I.FAST

Innovation Fostering in Accelerator Science and Technology

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DELIVERABLE REPORT

Report on the development and promotion of services to industry

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ABSTRACT

This report is the final report on the development and promotion of services to industry in AMICI Technical Facilities (TFs). It corresponds to the final report of task 13.2.

The report outlines the achievements and activities within task 13.2 in establishing a central information and contact point to streamline the access for external partners (sub-task 13.2.1), proposing standardized rules to simplify and expedite access for external partners across different TFs (sub-task 13.2.2), and in summarizing the results of 4 workshops to facilitate collaboration between laboratories and external stakeholders, with a particular focus on specific types of Test Platforms (sub-task (13.2.3). The report therefore underscores the collective commitment to promote collaboration, innovation, and the advancement of technological infrastructure within the AMICI Test Facilities.

Task Leader: DESY, with the active participation of partners including CEA, CIEMAT, CNRS, IFJ-PAN, INFN, KIT, UKRI, and UU.

For more information on IFAST, its partners and contributors please see https://ifast-project.eu/

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Delivery Slip

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Executive summary

This report provides an overview of Task 13.2 within the framework of the I.FAST European project. Task Leader: DESY, with the active participation of esteemed partners including CEA, CIEMAT, CNRS, IFJ-PAN, INFN, KIT, UKRI, and UU. The objective of Task 13.2 was to promote and develop services to industry in AMICI TFs.

This task was subdivided into three focused sub-tasks, each with a distinct mission:

Sub-Task 13.2.1 (CEA): Establishing a Central Information and Contact Point to streamline access for external partners.

Sub-Task 13.2.2 (DESY): Proposing standardized rules to simplify and expedite access for external partners across different Test Facilities.

Sub-Task 13.2.3 (INFN): Organizing annual workshops to facilitate collaboration between laboratories and external stakeholders, with a particular focus on specific types of Test Particles (TP).

This report delves into the progress and achievements of each sub-task, underscoring the collective commitment to promote collaboration, innovation, and the advancement of technological infrastructure within the AMICI Test Facilities. The subsequent sections provide a detailed account of the initiatives and their potential impacts.

1 Introduction

Within the broader context of our I.FAST European project, this deliverable encapsulates the progress and outcomes of task 13.2. This task, dedicated to developing and promoting services to industry in AMICI Technological Facilities (TFs), consists of three sub-tasks, each with its distinctive goals and contributions:

Sub-Task 13.2.1: The principal aim of this sub-task was to establish a centralized information and contact point, specifically tailored to cater to industry and other external partners. The central hub was envisioned to provide comprehensive, up-to-date information about the TPs available within the various partner facilities. Moreover, this central point of contact would simplify the process of formulating requests for information or seeking access to TPs, ensuring that they receive relevant and timely responses.

Sub-Task 13.2.2: This sub-task took on the challenge of analyzing the existing rules and procedures across different TFs that host external partners, with a particular emphasis on industry collaborators. The objective was to harmonize these diverse approaches and develop a set of standardized rules. This streamlined approach would not only facilitate access but also promote a more efficient and effective collaboration between the external partners and TFs.

Sub-Task 13.2.3: A fundamental aspect of our endeavor involved the organization of small workshops, each dedicated to a specific type of TP. These workshops brought together personnel from laboratories operating TPs of the designated type and potential users, including those from

industry. The core purpose of these workshops was to introduce the TPs to potential users and elicit their feedback.

This deliverable provides a comprehensive account of the progress made, the insights gained, and the potential impacts generated within Task 13.2. It reflects our commitment to enhancing collaboration, innovation, and the accessibility of technological infrastructure within our project.

2 Developing and promoting services to industry in AMICI TFs

2.1 Central Information and contact point

2.1.1 Sub-task introduction

The goal of Sub-Task 13.2.1 was the organization and operation of a central information and contact point for industry and other external partners. The idea was that possible external users, from industry or academic laboratories, have clear and regularly updated information on the Technical Platforms available in the different partner facilities, can easily formulate a request for further information or for access one of the TPs, and get appropriate answers.

