as far as it is possible. This will require an efficient sharing of the research output and will facilitate the valorisation of project related results.

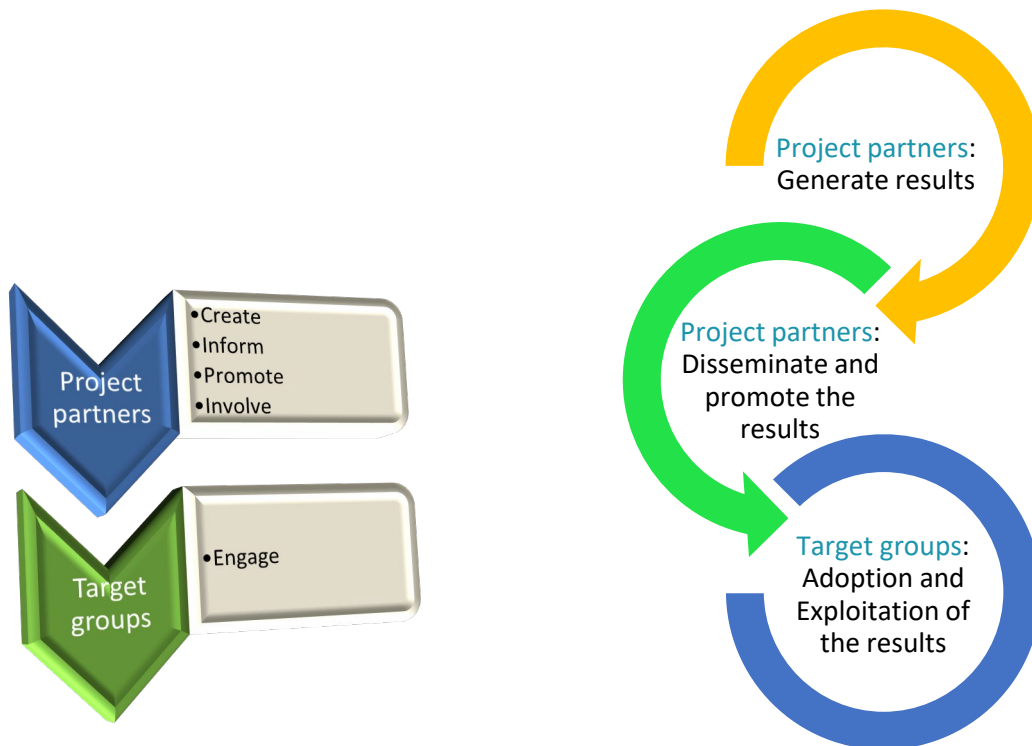


Figure 2: Specific actions for dissemination and exploitation (for each involved party)

Creating impact through exploitation require specific actions for meeting the project’s goals. As outlined in the figure 2, the project partners need to generate the results, but also to disseminate and promote the results, along with engagement of the right stakeholders to realize the exploitation of the results.

The deliverable outlines the ANSELMUS project’s overall approach to dissemination and exploitation, based on recognition that the pro-active dissemination of project related outputs and results is essential to facilitate their exploitation.

This document will serve as the key reference to all project partners’ dissemination and exploitation activities.

1.1. Purpose and Scope

The main purpose of elaborating a Plan for the dissemination and exploitation of the results (PEDR) is to define a practical guideline for efficiently implement the exploitation and dissemination activities at project level [4]. The dissemination and exploitation plan will render potentially interested stakeholders aware of the project’s findings and will facilitate the sharing of its accomplishments leading to their increased uptake.

The PEDR is a document that includes the strategy of project partners for these activities, together with concrete actions regarding the protection, dissemination and exploitation of the project results. The PEDR aims at establishing a rationale for the systematic organization of information to be transferred so to take the maximum profit from it. PEDR strategy is built on the following pillars:

- identification of the main stakeholders (scientific, decisional, industrial, educational, etc.) potentially benefitting from the project;
- definition of the engagement channels in line with the aimed messages to be delivered;
- use of those dissemination channels and means (conferences, workshop, technical events, scientific journals) most suited to communicate and disseminate the specific results to the various stakeholders according to their interest.

Complementing the above, two cross-cutting elements are essential to shape all dissemination and exploitation activities for the ANSELMUS project [1]:

- the creation of a visual identity of the project, to be adopted by all Partners for any activity;
- the identification of possible collaborations with existing European projects and International initiatives (e.g., SNETP, ESNII, GIF, IAEA, OECD/NEA) also addressing aspects associated with the HLM technology.

The document aims to support the achievement of the project objectives and in the same time, to facilitate the measures for the exploitation and dissemination of project outcomes.

The final aim of the PEDR is to ensure the widest possible impact of the project in terms of activities delivering results that can be considered as a consistent basis for further research and development (R&D) activities.

This deliverable outlines the dissemination and exploitation plan to be followed, acting as a reference document for the project partnership. PEDR is a live document that will be reviewed and updated in accordance to the project needs throughout the project lifetime.

1.2. Project summary

The objective of ANSELMUS project is to contribute significantly to the safety assessment of heavy-liquid-metal (HLM) systems, in particular ALFRED (Advanced Led-cooled Fast Reactor European Demonstrator) and MYRRHA (Multi-purpose Hybrid Research Reactor for High-tech Applications).

ANSELMUS project is set up to support the deployment of HLM advanced reactors in Europe, by fulfilling a set of particular objectives, respectively [1]:

- ✓ to **perform safety evaluation of the designs**, by:
 - performing a PIRT (Phenomena Identification and Ranking Technique) on ALFRED and MYRRHA;
 - establish the current state-of-the-art and identify the required Validation and Verification (V&V) actions.

The project will use the maturity of both designs to create two detailed phenomena identification and ranking tables that will help identify all verification and validation needs and will be used for further safety evaluation. Moreover, it will create a basis for further safety analyses that are the critical prerequisite to the licensing process, contributing to the safety demonstration of the design of the HLM systems under development in the EU that have reached sufficient maturity.

- ✓ to **assess fuel assembly safety by experiment and modelling**, related to:
 - improve and verify the safety by design of grid spaced and wire-wrapped fuel bundles to be installed in ALFRED and MYRRHA;



- understand the main safety related phenomena involved and their relative order of magnitudes, informing both the design and the computational modelling of mass and heat exchange dynamics in liquid metal reactor fuel assemblies;
- develop guidelines to reduce uncertainties in calculations.

The activities will pursue the improvement and validation of thermal-hydraulic modelling of the fuel assembly covering all operational circumstances.

✓ to **validate the safety performance of essential components**

The project will pursue the experimental validation of safety behaviour of key safety related sub-systems including the safety rods, failed fuel pin detection and the coolant chemistry control system. These safety systems rely on technological concepts that have individually been proven experimentally (TRL3), but not tested at conditions expected in HLM reactors. Prototypical experiments representative of the relevant conditions in the reactor environment are planned, allowing improving the Technology Readiness Level (TRL) of these safety systems up to TRL5 (technology demonstrated in relevant environment). Moreover, the new experimental data will be used for validating predictive models, providing essential information to the design team on the accuracy of their estimations.

✓ to **develop non-destructive test-based reactors safety monitoring and vessel inspection for LFR**

This objective relates to assessment of an In-service Inspection (ISI) practice applicable to LFRs, specifically focused on the reactor vessel of MYRRHA and ALFRED via ultrasonic testing (UT). The task will lay down the foundations for new inspection procedures representing future standards for these reactors. The building blocks of an NDT inspection strategy for MYRRHA and ALFRED will be developed and drafted, extending the ISI needs to other system, structure and components (SSCs) besides the reactor vessel. It is intended the development of an UT device operational at high temperatures of LFRs, i.e. up to 400°C. A special tolerances analysis will be performed to define the boundary conditions for the UT sensor and vessel inspection devices, to feed an initial feasibility study for such a carrier robot.

✓ to **address the social impact of the HLM systems**

ANSELMUS will investigate the social impact of HLM reactors by assessing the **integration of the HLM systems in a low-carbon energy mix**, including economic aspects, and by addressing **social and ethical considerations of HLM technologies**.

