FuSuMaTech

Future Superconducting Magnet Technology

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Grant Agreement Number n° 766974

DELIVERABLE D6.2

Initial Dissemination and Exploitation Plan of FuSuMaTech Phase 1

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1. INTRODUCTION

This document is the initial plan. It will evolve during the project. Final Dissemination and Exploitation plan will be delivered in Month18.

In the case of FuSuMaTech, it includes the central themes of the project, such as the ambition to reinforce the synergy between academics and industry and to contribute to the impact of the future superconducting magnets technology.

Dissemination and Exploitation plans are covered in different chapters.

What is meant by Dissemination?
The Dissemination Plan is an instrument and planning tool for the communication of the project. It is a strategic document, containing lists and actions to be undertaken during the project and at the end of the project. As such, it includes detailed information about selected means and channels for communication – meetings, reports, web presentation, etc. It also specifies the different target groups – both internal and external - including media and proposed actions to reach the objectives for the communication.
A dissemination plan often starts out by establishing the "communicative platform". That is the core values and concepts of the project or organisation. The plan is built in relation with the major events of the project in order to give it the largest possible publicity.

What is meant by Exploitation?
The Exploitation Plan deals with the utilization of results in further research activities, in developing, creating and marketing a product or process, or in creating and providing a service, or in standardization activities. It aims to make use of the results, to recognize exploitable results and their stakeholders and to concretize the value and impact of the activity for societal challenges. Exploitation can be commercial, societal, political, or suitable for improving public knowledge and action. Project partners can exploit results themselves or facilitate exploitation by others (e.g. through making results available under open licenses).

The Dissemination and Exploitation Plan regarding a research project will to some extent be flexible regarding the later parts of the projects. Depending on the outcome of the studies, some communication activities may have to be adapted, enforced or tuned down in relation to the original plans.

The communicative challenges of the FuSuMaTech project are to be discussed and evaluated in the light of the overall objectives – possibly with some regard to strengths, weaknesses and characteristics compared to other projects or organisations.

2. FUSUMATECH DISSEMINATION AND EXPLOITATION PLAN

2.1. Overall dissemination and exploitation strategy

As a condition of the European impact of **FuSuMaTech Phase 1**, dissemination activities will play a crucial role during the life of the project and will strengthen the EU collaboration between experts in superconductor magnet technology.

FuSuMaTech Phase 1 will deploy a variety of actions to make the results generated available and understandable to researchers, policy-makers and industrial players, so as to raise their awareness and knowledge on superconductor magnet technology.

The Figure 1 below presents the overall strategy during and beyond the project lifetime.

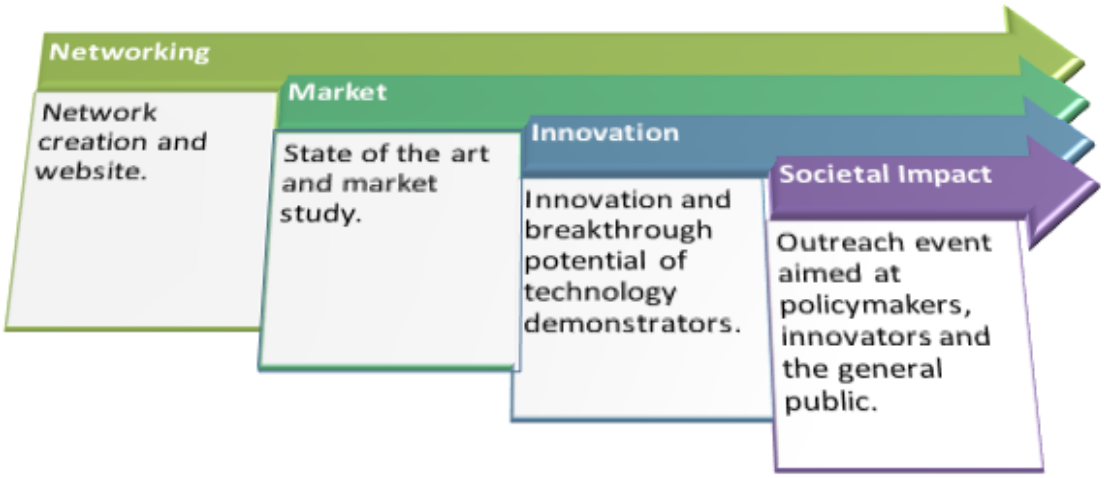


Figure 1 - Overall dissemination strategy

During FuSuMaTech Phase 1:
Setting-up of the FuSumaTech European Cluster (Partners responsible: All partners);

1. Website development (Partner Responsible: CERN);
2. Publication and widespread dissemination through website and social media of:
   a. Report on state-of-the-art of superconducting magnet technology (M14, T2.1, CERN)
   b. Report on market situation and landscape of patents and IP agreements (M18, T2.3, CERN)
3. For each technology demonstrator planned, a communication able to catch the attention will be disseminated aimed at the wider general public showing the enabling potential of such technology demonstrator (M12, T5.1 – T5.5), by the respective partner responsible for the demonstrator (ASG, BNG, ELYTT, OI, Sigmaphi and Tesla).