2.1.2 Work carried out

In order to allow external users to have a clear and updated information on the Technical Platforms available in the partners facilities and to easily reach them, a central information and contact point was organized. The information is given on the AMICI website and the central contact point can be found on the website either by contacting the coordination team for global information on the AMICI collaboration or by reaching each of the partners directly by means of a specific email address indicated on each page presenting the technological facilities. Thanks to these specific addresses, the person or the group of person in the partner laboratory processes and responds to requests. Moreover, the coordination team is now in copy of the emails sent to all these addresses in order to keep track of all the requests received, to make statistics on the number of requests but also possibly relaunch partners who have not replied or forward the request to another partner performing similar services.

2.2 Standardization of access rules

2.2.1 Sub Task introduction

The goal of the sub-task 13.2.2 was to analyse the rules and procedures in place at different technical facilities (TFs) to host external partners – in particular from industry – and try to combine them to a set of standardized rules for a simpler and faster access to the TFs and their platforms for external partners.

2.2.2 Work carried out

To carry out the tasks, the WP13 partners were contacted via the members of the WP Steering Committee (SC) to acquire information about the procedures in place at the individual TFs for external, in particular industry users to access these facilities. These rules and procedures could include for example safety regulations, liability clauses, confidentiality agreements, compensation schemes and others.
Since the availability of those rules and procedures for external partners seems to be limited, only very few responses were received. Responses received did not actually provided any inside into the rules applicable at the TFs but rather registration forms collecting personal information or the possibilities to apply for financial support.

DESY itself has a long history of providing services to external partners especially also partners from industry and has devised general “Terms of Service” (ToS) to be used, when external partners want to access TPs at DESY. To progress on this task, the ToS used at DESY were analysed . They do not describe all the rules to be followed for example by external personnel to access a TP on site, but give a (non-exhaustive) list of such rules.

The DESY ToS were distributed to the WP13 SC for comments and could serve as blue-print also for other TFs to welcome in particular industry partners in case no such terms are yet defined at the host lab of the TF. Besides general discussions in the WP13 meetings no substantial comments were received. The list of actual access rules, like safety and radiation protection, are assumed to contain many lab specific regulations which are implementations of national or local laws. Such rules seem to be impossible to harmonize but instead the list could serve as a guideline of what should be addressed when providing a service to external partners. Also topics like intellectual property, compensation schemes and taxes which could be regulated seems to follow very lab specific rules (looking at DESY alone). It is considered not very likely that TFs would give up their sovereignty of these topics.

A set of questions was formulated for the Industry Advisory Board (IAB) to identify those rules and paragraphs that from industry‘s point of view pose the largest obstacles when contracting the service of the TF. However, feedback for the IAB suggest that the lack of non-unified access rules is actually not an issue for industrial users at TFs. The possibility for collaboration with TF hosts, the availability of skilled and trained personnel at the TFs and the continuity of services is much more important to partners from industry.

2.2.3 Results and Conclusions

Even though a harmonization of rules and procedure to TFs could not be advanced due to the non-availability of input, the DESY “Terms and Conditions for Service Contracts” can serve as a blue-print on what to regulate if such contracts are in demand at partner labs and TF operators which so far do not have users from industry. The items to regulate when hosting external partners according to the DESY ToS include:

- Subject matter of contract and due date
- Reference to service offer
- Written reports by TF operator

- Cooperation of the client
- Service performance at TF (by external personnel)
- Subcontractors
- Renumeration
- Contacts
- Change Requests (by client to TF operator)
- Intellectual property and rights of use
- Confidentiality
- Naming of host lab in scientific publication and advertising
- Limitation and liability
- Termination
- Taxes
- Conclusion of contract
- Final Provisions

The ToS of DESY were composed in cooperation with a specialized legal firm, indicating also that the attempt to harmonize such term across labs in various countries may have been a bit to ambitious.

Nevertheless, the response from the Industry Advisory Board shows that the lack of such standards would not be an obstacle in approaching TF operators to use their TPs. But the collaboration with highly skilled personnel at the host labs is considered the biggest benefit by industry.

2.3 WORKSHOPS

Small workshops dedicated to a particular type of TP have being organized, which gather personnel from the labs operating TPs of this type and possible users. The aim of these workshops was to present the TPs to the possible users and identify how the services could be adapted or improved to better correspond to their expectations.

The subject and location of the workshops dedicated to particular types of TPs were as follows:

- SRF cavity testing at DESY, Hamburg
- Superconducting magnet test facilities at LASA Milano
- Platforms for characterization, treatments and test of materials at IJCLab, Orsay
- Facilities for beam test of accelerator components at IFJ PAN, Krakow.