ANSELMUS project will have as outcomes:

- Safety demonstration of design and components of advanced HLM systems;
- Improvement and validation of modelling tools for safety assessment of advanced nuclear systems;
- Establishment of NDT at high temperatures;
- Detailed business and financial plan for integration of LFR's with LF by co-generation in grid;
- Understanding of public perception toward advanced system safety.

2) Exploitation strategy

An exploitation strategy aims to ensure and foster an efficient use of data and results along and after the project execution, maximizing its impact.

The activities envisaged to achieve this objective, are referring to the following actions:

- define the target audience;
- elaborate the exploitation methodology;
- Intellectual Property Rights (IPR) management;
- identify the methods and tools for the exploitation activities;

- elaborate the exploitation plan.

The ANSELMUS project is devoted to the advancement of the safety assessment of innovative HLM reactors, by generating knowledge and experimental results in support of pre-licensing phase of ALFRED and MYRRHA (contribution to the safety claims, experimental validations of modelling tools for safety assessment, integration of LFR's with LF by co-generation in grid, investigations of public perception toward advanced system safety) [1].

The exploitation actions are focusing on making use of research results, identifying the one results that are most appropriate for sharing, to maximize the value and impact of the research activities.

Aiming at an effective exploitation of the results, the ANSELMUS partners have committed to take concrete measures to ensure exploitation of the results by:

- using them in further research activities;
- implementing them in ongoing projects;
- developing, creating or marketing a product or process;
- creating and providing services and/or
- using them in standardization activities.

2.1. Target audience

The involvement of bodies and institutions interested in knowing and using, even beyond the project period the results, is a complex process that depends on the type of result in question, on the category of stakeholders and their interest, as well as on the purpose of use.

The engagement process is primarily applied among the members of the project in their dual role of developers and final users of the information produced. The continuous and proactive sharing of information among the project partners will increase the fields of experience of the Partners through the technical areas of the project. The continuous flow of information between the Partners has the important role to summarize the expectations on the results for the various tasks in useful suggestions for their implementation and use.

The potential entities interested in the development and use the outcomes of the project could be categorized by type, method of interaction, interests on the project and sphere of influence. This list must be periodically revised, following the project evolution.

Since the exploitation should be oriented to the targeted audience able to speed up the implementation of the innovative results, the key players for the project (along with their interest in results) have been identified and grouped into the following categories [1]:

Scientific community - use the results for further research

HLM system developers (mainly design of ALFRED and MYRRHA) - validation of design, input for PSAR (enrich the validation database in order to strengthen their methods on a wider range of applicability or to validate innovative methodologies for the representation of complex phenomena)

Regulators & TSO - license application evaluation (feedback on the safety objectives and criteria, as well as methods for safety demonstration)

Decision makers, investors, public authorities, interested citizens - HLM system safety, integration in the energy grid & business model, public perception towards safety of advanced HLM systems)

Students - New developments in HLM technology, investigation of the related phenomena through PhD thesis or other scientific investigations



Nuclear industry, SMEs - interest in the perspective deployment of the reference technologies (LFR and ADS - Accelerator-driven systems) and/or in being involved in the further development and deployment of the concept.

2.2. Exploitation methodology

Following the activities, the expected results of the ANSELMUS project are as follows [1]:

- Analyses of the design of ALFRED and MYRRHA via the PIRT method and identification of any V&V gaps;
- Safety behaviour and reliability of safety rod and oxygen control demonstrated;
- Feasibility of failed fuel pin detection demonstrated;
- Experimental tests performed and models validated against existing data and newly generated results;
- Inspection strategy for HLM systems developed;
- NDT at high temperature with sensor demonstrated, boundary conditions and feasibility of carrier robot shown;
- Technical and economical parameters of LFR with LF by cogeneration deduced;
- Financial and economic business models developed;
- Ethical and social considerations assessed;
- PhD student trained.

In particular, patenting of tested components and/or NDT sensor is foreseen [1].

All aspects related to exploitation rules and methodologies are in line with the Consortium Agreement (CA) [2], which complies with the EC Grant Agreement (GA) [1] (and related Annexes) provisions.

The following types of results have the potential to be exploitable:

- patents;
- prototypes;
- techniques, methodologies and experimental data;
- models for physical, chemical, etc. phenomena;
- computer codes development and application;
- conceptual projects;
- studies (Analysis/reports/procedures, covering also the financial, economic and social aspects).

An Exploitation and Dissemination Manager (EDM) should be appointed from the project partners, with the key role during the exploitation process. In line with its key role, the EDM shall:

- coordinate all the exploitation and dissemination activities;
- supervise the management of all activities related to promoting the results;
- coordinate all exploitation related issues within the consortium (patents, licenses, etc.);
- coordinate possible negotiations concerning exploitation issues between the consortium and external parties;
- be informed on the scientific and technological progresses of the project as well as on the trends of the R&D activities at European and international level on the topics addressed in ANSELMUS;
- report on the status of the exploitation and dissemination activity during the project progress meetings;
- manage the process of data-set identification for their possible delivery as Open-Access Data.



Two approaches are envisaged for the identification of the potential exploitable results and for the effective implementation of the exploitation process:

- top-down approach,
- bottom-up approach.

The top-down approach represents an exploratory tool and has the advantage of a comprehensive analysis of the whole project, encompassing all the results generated and benefiting of the whole contribution of project partners. At the beginning of the project, a comprehensive analysis of the deliverables will produce the list of the most important ones, in terms of exploitation activity. The list will be periodically updated, according to the evolution of the project and the accumulated knowledge.

The bottom-up approach represents the effective implementation of the exploitation activity and is best effective with respect to some innovative elements carried out in the frame of the project by a limited number of partners. Any partner or group of partners can initiate the process of exploitation activities for a certain result that was identified as exploitable, using the bottom-up approach.

Both approaches are detailed below.

2.2.1. Top-down approach

The Top-down approach consists in a periodic verification of the elements emerging from the technical areas of WP1-WP5 by the EDM who collects information from the WP Leaders coordinating the technical activities. Based on the list of the deliverables, their description and a set of selection criteria, the most suitable deliverables will be selected to be used as a basis for the exploitation process. The selection activity will be coordinated by the EDM and supported by WP leaders.

The important results that are potentially eligible for exploitation should fall into one of the following categories:

- the results contribute to the demonstration of the safety claims and to the robustness of licensing application;
- the results offer meaningful experimental validations of modelling tools for safety assessment;
- the results contribute to integration of LFR's with LF by co-generation in grid;
- the results contribute to assessment of the public perception toward advanced system safety;
- the results are under IPR management;
- the results open other directions for R&D investigation.

At the end of the project, the top-down approach guarantees complete coverage of the technical deliverables issued by the various tasks.

The starting point for the analysis is represented by the results intended for public deliverables - the list of ANSELMUS deliverables open to public is presented in Appendix 1.

After drafting the list of deliverables having potential exploitable results, the list will be regularly updated according to the progress of each deliverable.

After drafting a deliverable which is included in the list, the content will be analyzed in detail, by a group gathering the WP leader, Task Responsible, the main author of the deliverable and EDM.

The exploitable results will be identified based on the content of deliverable, using a selection process. The eligible results for exploitation could be selected using the following criteria:

- the results address the real market needs;
- the results can be implemented on the short/medium term;
- the results have a relevant estimated market value (benefit).

If all criteria are fulfilled, it is a strong indication of an eligible result for exploitation.

The status of exploitation activities will be discussed periodically, during each progress project meeting.



2.2.2. Bottom-up approach

This approach relates to the individual initiative that addresses some individual results, components or innovative elements, carried out in the project by one partner or a limited number of partners. The initiator could be any Partner of the project, Task Leader, WP Leader or the Project Coordinator, whenever the initiator has identified a result as potential exploitable by their own resources and analysis.

In case of the bottom-up approach the initiator sends a proposal for an exploitable result to the EDM, using the Exploitable Results Form (ERF) included in Appendix 2. The ERF contains a quick selection, an initial set of information, in the form of yes/no questions, giving as result a fast evaluation of the exploitation potential of the result in question.