A public workwhop will be held at CERN destined to policy makers and the general public on the benefits of funding a larger R&D&I project in the domain of superconducting magnet technology.

To support the overall strategy, the

Table 1 below gives the timeline for key dissemination materials to be prepared progressively with the knowledge, technical and practical tools available and to be sent through the most sustainable channels such as the project website and brochures as well as through the community of applied superconductivity.

Ultimately, this strategy will lead to long-term collaboration agreements between European partners, as well as new project proposals within H2020.

Table 1 - Timeline for key dissemination materials

	Project Year 1 2017-2018									Project Year 2 2018-2019								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Dissemination activities																		
Meetings and events / workshops participation																		
Workshops organisation																		
Foreground / IPR management																		
Exploitation opportunities validation																		
Supporting dissemination materials																		
Press release and public articles																		
Flyer																		
Poster																		
Public deliverables																		

2.2. FuSuMaTech Phase 1 common exploitation plan

The **FuSuMaTech Phase 1** project has a joint exploitation plan which is to create a sustainable Network between Europe's leading superconducting magnet manufacturers, major public research organisations and end-users (MRI and NMR system integrators, innovative energy companies).

A comprehensive exploitation plan incorporating all the partners' inputs will be defined and based on the experience acquired in implementing the **FuSuMaTech Phase 1** project. In addition, the sustainability of the Network could also build on the initial experience of the Working Group on Future Superconducting Magnet Technology established as part of the CERN-CEA Collaboration Agreement.

Below are the basic principles of our common exploitation plan:

In **FuSuMaTech Phase 1**, the above initial envisaged common exploitation plan will be updated (during the first six months) and then validated by involving the following groups of actors (end-users) which will be reached through the activities performed in task T6.3.

Table 2 - Type of actors and their influence within the FuSuMaTech Phase 1 common exploitation plan

Actors	Description	Influence within the FuSuMaTech Phase 1 exploitation plan
HL-LHC Project and FCC Study	Both HL-LHC Project and FCC Study are the major drivers for R&D in superconducting magnet technology, on the	Close collaboration and mutual participation in

	one hand for a major accelerator upgrade (HL-LHC) and for a future circular collider targeting energies above 100TeV. HL-LHC project and FCC Study provide the umbrella for the FuSuMaTech Initiative and the FuSuMaTech European Cluster the future Phase 2) which will align its R&D and pilots with the R&D program of HL-LHC and FCC Study	project meetings and work packages.
MRI System Integrators	As one of the key stakeholders to achieve the desired impact of **FuSuMaTech Phase 1**, MRI System Integrators will receive a strong focus within the networking activities of Phase 1. Future superconducting magnet technology is an enabler for existing European companies (Siemens, Philips) and a platform for innovation for groundbreaking start-ups in this field.	Dedicated networking actions to ensure the value from innovations in superconducting magnet technologies is fully captured.
NMR System Integrators	Next to MRI, another market where innovations in superconducting magnet technology are a key drivers, is Nuclear Magnetic Resonance (NMR) imaging. Hence, NMR System Integrators (such as Bruker) will also receive a strong focus within the networking activities of **FuSuMaTech Phase 1**.	Dedicated networking actions to ensure the value from innovations in superconducting magnet technologies is fully captured.
Electrical power distribution companies	Smart grids and novel solutions for fast electric car charging are an important R&D focus for energy and utility companies. While this Industry does not rely on superconducting magnets per se, the R&D on superconducting cables itself is an important driver to achieve a higher efficiency power grid and faster charge times for cars, for example through superconducting magnetic energy storage (SMES).	Throughout **FuSuMaTech Phase 1**, synergies with these stakeholders will be identified and initial contacts established to incorporate possible new R&D projects into FuSuMaTech Phase 2 relating to energy and sustainability.
Special Magnets Companies	While the focus of **FuSuMaTech Phase 1** is on the mainstream applications of superconducting magnet technology, it is important that special magnets companies operating in niche markets are also on board.	The **FuSuMaTech Phase 1** networking activities will also include European Special Magnets Companies.