2.3.1 SRF cavity testing workshop

The first workshop took place in DESY, Hamburg, on September 14 and 15, 2022 on (vertical) cavity testing.
The Program Committee for the workshop consisted of:

- Lea Steder / DESY (CHAIR)
- Andrea Lidl / INFN LNF (I.FAST WP13.2.3)
- Akira Miyazaki / Uppsala University
- Hans Weise / DESY (I.FAST WP13.2)

- Alan Wheelhouse / STFC
- Mateusz Wiencek / DESY (AMTF Test Stand Operation)

Target group was on one hand the group of colleagues from labs with testing infrastructure, and on the other hand project delegates, who need their cavities tested.

The complete workshop documentation with all the presentations is available through https://indico.desy.de/event/35316. Altogether 42 participants from 14 laboratories and industry joined the meeting. In total 11 contributions introduced the measurement infrastructures of the different labs, including all the actually planned upgrades concerning diagnostic and test systems, as well as test capacities. Projects described their needs and schedules for cavity testing.

The in-person discussions during the workshop were absolutely important, after the long Covid suffering break. The small workshop dinner was held right next to the DESY vertical test stands and followed directly the extended tour through the TF infrastructure.

List of SRF cavity test benches in Europe and its customers:

SRF cavity test benches in Europe	
Within AMICI & I.FAST	CEA Saclay
	CERN
	DESY
	IJCLab
	INFN LASA
	INFN Legnaro
	UKRI Daresbury
	Uppsala University
others	HZB Berlin
	HIM Mainz
	HZDR Dresden
	TU Darmstadt
	Uni Wuppertal ?
outside Europe	Cornell Univ.
	JLAB
	FNAL
	MSU
	TRIUMF
	KEK
	IHEP
	SARI
	….

Customers		
	service contracts	In-kind

Industry	Research Instr.	LCLS-II	DESY	
		ESS-HB	DESY	
		PolFEL	DESY	
	ZRI Zanon	ESS-MB		
Institutes / projects	INFN	ESS-MB	DESY	ESS-MB
		PIP-II	(DESY)	PIP-II
	STFC	ESS-HB PIP-II	DESY	ESS-HB
	ESS	HB & MB		
	SOLEIL			
	CERN	FCC		
	SLAC	LCLS-II HE	DESY	
	FNAL	LCLS-II HE PIP-II		LCLS-II
	JLAB	LCLS-II HE	DESY	LCLS-II
	SARI	SHINE	DESY	

Conclusion:
The workshop brought together key experts from all respective Test Facilities. Closer contacts were established. In discussions between the labs and with institutes a much better understanding of TF capabilities and research project needs were gathered. During the weeks and months following, a more direct exchange between the partners became visible. The preparation of cavity testing related to future European and worldwide activities was clearly supported by the workshop.

2.3.2 Superconducting magnet test facilities workshop

The SC Magnet Workshop was organized in order to create a platform for the community of SC Magnet, with the joint participation of Research Institutes and Industries, and to discuss the present exploitation of Technological Infrastructures (TIs) and the innovative projects that they host.

The aim of the two day workshop was the presentation of all the TI's, which are already in operation atthe European Institutes, the discussion of Industry needs in relation to their innovative projects and how these TI's could be better exploited.

The first day (https://agenda.infn.it/event/32859/) has been dedicated to present the features of the TIs and the roadmap of SC Magnets for Particle Accelerators, Medical Application and Energy. The second day gave industry the opportunity to present their ideas, projects, suggestions. A dedicated Industry-Research round table on the topic "how the TIs could be useful addressed by Industry" gave the opportunity for frank and constructive discussions among all participants.

Particpants and agenda:

The Workshop was organized by a local committee from INFN (G. Bisoffi, D. Giove, A. Liedl, M.

Statera) supported by a scientific committee: with the stimulus of the national experts F. Broggi, P. Fabbricatore, S. Farinon, U. Gambardella, M. Morandin. R. Musenich, L. Rossi and M. Sorbi, the WP13steering committee eventually approved the final programme.

The participants list consisted of 32 people both from Companies and Research Institutes with only two participants by remote.

The Agenda was organized with a first day with presentations by Research Institutes and a second day of presentations by companies with a total Contribution List of 17 talks and one final round table.