The EDM, on the basis of the ERF, checks the opportunity and feasibility of exploitation process and then the Governing Board performs an analysis on the IPR aspects at the level of Consortium and, if eligible, approves the exploitation procedure.

After the approval, an Implementation Group (IG) for a specific marketable result may be set-up, to be responsible for the implementation actions. The IG will include one representative per each Partner contributing to the exploitable result (one representative per organization having IPR for the marketable specific result), under the coordination and supervision of the EDM.

The EDM will report to Governing Board on the progress of the exploitation activity at each Project meeting.

The exploitation process actions are presented in Table 1.

Table 1: Actions for the results exploitation

Step	Actions	Involvement
Initiation	Top-down approach • check the eligibility criteria fulfillment	WP leader + Task Responsible + main author of the deliverable + EDM
	Bottom-up approach Initiate a proposal for exploitable results • check the criteria reported in the ERF • send the compiled ERF to EDM	Any Partner Task Leader WP Leader Project Coordinator
Evaluation	Check the opportunity and feasibility of exploitation process Analyze the IPR at the level of Consortium and approve for exploitation	EDM Governing Board
Implementation	Undertake practical actions for the establishment of specific exploitation programme and for the subsequent actual exploitation	Implementation Group (One representative per each Partner contributing to the exploitable result and the EDM)
Monitoring	Supervise and report the status of the implementation actions to Governing Board	EDM

The Implementation Group will send periodically reports to the Coordinator, informing on the status of the exploitation activity. Beyond the end of the project lifetime, the coordinator will inform each partner on the progress of the exploitation activities until their finalization, based on the reporting activities of the Implementation Groups.



2.3. Intellectual Property Rights

ANSELMUS activities are focusing on raising scientific excellence, improving standards of implementing research activities and adopting cutting-edge methodologies and instruments on the advanced reactors field. This is why the protection and procedures about the use of IPR [6], that are applicable to outputs explicitly resulting from the project need to be considered.

The ANSELMUS partners have established a Consortium Agreement (CA) [2] based on the DESCA 2020 Model Consortium Agreement [3] and in complete accordance with the Horizon 2020 rules for participation. The agreement sets the detailed rules for intellectual property management (in particular for access rights to foreground and background knowledge).

Special clauses are agreed among the project partners concerning non-disclosure agreements and agreements for the joint exploitation of the background information.

Unless stated otherwise in the CA, the Parties agree to the general principle that methods, procedures, techniques, models, equipment, datasets etc. which are developed or improved upon during the performance of the project, will be considered as Background of the Party that introduced the underlying Background to the project on condition that the development and/or improvement was realized by the Party introducing the relevant Background and is not an expected Result. Any Party may add additional Background to Attachment 1 of the CA [2] during the project provided they give written notice to the other Parties. However, approval of the Governing Board is needed should a Party wish to modify or withdraw its Background in Attachment 1 of the CA.

In order to ensure a good execution of the project, the project partners agree to grant each other royalty-free access rights to their background and results necessary for the execution of the project. The CA also define further details concerning the access rights to foreground and results at the end of the project in order to ensure exploitation of the results with the objective to maximize the benefits of publicly funded research for society, more specifically [2]:

- ownership of the results

Results are owned by the Party that generates them, the joint ownership being governed by Grant Agreement [1] articles and annexes.

- transfer of results

Each Party may transfer ownership of its own Results, including its share in jointly owned Results, following the procedures of the Grant Agreement. The transferring Party shall, however, at the time of the transfer, inform the other Parties of such transfer and shall ensure that the rights of the other Parties under the Consortium Agreement and the Grant Agreement will not be affected by such transfer

- dissemination

All Parties are committed to dissemination of their research findings and aim to ensure a fair distribution of opportunities to publish, the visibility of the collaborative effort and the inclusion of young researchers in publication and dissemination activities. During the project and for a period of 1 year after the end of the project, the dissemination of own Results by one or several Parties including but not restricted to publications and presentations, shall be governed by the articles and annexes of the Grant Agreement [1]. A Party shall not include in any dissemination activity another Party's Results or Background without obtaining the owning Party's prior written approval, unless they are already published.

- access rights

Access Rights are granted on a non-exclusive basis.



Access rights to results for internal research activities and for non-commercial educational purposes shall be granted on a royalty-free basis. Access Rights to results and Background Needed for the performance of the own work of a Party under the project shall be granted on a royalty-free basis. Access Rights to Background if Needed for Exploitation of a Party's own Results, shall be granted on Fair and Reasonable conditions subject to a separate written agreement between the Parties concerned.

- access rights for exploitation

Access Rights to Results if Needed for Exploitation of a Party's own Results shall be granted on Fair and Reasonable conditions.

- non-disclosure of information

All information in whatever form or mode of communication, which is disclosed by a Party to any other Party in connection with the project during its implementation and which has been explicitly marked as "confidential" at the time of disclosure, or when disclosed orally has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within 15 calendar days from oral disclosure at the latest as confidential information by the Disclosing Party, is "Confidential Information".

2.4. Methods and tools for exploitation

The partners will use their networks to promote the dissemination and exploitation of the project foreground. The Advisory Board of the project will also participate in the dissemination and exploitation of the foreground.

Each target audience has a different importance in the exploitation activity and requires specific action (informative, feedback, technology transfer, computer codes qualification, education and training, etc.) devoted to the maximization of the project impact.

Aiming at this goal, the following tools are used in the project [1]:

- a specific ANSELMUS session at a recognized international conference as a framework for open discussions with all major players in the field (designers, scientists, industrial community, regulatory bodies, etc.) having a potential interest in the topics investigated by the project;
- joint organisation of technical review meetings with related projects that investigate common topics as ANSELMUS, allowing the presentation of project results to different communities;
- a dedicated stakeholder workshop, for the direct networking with stakeholders, having as topics the safety related investigations and the results from the social impact activities;
- a summer school at SCK CEN, and lectures, covering the main topics addressed by ANSELMUS, offering the opportunity of information exchange among experts, students, and young researchers.

The project partners dispose of all the background expertise and capacity to achieve the targeted exploitation plans and accelerate the path to the targeted stakeholders. The measures to accelerate exploitation that may be used are the following:

- Communication activities launched and followed-up on a regular basis to keep target groups informed;
- Active participation in stakeholder and Advisory Board;
- Promotion of project findings through open access scientific journal publications and presentations in conferences;
- Contribution to standards, good practice and related policies;
- Workshops and industry exhibitions;
- Negotiation with the consortium partners the right to directly exploit the results;



- Commercial exploitation;
- Expert training;
- Generation of further research.

2.5. Implementation plan for exploitation

The implementation plan for exploitation was designed to maximize the impact of the results generated during the project. The plan contains the activities to be undertaken, along with the responsible and the date planned for implementation.

All actions are summarized in Table 2.

Table 2: Implementation plan for exploitation

No.	Action	Responsible	Planning
1	Identification of key deliverables representing the basis for exploitation process	WP Leaders + EDM	M12
2	Updating the list of key deliverables	WP Leaders + EDM	Continuous, according to the evolution of the project
3	Identification of exploitable results (based on selection criteria)	WP Leaders + Task Leaders + main authors of the deliverables + EDM	Continuous
4	Checking the opportunity and feasibility of the exploitable results	EDM	Continuous
5	Analysis of the IPR at the level of Consortium Approve the implementation plan	Governing Board	If required by EDM, at each annual meeting
6	Exploitation of the results	Implementation group	Once implementation plan for a specific result was approved
7	Monitoring the exploitation, proposing improvements if needed	EDM	Continuous
8	Reporting on the status of the exploitation activity	EDM	Periodic, during the Progress meetings
9	Informing the partners on the progress of the exploitation activities	Project coordinator	Beyond the project lifetime

To support the efficient exploitation of the results obtained during the project, each Partner, under the coordination of EDM, is encouraged to find the most appropriate communication channels with potential end-users at national level, to increase their awareness on the project outcomes.