2.3. FuSuMaTech Phase 1 individual partner exploitation plans

Besides the exploitation plan at the consortium level which is detailed in the section above, each partner has already a clear exploitation strategy of the project results:

Table 3 - FuSuMaTech Phase 1 individual partner exploitation plans

Partner	Individual partner exploitation plan
CEA	CEA has in his missions to explore new applications in medical research in particular with high magnetic fields. Also one of the missions of CEA is to open collaborations between research and Industry. So **FuSuMaTech Phase 1** which will be coordinated by CEA is at the heart of CEA activities. Technically new quench analysis tools and cryogenic data base as well as cryogen free technology will be used by CEA for the development of many different

	magnets. All the pre-selected R&D axes of **FuSuMaTech Phase 1** are strategic for the CEA activities and the results of the programme are very promising.
CERN	New or refined quench analysis tools will be used by CERN for the development of the high field magnets for a new collider. To get more precise results from the various models, mechanical, thermal and quench, that are required to reach higher fields for future collider magnets, CERN will extensively use the new materials database. Equally important for these magnets is the availability of new high stress materials. A better understanding of the IP situation of the magnet technologies will be used by CERN to improve its knowledge dissemination.
ASG	Technologies for the design and manufacture of high field magnets is becoming key to most of the research efforts both in High Energy Physics and in Healthcare: ASG will leverage on the findings and the results of the **FuSuMaTech Phase 1** and Fusumatech Initiative in order develop the awareness of Research Institutions in both fields as to the feasibility of specific projects and to provide them tools that can actually support their investigations.
BNG	High field magnets are a key technology for future applications in material science, medicine and high energy physics. The development of an HTS high field insert for the LNCMI hybrid magnet will be an enabler for the further commercialization of high field magnets, leading to new and advanced applications. For Babcock Noell, **FuSuMaTech Phase 1** would be a profound basis for further developments in these fields.
ELYTT	The development of innovative geometries for superconducting magnets would create totally new applications to the field of MRI. A fully new market would be created for portable and open MRI systems. Because ELYTT is a newcomer to the existing market, we consider that our best chance relies on a new product and market instead on entering in the existing one, with well positioned, technically able competitors.
OI	**FuSuMaTech Phase 1** results will facilitate the development of new and advanced technical and engineering capabilities required for a variety of superconducting and cryogenic applications. OI expect to exploit the new advancements in commercialization of new superconducting and cryogenic solutions that will have enhanced capabilities in a compact size and manufactured cost effectively. In particular compact high field magnets, cryogen free systems and new solutions for life sciences, quantum technologies, energy applications and physical sciences.
Sigmaphi	**FuSuMaTech Phase 1** will give to Sigmaphi the opportunity to carry on the work started in 2012 with CEA Saclay on small MgB2 coils and demonstrate the MgB2 technology new potential at large scale. First objective for Sigmaphi will be to propose in a near future MgB2 cryogen free magnets with low electrical consumption for replacing high power resistive magnets. This technology breakthrough could help the company to expand its market and turnover.
Tesla	**FuSuMaTech Phase 1** will result in a network of cryogenic and supconductivity expertise in Europe. Tesla would look to exploit this knowledge network to commercialise advanced magnet and gradient engineering solutions for MRI and other medical applications (such as superconducting cyclotrons for radiation therapy).
CNRS	**FuSuMaTech Phase 1** through the HTS insert prototype will contribute to clarify what role HTS could play in the Roadmap for high magnetic field development in Europe.

KIT	**FuSuMaTech Phase 1** with access to leading software codes will strongly support the already very successful transfer of KIT's modeling expertise and codes to the industries and users of HTS solutions strongly supporting the expertise. The existing collaboration with a couple of material companies will profit from the new established data basis and characterization work on advanced high performance cryogenic materials, qualifying existing materials (suitability unknown) and exploring new solutions for the ultra-low temperatures. The focus will be on thermoplastic, metallic and composites (conventional and 3D printed) and dispersion and fiber reinforced composite materials with the general goal of drastically improved cryogenic performance.
PSI	Together with CERN, PSI is active in the development of software tools for quench analysis for low-temperature SC magnets. Through **FuSuMaTech Phase 1**, access to new high-strength materials, validated material databases, data and experience on cyrogen-free magnets, as well as quench-analysis tools for low-temperature and high-temperature SC will enable PSI to produce state-of-the art SC magnet systems for particularly challenging environments.
STFC	Reliable materials data is an enabling factor in developing cryogenic technology, which underpins many science projects. Through **FuSuMaTech Phase 1**, a network of labs and individuals in cryogenic materials testing will help STFC projects share state of the art testing facilities across Europe. Projects across STFC in Space, Astronomy, Synchrotron Light Sources, Particle Physics and Neutron Science will benefit.

3. TARGET GROUPS

3.1. Identified Target Groups

The initial Dissemination and Exploitation Plan is presented below for each target group and related quantified performance indicators with target values to reach during the project lifetime. The DEP will be validated at the project start and updated at Months 6 and 18 (tasks T6.2 and T6.3 led by CERN in cooperation with the consortium members). The dissemination activities are well tailored to reach the key targets, which will be further involved in the strategic exploitation of FuSuMaTech Phase 1 and from which the partners are willing to obtain a useful feedback.