The contributions by the Companies were focused on the theme "Interaction with Technological Infrastructure - Innovative Collaboration Projects - Future Developments"

- *ASG Superconductors* - Dr Antonio Pellecchia
- *Bilfinger Noell* - Mr Michael Gehring
- *OCEM PE* - Dr Miguel Pretelli
- *Saes Rial Vacuum* - Dr Carlo Santini
- *Tesla Engineering* - Dr Steve Bates
- *Round Table "The Present and Future Interaction between Industry and Research Institutes"*

  - Mauro Morandin (INFN)

Conclusion and Feedback:

All the presentations and the final round table have achieved the aim of the workshop: create an opportunity for a specific community to discussion about the improvements of the collaboration for the future innovative projects.

Beyond the presentation of the specific features of the single Tis and of the competences of the various companies, the discussion and in particular the round table highlighted different points:

Standardization of TI access procedures for companies

The experience gained by light source and neutron source labs can be very valuable since they have setup well established procedures to cope with the services they are providing to industrial users. The I.FAST activity in this respect could be carried out in collaboration with LEAPS. To facilitate the interaction and the exploitation of the TIs, it was also discussed to possibly agree on criteria that TIs have to satisfy to be qualified as "capable" of providing services to Industry.

Procurement and TT rules

There is a well perceived impression that the constrains of Technological Transfer (TT) and procurement rules sometimes strongly limit Industry participation to tenders and the opportunitiesof cooperation. The existing rules seem to reduce the possibilities of addressing, in an efficient and flexible way, the occurrence of unexpected events that are typical of the research environment, suchas design modifications, unpredicted extra-costs, etc… Providing an opportunity to collect advance

feedbacks from the industrial sector could help TIs in tuning the market survey and organize the tendering procedures to avoid such limitations. Furthermore, the experience of the rules adopted by CERN, or by some non-European states, may be of inspiration. The example of HL-LHC correctors, where the first 6 months could be devoted to design changes and agreement on new tolerances, can be inspiring. A study of the most crucial aspects could be carried out also within the European projects like IFAST, with the objective to advance concrete proposals.

Test Facilities for HTS Material

HTS material characterization will need ultra-high field test stations (about 30 or 40 T, accessible for significant time spans),variable temperature set-ups, electro-mechanical testing in non-standard configurations (e.g. shear, peel, etc.), variable temperature high current test stations (50 K, 50 kA), background field with variable temperature and high current (15 T, 150 mm, 50 K, 50 kA, this is close to TFD in the US). These Test Facilities required a large investments in terms of funding and qualified personnel: a coordinated approach promoted at the European level by RIs might be important to solicit these large investments and make the best use of them

European industrial leadership position

The European competitiveness in the sector of superconducting magnets at low temperatures may be strongly jeopardized in the evolution towards HTS. The big investments being recently poured by US in the fusion sector and the unique Chinese industrial capabilities are warning alarms. Given the big impact that HTS may have in several key application fields, an initiative at the European level might be the only option to secure the necessary funding needed to implement a large scale ambitious program that can be beneficial for European companies.

Intellectual Property

The actual rules for purely commercial non-R&D work, tend to restrict exploitation of IP, which is not in the interest of the public and private partners in this field. In some countries, agencies exist, which take care of notifying patents to potentially interested industrial companies

TRL levels and Industry

While TRL5-8 is the typical area of collaboration between institutes and companies, lower TRLs implya higher cost and risk in the RoI. On the other hand, low TRLs is where breakthroughs may lie. Starting to work from TRL1 onwards with the institute is fine for some companies, and too demanding for others. One bottleneck is the bid ruling framework, forbidding companies involved in early-stage prototyping to participate in the construction of the final products. On the other hand, cost estimation for series production is really difficult before the prototyping phase. The “HL-LHC correctors” experience is an example of different paradigm: the Institute provided the ancillary instruments to both the prototype and the series phases: with these premises, the same companies could participate in both development phases.

2.3.3 Platforms for characterization, treatments and test of materials workshop

This workshop on Platforms for characterization, treatments and test of materials is part of a series of four, each dedicated to a specific category of Technological Platforms (TPs). The present category

include platforms for thermal treatments ; chemical treatments ; facilities for surface analyses ; electromagnetic, mechanical, thermal and associated material characterisation ; test stations for mechanical manufacturing and tests at cryogenic temperatures. The goal was to gather personnel from the labs operating Technological Platforms (TPs) of this type and possible users in particular from industry, in order to discuss the present exploitation of TPs in operation in the European Institutes.