3) Dissemination strategy

Generally speaking, an efficient and relevant dissemination activity will:

- specifically address project related outputs and results to target groups by publicly disclosing them by any appropriate means;
- ensure the transfer of knowledge and results to the ones that can best make use of it;

- maximise the impact of research related results, enabling their value to reach the maximum possible;
- prevent the results to remain trapped within the project boundaries.

The promotion and dissemination of the results stays at the basis for their efficient exploitation. In this regard, the ANSELMUS partners are determined to disseminate the results of the performed activities by disclosing them to public through the most appropriate means, including high level scientific publications aiming at enhancing broad understanding of the significance of the results and of the related socio-economic benefits.

PEDR will outline the dissemination and communication strategy and action plan, with the list of actions to be carried out in the next project period, as well as the list of planned events to be organized and/or used for dissemination and communication purposes. Since the relevant publications will be stored in a dedicated repository at SCK CEN, their accessibility will be assured throughout and after the project duration.

The dissemination activities of the ANSELMUS project aims to increase the awareness of both the project itself and of heavy liquid metal cooled fast reactors technology in general.

The dissemination strategy is set at defining and managing those activities for the disclosure and promotion of the project results at any part having interest in the potential use of the result, in order to maximize the impact of the project and to promote the results for their effective exploitation.

The main goals of the dissemination strategy are:

- to wisely identify the results to disseminate and transfer the knowledge and results to these stakeholders that can best make use of it;
- to identify the appropriate dissemination channels;
- to maximize the impact of research;
- to monitor and evaluate the effects of the dissemination activities.

The dissemination strategy envisages performing the following main steps:

- define the target groups;
- elaborate the dissemination methodology;
- identify the suitable methods and tools for dissemination to each stakeholder group;
- elaborate the action plan for dissemination;
- define the indicators for the effectiveness of the implementation plan.

The primary role of the dissemination work is to ensure that the knowledge and information reaches a variety of stakeholders in a format that suits the best an individual stakeholder. Dissemination is most successful if multiple methods are used over time, as the important findings and results could use multiple formats, ranging from full scientific papers to executive summaries.

The dissemination activities will be implemented by the individual partners, under the coordination of the EDM. EDM will be in charge to report on the progress of dissemination activities along the project life.

All partners of the consortium will be stimulated to contribute to dissemination according to their role and involvement in the project activities. They will use all available dissemination tools exploiting each opportunity to disseminate the relevant project results (e.g., by participating and giving presentations at conferences, publishing papers, posting on social media platforms, networking, etc.).

3.1. Target audience

To achieve the main and specific objectives of the results dissemination, the identification of the right audience that could make use of the project results, should be the first step of the methodology.

The effective strategies for stakeholder engagement and dissemination of results should take into account that the stakeholders have different levels of involvement in project activities.


Thus, the dissemination activities must be tailored to reach the appropriate category of stakeholders most efficiently through an appropriate selection of the suitable methods and tools for dissemination.

All project partners have to identify and approach the important stakeholder groups, in order to benefit their contributions to the deployment of ALFRED and MYRRHA.

The target groups for external dissemination of the project results, with the expected outcome of dissemination activities, are specified [1] in table 3.

Table 3: Target audience for the project results dissemination

Target group	Expected outcome of dissemination
Scientific community	<ul style="list-style-type: none"> • Application of the results and innovations to further research activities • New developments in HLM technology • Exchange of expertise and experience • Capitalization of the potential of collaboration
HLM system developers	<ul style="list-style-type: none"> • Validation of design, input material for PSAR –enrich the validation database for the representation of complex phenomena
Regulators & TSO	<ul style="list-style-type: none"> • Feedback on the design validation, as well as on the methods for safety demonstration • Feedback on the adequateness and exhaustiveness of the generated data
Industrial stakeholders	<ul style="list-style-type: none"> • Raise interest in the perspective of deployment of the HLM technologies • Facilitate the further development and deployment of the concept (e.g., vendors, utilities, supply chain) • Gather valuable feedback on the project (e.g., challenging requirements to be considered; economic, social aspects; considerations on the project’s sustainable development) • Establishment of a synergic environment for innovation through collaboration, by stimulating the collaborations between research and industry
International organizations	<ul style="list-style-type: none"> • Increased exchange of expertise on the new reactor concepts and technologies; • Stimulation of cooperation in the field of innovative nuclear systems
Policy makers, public authorities	<ul style="list-style-type: none"> • National and European support to innovative nuclear systems development and deployment • Increased knowledge on HLM system safety, integration in the energy grid & business model
Students	<ul style="list-style-type: none"> • Raise the interest in the new technologies • Provision of educational and professional training Deeply investigation of specific phenomena through PhD thesis or other scientific investigations
General public	<ul style="list-style-type: none"> • Improve public perception towards safety of advanced HLM systems

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	<ul style="list-style-type: none"> • Increase the awareness of the potential benefits of HLM-cooled reactors in terms of safety and sustainability, respectively on the economic and social aspects
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3.2. Dissemination methodology

ANSELMUS will generate relevant results in the area of heavy liquid metal cooled reactor technology and safety for GenIV LFR and heavy metal cooled transmutation systems. Moreover, the project will also yield results regarding the socio-economic aspects of HLM nuclear systems.

The dissemination of project results is referring mainly to the project deliverables, presentations and scientific publications. The project public deliverables will be made available in the project website, along with all the presentations related to the project.

In particular, the specific objectives of the dissemination activities in ANSELMUS consist in:

- Increasing the awareness of target stakeholders on the project and the significance of its results, by providing them with the high-quality information on the project related outputs and results;
- Preservation and transfer of the knowledge accumulated in the project, through both presentations at international scientific events and accomplished publications in peer reviewed journals targeting the international scientific community;
- Developing synergies with projects, platforms and networks in order to join efforts, to avoid work duplication and to maximize the exploitation potential of the results;
- Paving the way for the deployment of a new generation of reactors complying with the Generation IV goals of sustainability, economics, safety, proliferation resistance and physical protection.

The project dissemination activities are performed both internally and externally.

3.2.1. Internal dissemination

The internal dissemination represents all dissemination activities among the project partners. This type of dissemination plays an important role in the dissemination process due to the fact that the partners are potential users of the results and also the main actors in promoting the findings with other potential users at national and/or international level. The internal dissemination will ensure a proper execution of the project, to exploit synergies and to ensure the complementarity of the research carried out.


The internal dissemination activities will rely on the effort and the possibility of each Partner in disseminating the knowledge accumulated during the project.

To achieve this, each partner will make efforts to identify and to efficiently implement the necessary activities to present the project and its result (participate to conferences, seminars, workshops, publishing articles in internal newsletters and publications, posting links to project website, etc.). All activities will have to be brought to EDM attention.

All documents and files related to internal dissemination will be uploaded on the allocated space on the project workspace.

3.2.2. External dissemination

The external dissemination represents all dissemination activities that took place beyond the project partners. The external dissemination targets external audience of the project, more specifically, the defined specific groups at national, European and international level.

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The external audience is represented by the major players in nuclear field who could be interested to further dissemination of the project results, or moreover to benefit from its meaningful outcomes.

3.3. Dissemination policy and rules

Dissemination activities in ANSELMUS project are governed by the general principles of IPR protection (see section 2.3), as stated in the Grant and Consortium Agreement [2].

Prior notice of any planned publication (“Publication Notice”) shall be given to the WP Leaders, Project Coordinator and EDM at least 30 calendar days before submission of the draft paper. An exception to this deadline is allowed in the sole case of early submission of abstracts for conferences, in which case the authors should send the Publication Notice at the latest when the abstract is submitted.

The Notice shall provide general information about the paper including paper title, general content and authors (the template is included in Appendix 3).

Under EDM coordination, the WPs Leaders and the Project Coordinator will evaluate the sensible nature of the information proposed for publication, and will decide under the approval or not within 30 calendar days after the date of Publication Notice.

All publications based on work funded by EC within the activities of the ANSELMUS project will acknowledge their affiliation to ANSELMUS and bear recognition of the EC funding.

A common graphical identity has been defined (see Section 3.5.1) to allow for better visibility and recognition of the ANSELMUS project. Therefore, all dissemination tools and activities must refer to or include:

- the name of the project: ANSELMUS,
- the project logo (see figure 4),
- the project’s website: www.anselmus.eu
- acknowledgement to EC public funds. The official EC logo (with the Horizon Europe) will be used for any deliverable, report or presentation.

Open Science

Making scientific results openly available indubitably improves the transparency of research and increases the possibility of reproduction of the results. The management of the research data generated by ANSELMUS project has been conceived in respect to the FAIR principle, and the project will support the open science approach [5] to the fullest extent possible, having EDM as responsible of the evaluation of proposals of datasets to be made openly available. However, since the project involves nuclear research, due care should be taken with potentially sensitive information and the protection of IPR. In consequence, the access to results and data from ANSELMUS will be on one hand as open as possible and on the other hand as restricted as necessary.

The main categories of open access that might be used [5] are mentioned below, with their characteristics:

Green Open Access: the published article or the final peer-reviewed manuscript is archived by the researcher in an online repository before, after or alongside its publication. Access to this article is often delayed (embargo period).

Gold Open Access (open access publishing, or author pays publishing): a publication has a free-cost access mode, provided by the scientific publisher. Associated costs are shifted from readers to the authors, in particular university or research institute to which the researcher is affiliated, or to the funding agency supporting the research.



The Zenodo open-access repository at CERN as developed under the European open AIRE programme will play a central role in the open science strategy of the project as the peer-review publications will be deposited there. In the project, part of the purchase costs are dedicated to cover the article processing charge (APC) to ensure “gold” open access, making the papers available immediately as much as possible.

Another opportunity is provided by the European Commission through the Open Research Europe [8], an open access publishing platform for the publication of research stemming from EC funded projects. The publishing on this platform is free of charge, the fees being covered by the EC; the sole condition is that at least one author be involved in a running Horizon Europe project. Other alternatives for open access with lower costs such as publication in different open access journals with lower or zero APC will be investigated as well.

3.4. Methods and tools for dissemination

The information generated in ANSELMUS project (relevant results in safety and socio-economic aspects of HLM cooled nuclear systems) will be disseminated to various targeted stakeholder groups. The dissemination of the results will be ensured mainly via several different channels including workshops, training courses, publication in international journals and conferences, publication on open access repositories (Zenodo), direct networking with stakeholders, publication on the ANSELMUS website where public reports will be accessible and downloadable, internet/project web site, yearly newsletters and social media communications.

In order to reach the targeted audience, the results of the project will be disseminated outside the consortium through the most effective dissemination channels, in the efforts to establish a network for information flow on the project among the nuclear community and the public at large. More specifically, the dissemination and communication mean are specifically directed to key target groups for the ANSELMUS project [1], as follows:

Dissemination towards scientific community via participation in workshops, conferences and open publication in journal

Dissemination towards system developers via direct interaction (networking) backed up with retrievable deliverables

Dissemination towards stakeholders (Regulator, TSO, decision makers, investors) via dedicated stakeholder workshop

Communication towards students via learning opportunities (summer school, lecture series)

Communication towards general public via social media, website, YouTube platform.

The dissemination actions should support the exploitation of results, and to achieve this, some activities need to be performed, like:

- Identification of relevant conferences and scientific events;
- Selection of the adequate journals for publications;
- Dissemination to industry and end-users to show the market potential.

All Partners will contribute to maximize the use of all existing dissemination channels to enhance and better exploit the outcomes of ANSELMUS by engaging key stakeholders to act as multipliers and to motivate others to adopt and implement the project result.

The dissemination tools use to reach a specific stakeholder group are specified in figure 3.

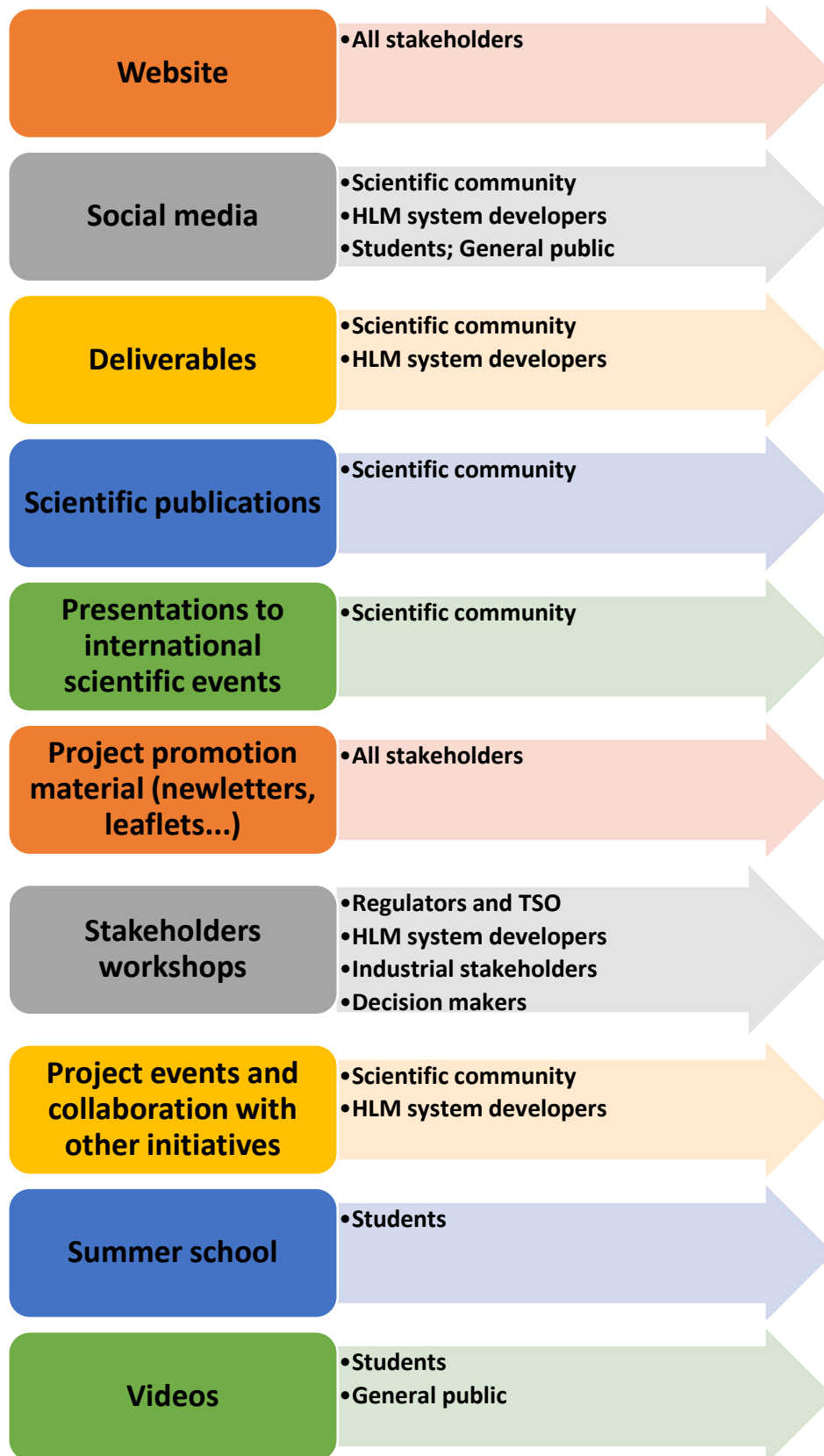



Figure 3: Dissemination tools and target audience

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The specific tools used for dissemination of ANSELMUS results are detailed below.

3.4.1. Publication in international journals and presentations to conferences

The main tools for dissemination towards the scientific community are publications in journals and presentations at conferences. ANSELMUS partners will actively participate in international conferences in order to contribute to the dissemination of the project results. Moreover, in order to widen and optimize the dissemination of the results, a specific ANSELMUS session at a recognized international conference will be organized near the end project [1].