The platforms that were presented during these days have been created with the aim of testing samples, materials and small components that are then used in the composition of accelerators or magnets. The opening of our platforms to external users is also a way to extend the testing use of our TPs to other fields such as space, aeronautics, climate...

This workshop also gave the opportunity to present Industry needs for their innovative projects and to discuss how these TPs could be better exploited.

Participants and agenda:

The participants list consisted of 26 people both from Companies (5 the first day and 3 the second day) and Research Institutes.
The agenda can be found on the event's indico site:
https://indico.in2p3.fr/event/28703/timetable/#20230622

CNRS and CEA Visits:

As part of our workshop focused on 'Platforms for Characterization, Treatments, and Tests of Materials,' we had the opportunity to conduct site visits at both CNRS and CEA. These visits were conducted on separate occasions, and they provided a firsthand look at the infrastructure that are instrumental in advancing our understanding of materials, their properties, and their applications. These platforms are described on the AMICI website: https://amici.ijclab.in2p3.fr/technology_infrastructure/category

At CNRS, we explored cutting-edge laboratories and research centers, including the 'Vacuum Furnace' and the 'Supratech Facility: Cavity Preparation.' The visit to the 'Vacuum Furnace' showcased advanced techniques for materials processing in controlled environments, while the 'Supratech Facility' highlighted capabilities for cavity preparation and characterization.

During our visit to CEA, we had the opportunity to tour a range of specialized platforms, including the 'Vertical Electropolishing Cabinet,' 'Diagnostics, Vacuum and Assembly – DIVA,' 'Test Cryostat at Variable Temperature and High Magnetic Field – CETACES,' 'Characterization Laboratory at Cryogenic Temperature – LABCAF,' ‘Pressurized Superfluid Helium Cryostat,' and ‘Measurement of the Thermal Conductivity of Insulators and Conductors – MECTIX.' These platforms encompassed a wide spectrum of capabilities, from chemical treatments to cryogenic testing, and provided valuable insights into the cutting-edge research being conducted in the field of materials science.

Workshop facts – discussion with the industrials:

FIRST SESSION:

Many topics were discussed with the industry representatives present at the workshop during this

first session. The main conclusions of these exchanges were:

Collaboration between Labs and Industry

This discussion highlights the importance of collaboration between public research laboratories and industry for the execution of complex projects. The role of government agencies in producing pre-designs was acknowledged but it is necessary to determine which parts of the project can be outsourced while maintaining adequate control.

Measurement of Success and Objectives

The importance of defining clear success indicators and integrating them into decision-making and behaviour was emphasized. Additionally, the distinction between fundamental research and applied research was highlighted, each having its own goals and methods for measuring success.

Industry-University Collaboration

This discussion underscores the necessity of strengthening ties between companies and universities, exploring various forms of collaboration. Adapting existing infrastructure and resources to meet industry needs is important. The challenge of attracting companies from different fields was underlined.

Training Highly Qualified Personnel

Training highly qualified personnel is crucial for research and industry, but it is necessary to find effective ways to provide this training, considering time constraints and productivity in the industry.

Infrastructure Mutualization

Mutualizing infrastructures can allow for more efficient resource utilization and increased collaboration among various stakeholders and is therefore encouraged.

SECOND SESSION:

The discussion centered on the dynamics of industry-public research laboratory collaboration, particularly within the context of the Innovate UK agency established at UKRI, pre-design contracts, and the AMICI network.

Collaboration between industry and public research bodies

This discussion highlights how companies interact with public research bodies to address their innovation needs. Collaboration between the private sector and the government is essential to support technological research and development. The example of Innovate UK, created by UKRI in response to companies, which expressed the need for a dedicated contact point within research government bodies to facilitate communication and cooperation, was presented. Requests from companies are sent to this contact point, which then assesses the possibility of responding to the demand. Each UKRI department typically has around ten individuals responsible for handling business-related matters.

Collaboration Between Laboratories

Collaboration between laboratories is a crucial element in fostering innovation. The AMICI Network, which facilitates the exchange of human resources between laboratories, is a concrete example of this

collaboration. It was also mentioned that cooperation at the European level can enhance the position of laboratories in the face of global competition.

Importance of Networking and Communication

This discussion underscores the importance of communication networks to facilitate the exchange of information and resources among laboratories. It also highlights the need for continuous evolution of laboratories to meet the changing needs of industry and research. With ten laboratories involved in the network, it was suggested that a common agreement could be established, allowing industrial partners to collaborate with the entire network.

Conclusion:

In summary, the discussions during the workshop highlighted the importance of collaboration between laboratories, industry, and universities, the need to define clear success indicators, and the requirement for training qualified personnel to address technological challenges. The mutualization of infrastructure also emerged as an opportunity for more efficient resource utilization. These key points can serve as a foundation for guiding future recommendations and actions in the field of technological infrastructure.

The discussions also addressed collaboration between the private sector, government, and research laboratories, cooperation among laboratories to respond to demands, and the importance of communication networks to facilitate these collaborations. These elements emphasize the importance of coordination and cooperation in the field of technological infrastructure.

2.3.4 Facilities for beam test of accelerator components workshop

The present category include the beam test facilities at AMICI laboratories used to perform the experimental validation and research vital to advancing the accelerator technology.

The purpose of the workshop was to bring together personnel from scientific laboratories and industrial companies that prepare components used in devices exposed to different types of ionizing radiation, i.e. components used in the construction of large research accelerator facilities, in the construction of medical devices for radiation therapy, devices operating in high radiation fields (e.g. nuclear fusion reactors), and those intended for use in space. The workshop aimed to identify the need for testing the radiation resistance of non-silicon electronic components and to determine changes in the physical properties of structural materials used in the construction of radiation-exposed equipment. The use of new materials, including new composite materials, adhesives and epoxy resins, polymer optical fibers, 3D printed components in the construction of equipment and apparatus exposed to radiation has become increasingly widespread. During the workshop the possibility of testing of components and structural materials in laboratories with the capacity to beam test the physical parameters of materials was presented.

The meeting also formulated the expectations and identified the opportunities for cooperation in the following R&D tasks:

- The influence of low-energy particles on the properties of polymers and adhesives;
- The influence of radiation on the properties of accelerator elements that were created with use of 3D printing;

- The influence of radiation on mechanical properties of nanostructured amorphous-ceramic and metal composites;
- The influence of radiation on the resistance of cable dielectric materials/insulation materials;
- The effect of radiation on the properties of resins used in materials.

Participants and Agenda:

The participants list consisted of 29 people from both Companies, Technological Agencies and Research Institutes.
The agenda can be found on the event's indico site: https://indico.ifj.edu.pl/event/1122/

IFJ PAN Visit:
As part of our workshop focused on **Facilities for beam test of accelerator components** we had the opportunity to conduct site visits at AIC-144, a cyclotron-based beam test infrastructure at IFJ PAN. We had opportunity to tour all parts of this infrastructure both cyclotron and two test stations. This visits provided a firsthand look at the one of the infrastructure that is vital in the experimental validation and research vital to the accelerator technology.
This platform is described on the AMICI website:
https://amici.ijclab.in2p3.fr/technology_infrastructure/ifj_pan/test_beam_facilities

Workshop facts:

The topics discussed at the workshop and the main outcomes were:

The evolution of radiation damages in materials applied at cryogenic temperatures

This discussion highlights the importance of scientific support of users in understanding the results of irradiation tests. The collaboration between public research laboratories and industry for the execution of complex projects is vital but the distinction between fundamental research and applied research was highlighted.

Facilities for beam tests

The importance of standardizing of dose rate measurements was highlighted. Not all facilities use the detecting setups which can be compared. Some investments is needed to upgrade the AMICI beam test facilities. Also training of highly qualified personnel is crucial for research and industry. It is necessary to find an effective way to provide this training.

Case Study

Two case study were presented. The first case study was related to sealing material which should withstands extreme irradiation and thermal conditions. The discussion was focused on supporting of users with finding the right irradiation infrastructure in order to obtain required dose rate. The existing databases with irradiation facilities are not disseminated efficiently. The second case study was focused on irradiation methodology and needs of unification of main irradiation procedures.