The national and international conferences are an excellent opportunity to share the obtained results and findings with experts in the field and, therefore, to achieve an effective dissemination of the project. In the same direction, the workshops, meetings and other large events represent relevant opportunities for dissemination.

The project partners are strongly encouraged to present preliminary and final results of the activities carried out in the project through an active participation to conferences (e.g. International Congress on Advances in Nuclear Power Plants - ICAPP, International Conference on Nuclear Engineering - ICONE, conferences of European Nuclear Society, of SNETP platform, of IAEA, etc.) by means of papers and posters and through the submission of technical/ scientific papers to peer reviewed journals. The participation in all relevant events to present the project and its results will increase the project visibility and will help in establishing new links with other projects and scientific networks.

A specific ANSELMUS session at a recognized international conference will be organized near the end project.

Creation of list of the conferences of interest for the dissemination of the outcomes of ANSELMUS will be among the actions included in PEDR. In the same logic, suitable journals with a high impact factor will be identified for the publication of the results.

All peer reviewed publications, be it in journals and conferences that originate from the project will be treated according to the open science policy [5] (according to the obligation to provide open access to scientific publications and research data funded by the EURATOM Programme).


The PEDR include a search to identify relevant journals in the field that permit deposition of the paper without charge or embargo on Zenodo under the Creative Commons license or equivalent.

The PEDR update will include a revision of the open access strategy taking into account the policy of the target journal for open access and the opinions of the partners in the project.

3.4.2. Workshops and Joint Review meetings

A significant part of the technical and scientific community interested in HLM technologies and the development and modelling of heavy liquid metal cooled fast neutron systems is involved in the ANSELMUS project and/or in related EC projects like PASCAL and PATRICIA. The project will actively encourage participation of researchers and students in the topical workshops planned in related projects, allowing them to present project results to the different communities. The project will pursue joint organization of technical review meetings with related projects [1], reciprocal participation enhancing an immediate dissemination of results.

To create synergies with stakeholders and network platforms, the ANSELMUS Partners will pursue the identification of possible collaborations with existing European and International initiatives in the framework of Heavy Liquid metal-cooled Fast Reactor (GIF, SNETP, IAEA, ESNII, OECD/NEA, etc.).

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A list of on-going EU projects and initiatives in synergy with ANSELMUS topics will be prepared in the first year.

3.4.3. Direct networking with stakeholders

The partners will use their networks to promote the dissemination and exploitation of the project foreground.

The particularly targeted groups include industry and research communities interested in the development of fast neutron reactors (SNETP, ESNII), international and European projects (PATRICIA, PASCAL, INNUMAT, etc.) and initiatives (GIF, OECD/NEA).

The workshop format will also be used to reach out to group of regulators, TSO, decision makers, etc. Experience has shown that the most effective way of dissemination of information to this group is direct interaction, and in consequence, a dedicated stakeholder workshop will be organized in the last year of the project in Brussels, organized by JRC and supported by SCK CEN and RATEN [1]. The goal is to bring together the stakeholder group together with the HLM system developers and interact with them on the basis of the safety related investigations and the results from the social impact activities.

In addition, a specific body – the Advisory Board - is set up in the project, and its members will also participate in the dissemination and exploitation of the foreground. The Advisory Board members are experts representatives for [1]:

- the design teams proposed and host sites of the two reactors developments (MYRRHA and ALFRED);
- TSO (and where possible regulators) in Europe in particular from the ALFRED and MYRRHA host countries -Romania and Belgium);
- international fora and projects involving HLM fast reactor technology;
- industries involved in HLM development.

The objectives of the Advisory Board is to engage in a two-ways communication with the project. This means that they should get informed about the progress and results of the project and also improve the tight interaction of the project with the end users to ensure outcomes towards feasibly deployable solutions.

3.4.4. Training initiatives

Dissemination to young scientists and students will be done by organizing two learning opportunities in the form of a summer school at SCK CEN, addressing the main challenges of the technology deployment, and a lecture series at IVKDF [1]. These will take place in the first half of the project to initiate young scientists and engineers to the field. Active participation in lecture series and schools organized by related projects is envisaged as well.

3.5. Tools for communication activities

The communication activities intended within ANSELMUS will be chosen to maximize the impact of the project achievements.

The objective of the communication activities is to:

- promote ANSELMUS and its role in Europe's effort towards safe sustainable nuclear energy;
- increase awareness of the target groups of sustainable nuclear energy and safety;
- promote and inform the nuclear community on particular ANSELMUS research results;
- get feedback on the ANSELMUS activities from the target groups in order to explore possibilities for cooperation and the organisation of joint events;



- spread unified message on project activities and provide the target groups with as much information as possible, tailored to their needs.

The content, language and media used for communication will be adapted to the relevant target audience. In order to carry out the intended communication activities means and activities are foreseen as follows:

3.5.1 Project visual identity

Elaborating the project visual identity will ensure a consistent visibility of the project along and beyond the whole period of the project.

Project logo

The ANSELMUS logo (Figure 4) has been designed at the beginning of the project to create a common visual identity to all the work developed in the frame of the project (for any internal or external outcome and dissemination tool).



Figure 4: Project logo

Templates

In the effort to substantiate the visual identity of the project and to have a common identity across all communication activities, a set of document templates has been produced for:

- Deliverables
- Presentations
- Meeting Agenda and Minutes.

All templates are available on the project website.

3.5.2. Project website

Aiming to maximize the visibility of ANSELMUS objectives and results, a project website (www.anselmus.eu) has been created from the beginning of the project and it will regularly be updated with relevant information, following the project evolution.

The project website has a key role in the strategy devised as it:

- presents ANSELMUS to the widest audience possible;
- outlines project achievements and news;
- provides links to the social media channels.

The website (in English) will serve as a major dissemination tool for ANSELMUS objectives, events and results.

The website allows the access of a broad audience to public deliverables/results, the project presentation, leaflets, press releases and open access scientific publications.



The project website was designed with different levels (members-only, scientific community and public). For the latter, the website (at least the homepage and several sections) will be written in a non-expert language in order to be welcoming for the general public.

The public section of the website provides relevant information about the project, including:

- the objectives and the structure (technical WPs, one devoted to Dissemination and one covering the activities related to Project Management and Technical Coordination) of the ANSELMUS project;
- a logo of each of the project partners and a link to its web sites;
- access to the project public deliverables; copies of publications and presentations done at external events;
- a “News” section with the latest information related to the project, and an “Event” section for all project events (meetings, workshops, conferences, etc.) and external events.

A restricted area, password protected, is defined for Consortium internal communication, playing the role of the internal repository and workspace for Partners. Here will be posted drafts of different documents, minutes of the meetings, the deliverables with restricted access, other confidential documents, templates for presentations and documents, etc. The access (username and password necessary) to the restricted area will be granted to all persons involved in the project.

The website was created by SCK CEN, which together with RATEN is responsible for its content updating, by sourcing content from all partners of the project.

The content of the website will be permanently updated with new and relevant information aiming at creating a positive impact on the knowledge sharing: updates on the project’s progress, results, and events as they are defined.

The website will be professionally referenced to be easily reachable via search engines on relevant keywords.

As the URL of the website (www.anselmus.eu) is listed on all promotional materials, the potential users of the project results may access the website for more detailed information.

The website will include a counter of visitors (using Google Analytics) in order to monitor the interest of all stakeholders including the general public which represents one of the Key Performance Indicators (KPIs) that should be reached (see Table 5).

3.5.3. Social media platforms

Social media represents a modern and powerful communication channel serving on-demand access to content anytime, anywhere, on any digital device.

In the last years, social media have become an essential tool for communication, networking and information sharing and help in implementing communication and dissemination goals of the research projects. Social media presence allows the project to:

- reach relevant stakeholders
- establish an online presence
- increase awareness of the project results.

Therefore, ANSELMUS will have its own profile on social media aimed to reach the public and to stimulate the discussion on various topics of interest. Twitter and LinkedIn were selected as social media channels, as these channels are most relevant in the scientific and business world.

The social media channels that have created for the project are the following:

<https://twitter.com/anselmus>

<https://www.linkedin.com/anselmus>



Twitter will be oriented mainly to the broad public, whereas LinkedIn will target the professional audience. The information would be presented in a simplified way to stimulate the interest of people involved in other scientific areas as well as of citizens interested in energy and related technologies. The content will be periodically updated to rapidly promote the project's updates and results.

In order to grow the audience for the specific social channel, the following actions will be taken:

- proactive periodic posting on the social media channels;
- sharing, engaging and commenting content on the social channels;
- interlinking with partners social media channels;
- following other related projects social media accounts and pages;
- following the stakeholder social media pages;
- using appropriate communication tools when engaging with the audience.

3.5.4. European Commission tools

The EC services can be used for:

- Access and taking up of results from EC projects, to get an overview of the results generated within previously related projects;
- Access and taking up of all publicly available HEU, H2020 deliverables and publications, to get an overview on the most recent research results provided through EC funded projects;
- Publication and promotion of own project related activities, such as news articles and events, increasing project visibility at European level.

In cooperation with the Project Officer, the ANSELMUS partners will examine the possibility to present the project findings using EC services supporting dissemination and exploitation in EU-funded R&I projects.

The various free-of-charge list of tools offered by the EC to support the dissemination and exploitation activities includes the following:

CORDIS platform [7] - Multilingual articles and publications that highlight research results, based on an open repository of EU project information. It is suitable for communication, dissemination and exploitation activities.

Open Research Europe [8] - Fast publication and open peer review for research stemming from Horizon 2020, Horizon Europe and Euratom funding across all subject areas. It is suitable for dissemination and exploitation activities.

Horizon Magazine [9] - It brings the latest news and features about thought-provoking science and innovative research projects funded by the EU. It is suitable for communication activities.

Horizon Results Platform [10] - A public platform that hosts and promotes research results thereby widening exploitation opportunities. It helps to bridge the gap between research results and generating value for economy and society. It is suitable for dissemination and exploitation activities.

Horizon Results Booster [11] - A consulting service, useful for application for the following services: Portfolio Dissemination & Exploitation Strategy; Business plan development; Go-to-Market Support. It is suitable for dissemination and exploitation activities.

3.5.5. Presentations and scientific publications

To increase the visibility and promote the meaningful results of the project, publication in relevant scientific journals and participation in international conferences and workshops are envisaged.

The national and international conferences are an excellent opportunity to share the obtained results and findings with experts in the field and, therefore, to achieve an effective dissemination of the



project. In the same direction, the workshops, meetings and other large events represent relevant opportunities for dissemination.

The list of relevant conferences and scientific journals will be created at the beginning of the project and periodically updated, based on the proposals of the project partners.

The open section of the project website will be used to communicate on the project publications (considering those results which are publicly available).

3.5.6. Project events and collaboration with other initiatives

The project will pursue joint organization of meetings with related projects, and will try to create synergies with stakeholders and network platforms. The good communication on the joint initiatives will bring together the main actors having a keen interest in the heavy liquid metal cooled reactors technology.

All the joint events will be promoted on the project website. A summary of the events and their outcomes will be communicated to the wide public, being posted on the project webpage. To increase the impact of these events, all Consortium Partners are encouraged to spread the information through their own dissemination and communication tools and channels.

3.5.7. Project newsletters

Electronic newsletters will be issued periodically to keep informed the interested audience about the project's evolution and progress. The newsletters inputs will be collected from the project partners and the relevant achievements of the project will be provided to scientific community and interested parties. The project newsletters would include technical highlights, related international news, announcements of relevant events, etc.

The project newsletters will be disseminated:

- via links on social media (Twitter/ LinkedIn);
- via direct emails to professional contacts of the project partners;
- via the project website.

A "Subscribe" option for newsletter will be available on the public section of the website in order to progressively extend the distribution list.

3.5.8. Other materials (videos, leaflets, brochure, etc.)

Public Reports will be compiled midway and at the end of the project. These reports will be published online and distributed through various channels including an electronic mailing list in order to inform the broad public about project developments.

Leaflets, posters, presentations and other materials are example of tools used to increase awareness, inform and engage with general public on the perception of nuclear safety (in general) and notably on the advantages of the HLM technology.

A leaflet will be created for a wide audience and will be distributed to the partners that will attend workshops, conferences and other events in order to increase the awareness of the project results. The leaflet will be updated during project running emphasizing the progress and the outcomes achieved.

A project brochure with an attractive project overview and a summary of the main objectives and outcomes will be elaborated also, being available for download from the Project website. The brochure



will be used to promote the project towards a larger audience during workshops, conferences and other events in order to increase the awareness about ANSELMUS project results.

A specific communication action will be undertaken directed at the general public in the form of lecture series, as series of YouTube clips that explain the advantages and properties of HLM coolants [1] in an interesting and entertaining way. VKI and SCK CEN will work together to produce these clips.

3.6. Implementation plan for dissemination

The implementation plan for dissemination of the project results was designed to maximize the impact of the results by targeting the relevant stakeholders. The plan contains the activities to be undertaken, along with the responsible and the date planned for implementation.

All actions are summarized in Table 4.

Table 4: ANSELMUS dissemination plan

No.	Activity	Responsible	Planning (month)
1	Setting-up the project website	SCK CEN	M6
2	Inclusion of link to ANSELMUS website on Partners' websites	Project partners	M7
3	Update of the website content	SCK CEN + RATEN	Continuous
4	Setting up the LinkedIn page for the project	SCK CEN	M7
5	Update the content of LinkedIn page for the project	WP6 partners	Continuous
6	Setting up the Twitter page for the project	SCK CEN	M7
7	Update the content of Twitter page for the project	WP6 partners	Continuous
8	Issue periodically newsletters	RATEN	Each year
9	Elaborate leaflets, brochure	WP6 partners	M12
10	Develop the list of relevant international conferences, workshops	EDM +All Partners	M12
11	Develop the list of scientific journals suitable for publication	EDM +All Partners	M12
12	Create the ANSELMUS community on ZENODO	VKI	M12
13	Develop the list of ongoing EU projects and initiatives in synergy with ANSELMUS topics	EDM +All Partners	M12
14	Disseminate the results by participating to international events	All Partners	Continuous
15	Publish the important results in scientific journals	All Partners	Continuous
16	Use the opportunities for collaboration and co-operation with other initiatives	All Partners	Periodically, at least once per year
17	Organize the stakeholder workshop	JRC + RATEN	M40
18	Organize a special session for the project at an international conference	RATEN	M36
19	Organize the summer school	SCK CEN	M18
20	Organize one-week comprehensive lecture series	VKI	M42
21	Elaborate the proceedings for the lecture series	VKI	M48
22	Elaborate the films on the use of liquid metal	SCK CEN + VKI	M48

23	Updates of the dissemination channels/ means for dissemination	All Partners	Continuous, when needed
24	Reporting on the KPI values, and proposing corrective measures, if necessary	EDM	At each progress meeting

This action plan will be regularly updated as project evolves and the results are available.

3.7. Performance monitoring parameters

Measuring the performance is important for analyzing the influence of the project during and after its lifetime. A strategic performance monitoring helps to understand whether the project achieves the goals defined in the dissemination and exploitation plan. This section specifies the indicators which will be used to ascertain the impact of the dissemination strategies devised.

The development of measures and indicators at the start of the planning process will increase the likelihood of having baseline data, which identifies a starting point and makes measurement of progress towards a goal easier. Moreover, having data-based goals will provide information on how much progress towards a goal has been made, and will make it possible to clearly define when a goal has been accomplished.

All consortium Partners are encouraged to report the results of each dissemination activity immediately after they are realized. The dissemination material will be posted on the project working space (paper, conference presentation, etc.). For monitoring purposes, the dissemination activities will be evaluated regularly during the periodic progress meetings.

The monitoring of the proper advancement of the dissemination activities will be done using KPIs, selected in order to provide quantitative figures of merit for each potential dissemination means. KPIs are the perfect tools for project learning, communication, strategic change, and improvement. Both quantitative (the website counter, number of attendees in the educational activities, number of journal articles, number of (PhD) students as well as qualitative (post-event surveys, feedback from periodic reports) evaluation tools will be used.