Industry feedback and roundtable

The discussion was focused on the challenges in establishing of industry and public research laboratory collaboration. The collaboration between the private sector and the public sector is essential to support technological research and development. There are strong demand from industry as well as laboratory user for support from beam test facilities in order to define the initial beam test setups or for assistance in adaptation of existing test setups in to fulfill test requirements. Also mutualizing infrastructures can allow to fulfill irradiation requirements. Collaboration between beam test facilities is also crucial in fostering innovation. In order to facilitate the exchange of services and resources among laboratories a communication networks would be beneficial and a common agreement could be established, allowing industrial partners to collaborate with the entire network.

Conclusion

The beam test facilities at AMICI laboratories (IFJ PAN, INFN-LNL, INFN-INF, and STFC) are a solid base for the testing of accelerator components, among which beam diagnostics and electronic components, and studies related to materials under irradiation, which can be important for other domains such as space and medical applications. Some new trends in associated R&D have been identified, which call for at least the long-term preservation of these facilities and their upgrading.

2.3.5 Conclusion

This series of workshops served as a pivotal gathering, bringing together key experts from various Test Facilities and industrial partners. It fostered closer connections and facilitated invaluable discussions between institutes, leading to a more profound understanding of TF capabilities and research project requirements. In the weeks and months that followed, it was evident that a more direct exchange between partners had evolved.

The discussions during the workshops underscored the critical significance of collaboration among laboratories, industry, and universities. It emphasized the need to establish clear success indicators and the necessity for training qualified personnel to address technological challenges. The shared use of infrastructure emerged as an opportunity for more efficient resource utilization, laying the groundwork for future recommendations and actions in the realm of technological infrastructure.

The deliberations also addressed collaboration between the private sector, government entities, and research laboratories, promoting cooperation among laboratories to meet demands, and highlighting the pivotal role of communication networks in facilitating these partnerships. These elements underscore the importance of coordination and cooperation.

3 General conclusion

This report highlights a significant leap forward in our collective mission to enhance the accessibility, collaboration, and innovation within the AMICI Test Facilities. We have made substantial strides towards achieving the primary objectives of Task 13.2, each element contributing its unique value to the overall endeavor.

The establishment of a central information and contact point has proven to be a pivotal step. It now provides external users, whether from industry or academia, with an easily accessible source of clear and updated information regarding the Technical Platforms available across partner facilities. This improvement in information dissemination is reflected on the AMICI website and the central contact point, ensuring that potential users can make informed inquiries and access the facilities more efficiently.

While the harmonization of rules and procedures across various Test Facilities did not fully materialize due to certain constraints, we have a valuable blueprint in the form of DESY's "Terms and Conditions for Service Contracts." This template, crafted in cooperation with a specialized legal firm, signifies our commitment to establishing standardized guidelines, even if the path proves ambitious. The response from the Industry Advisory Board has been a testament to the strength of collaboration with highly skilled personnel at the host laboratories, highlighting that while standardization is valuable, it is not an insurmountable obstacle for industry engagement.

The series of workshops conducted within Task 13.2 has been a significant milestone. It has solidified connections between experts from various Test Facilities and industrial partners, fostering a deeper understanding of capabilities and project requirements. The resulting direct exchange between partners signifies the positive impact of these collaborative efforts. These discussions have underscored the critical importance of collaboration, the establishment of clear success indicators, and the need for training qualified personnel to address technological challenges. The shared use of infrastructure emerges as an opportunity for more efficient resource utilization, a foundation for future recommendations and actions.

It should be added that some of the Technical Platforms belonging to the AMICI network are now part of the WP3 of EURO-LABS [2] Horizon Europe project, which provides transnational access to Research Infrastructures for Accelerators. The work carried out as part of IFAST WP13, gathering information, establishing a point of contact and promoting them through dedicated workshops, will be very useful in attracting new users to these platforms. Actually, the last workshop in Krakow was organized just after the second annual meeting of EURO-LABS in order to benefit from the synergy between the two projects.In summary, this deliverable reflects our shared commitment to advancing the I.FAST project and the broader goals of promoting collaboration, innovation, and accessibility within the technological infrastructure landscape.

References

[1] AMICI – Accelerator and Magnets Infrastructure for Cooperation and Innovation – H2020 Grant agreement #731086

[2] EURO-LABS – EUROpean Laboratories for Accelerator Based Science, Grant Agreement No 101057511 (EURO-LABS)

Annex: Glossary

Acronym	Definition
AMICI	Accelerator and Magnet Infrastructure for Cooperation and Innovation
TF	Technological Facility
TP	Technical Platform