ANSELMUS partners have identified a number of measurable success indicators to evaluate the impact of the dissemination and communication actions (Table 5 provides these indicators).

Table 5: Dissemination channels and associated KPIs

Dissemination channels	Key performance indicators
Website	Number of visits/year Number of posts in “News” section Number of interactions via the project website
Deliverables	Number of downloads for public deliverables
Scientific publications	Number of scientific papers/year Number of citations
Presentations in topical national and international scientific conferences, and other relevant events	Number of presentations in international conferences Number of Scientific, Technical and Policy conferences & workshops where the Partners will promote the project
Workshop	Number of participants Number of targeted stakeholder groups present Number of presentations from project partners Post-event feedbacks



Project events and collaboration with other initiatives	Number of participants to joint events Post-event feedbacks
Summer school	Number of participants Number of EU countries represented by the participants Post-event feedbacks
Videos / Open Educational Content	Number of views
Social media (Twitter, LinkedIn) Partner's websites	Number of followers on Twitter Number of followers on LinkedIn Number of interactions via the Twitter and LinkedIn Number of articles, posts in newsletters, website, social media Geographical scope and range of publication
Project material (newsletters, leaflets, brochure)	Number of distributed newsletters Number of subscribers for newsletter Number of distributed leaflets and other materials

The project dissemination status will be analyzed before each project progress meeting (held every 6 months), so that the key conclusions and possible corrective actions could be communicated to the Consortium, thereby allowing all the Partners to improve/modify their dissemination actions according to the updated plan.

The EDM will keep track of dissemination activities, and will analyze the effectiveness of the implementation plan for dissemination. The EDM will periodically report to the Partners during the progress meetings, on KPIs values for each item. The monitoring of the values of the KPIs in time will allow to evaluate the effectiveness of the dissemination strategy, and if needed, timely implement corrective measures to secure the expected impact of the project.


4) Conclusions

- ✓ The ANSELMUS PEDR provides the framework of activities and instruments that will be employed for disseminating and exploiting the project outcome. It describes a long-term strategy tailored to maximize the impact of the project through exploitation and dissemination activities, according to the different targeted audiences.
- ✓ The project exploitation approach was set to ensure the maximum use of data and results (experimental data, models for physical and chemical phenomena, studies, analyses and procedures, etc.) during and after the project.
- ✓ The dissemination approach of the ANSELMUS was designed to ensure high visibility of activities and outcomes of the project, enabling the widest possible impact of the obtained results.
- ✓ All planned activities will be based on a coordinated effort among all project Partners, to efficiently exploit the results, to communicate and disseminate the project findings, as widely as possible, using all available means to reach the target audience.
- ✓ PEDR follows the project's evolution and will be permanently monitored and updated during the project lifetime.



References

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Appendix 1 – Technical Deliverables Open to Public

List of technical deliverables accessible to public

Code	Deliverable name	WP No.	Lead participant	Delivery date (months)
D1.1	PIRT methodology and development	1	JRC	M42
D1.2	ALFRED reference design and initiating events	1	ANN	M06
D1.3	MYRRHA reference design and initiating events	1	SCK CEN	M06
D1.6	R&D roadmap for V&V needs	1	ENEA	M48
D2.1	HELENA loop description and deformed bundle configurations definition	2	ENEA	M03
D2.4	Blind calculations on HELENA deformed bundle reference case	2	NRG	M15
D2.5	Benchmark on HELENA deformed bundle	2	NRG	M30
D2.6	Code-to-Experiment comparison on the HELENA deformed bundle (Configuration A&B)	2	VKI	M42
D2.7	Code-to-Code comparison on the HELENA deformed bundle	2	CRS4	M42
D2.8	Synthesis on grid-spaced deformed bundle experiments and simulations in water and lead	2	NRG	M48
D2.9	Design description for the wire-wrapped rod bundle water experiments	2	VKI	M09
D2.10	Database of available existing wire spaced experiments	2	SCK CEN	M19
D2.11	Results of the wire-wrapped undeformed rod bundle experiments	2	VKI	M24
D2.12	Experimental results for the wire-wrapped deformed rod bundle experiments	2	VKI	M30
D2.13	Pre- and post-test CFD analysis of the water rod bundle experiments	2	NRG	M42
D2.14	Guidelines for CFD application to wire-wrapped rod bundles	2	NRG	M48
D3.1	Experimental results of the safety rod proof of principle tests at COMPLIT	3	SCK CEN	M37
D3.2	Report on the performance of oxygen control system with PbO MX and cold trap in liquid LBE	3	SCK CEN	M42
D3.3	Report on the performance of oxygen control system with electrochemical oxygen pump and oxygen getter in liquid Pb	3	ENEA	M42
D3.4	Numerical simulation of safety rod insertion and comparison with proof of principle tests at COMPLIT	3	CRS4	M48
D3.5	Failed fuel pin detection and localization by cover gas monitoring in LBE cooled systems	3	SCK CEN	M48

D3.6	Noble gas detection by cover gas monitoring in the liquid Pb installation	3	RATEN	M48
D3.8	Experimental validation of the gas tagging system at gas jet facility (SINQ	3	PSI	M48
D4.1	List of needed normative standards and practical strategy for the in-service inspection of HLM systems	4	JRC	M37
D5.1	LFR BOP Configurations analysis: Definition of the final system configuration, equipment specifications and balance of plant	5	EAI	M06
D5.2	LFR BOP Main components definition: Definition and sizing of the main components, including sensitivity analysis of both BOP configurations	5	EAI	M12
D5.3	Economic Analysis: Calculation of CAPEX, OPEX and overall levelized cost for hydrogen production and energy storage	5	CIRTEN	M30
D5.4	Financial Analysis: Calculation of key financial parameters (e.g. NPV, IRR) for different financial configurations	5	CIRTEN	M40
D5.5	Business models: Definition of viable business model for the key stakeholders (e.g. utility, system integrator, technology provider) involved in the project	5	CIRTEN	M48
D5.6	Social and ethical considerations on advanced nuclear technologies	5	SCK CEN	M48



Appendix 2 – Exploitable Result Form



ANSELMUS

Advanced Nuclear Safety Evaluation of Liquid Metal Using Systems

Exploitable Result Form (ERF)

Initiator

- Project Coordinator
- Work Package Leader
- Task Leader
- Partner

Name:

Organization:

Role in project:

Type of exploitable result

- Patent
- Prototype
- Experimental data
- Phenomenological models
- Conceptual projects
- Computer codes
- Studies, reports, analysis
- Techniques, methodologies
- Other

Description of result

Clear identification

Please specify details of the result in question

Novelty

Please specify the novelty aspect(s) related to the potentially exploitable result identified



Internal reference

For traceability, please specify the ID of any ANSELMUS document (e.g. deliverable) which could provide a reference for the identified result

Justification for the request**Target audience**

- Scientific community HLM system developers Regulators & TSO
- Decision makers Industrial stakeholders Students
- International organizations General public

Expected impact

Please specify the expected impact related to the potentially exploited result identified

Organizations having IPRs

If any IPR is related to the identified result, please specify the name of the involved Organization(s). Otherwise, please insert "Not Applicable"

Eligibility

Please specify the eligibility of the result for exploitation by checking or not the corresponding box hereafter. Please note that the envisaged exploitable result is eligible only in case ALL the boxes are checked.

- The results address the real market needs
- The results can be implemented on the short/medium term
- The results have a relevant estimated market value (benefit)



Appendix 3 – Publication Notice Form



ANSELMUS

Advanced Nuclear Safety Evaluation of Liquid Metal Using Systems

Publication Notice Form

Initiator

Name:

Organization:

Email:

Other authors:

Please provide Names and Organizations

Related Work Package(s):

Description of publication

Title:

Type of publication:

Journal article

Conference paper

Other

Compliance with open access policy:

Compulsory for journal articles

Gold open access

Green open access

Other



Abstract