Table 4 - FuSuMaTech Phase 1 initial Dissemination Plan

Target groups	Group description	Indicators for measuring the effectiveness of the approach	Min target (project end)	Feedbacks expected
EU Policy Makers	**FuSuMaTech Phase 1** being a preparatory phase for creating a European Cluster (FuSuMaTech Phase 2). One of the key stakeholders during the first phase will be EU policymakers. The group will be composed of decision makers at the EC (DG Research and Innovation, DG Health and Food Safety) and policy officers in national ministries (research and health).	• Attendence to public engagement event for presenting FuSuMaTech Phase 2	**1**	Develop synergies order to foster common accepted solutions in Europe
		• Meetings with EU policymakers	**5**	
		• Joint events with other EU projects (FCC Study, ARIES, AMICI)	**1**	
FuSuMaTech Industrial Network	Industrial partners in the FuSuMaTech Consortium (namely superconducting magnet manufacturers) and downstream system integrators and end-users.	• Attendence to Joint meetings with the consortium	**3**	Knowledge exchange and definition of common roadmap.
		• Engagement meetings with system integrators and end-users	**3**	
General Public	Citizens of Europe of all ages and backgrounds.	• Number of monthly visits to the **FuSuMaTech Phase 1** website by non-consortium members.	**100**	Awareness of the benefits of superconducting magnet technology for day to day applications used by the General Public.
		• Number of **FuSuMaTech Phase 1** articles prepared for the general public	**2**	

The presentation and identification of the "exact" target groups will be refined as the project goes on. A final dissemination and exploitation plan will be delivered at the end of the project.

3.2. Media

Although FuSuMaTech itself may not be that "newsworthy", the project and its research field may be of interest to specific media for some selected purposes.

- Scientific journals within selected scientific areas for the presentation of superconducting magnet technology.
- Publications like RTD-info, aimed at the "commission community", i.e. people working in European institutions and organisations.
- FuSuMaTech as an example of co-innovation process between Academic and Industry.

One strong press release will be done one or two months before the end of the program.

For this reason, the messages must be delivered in a periodical approach, with respect to a **general approach** and the anticipated development during the course of the project:

1/ from the kick-off (October 2017) to the IP workshop (April 2018):

"FuSuMaTech exists"

2/ from the IP workshop (April 2018) to the mid-term report (July 2018):

"FuSuMaTech is going to produce relevant information that may interest your business in the future"

3/ from the mid-term report (July 2018) to the Final workshop (April 2019):

"FuSuMaTech has produced relevant preliminary information that will impact your business in the future"

4/ At the Final workshop (April 2019):

"Here are the results of FuSuMaTech Phase 1 and prolongations induced by the project for future funding"

4. FUSUMATECH COMMUNICATION SUPPORTS

4.1. General Information

Furthermore, as the number of possible presenters of the FuSuMaTech results may be large, **a PowerPoint template** and a short PowerPoint of the project that everybody can use and at the disposal off all members of the consortium will be produced. This is also an important part of the internal communication, as it may form a basis for a common understanding of the project and its objectives.

Governmental agencies in charge of member states Innovation policies will be offered the possibility to arrange presentations at their own locations, possibly with invitations also to other national or European groups of interest. The exact form for these presentations/conferences /information opportunities will have to be discussed during the course of the project.

And so far regarding the "**European-relay" institutions**: similar presentations may be officially arranged for the European Parliament members and for all European wide RI stakeholders mixing EC representatives, member-state representatives and professional lobbyists located in Brussels.

4.2. Project presentation materials (set preparation and design)

There is a need for presentation material during all phases of the project, not only concerning what already has been achieved, but also what is going to be done in the near future. This is not least important in the extensive contact and network building work, which precedes the actual interviews and market studies.

A number of PowerPoint presentations with contents adapted to the actual target group (industry, government or research infrastructures) are produced by the various Work Packages. Such material will also be available – in suitable formats using the PowerPoint template - for presentations at conferences, e.g. Magnet Technology Conference MT26 (Vancouver 2019).

Instructions will be prepared regarding the format (basic wording, frame, font, logo, etc.) to be used for accompanying the diffusion of news within the FuSuMaTech project stakeholders.

4.3. FuSuMaTech flyer

A Flyer hasbeen realized and will be updated as the project will go on. They will be distrubuted widely to EU Policy Makers, FuSuMaTech Industrial network and people from the community of applied superconductivity. It will give the website link.

4.4. Web site

As foreseen in the Grant Agreement WP6 team started constructing a website for FuSuMaTech. It can be found at http://fusumatech.web.cern.ch.The website will be updated once the logo (and possibly color scheme) has been done. All partners are asked to share the link to the web site in their communication and own website as part of FuSuMaTech joint dissemination responsibilities.

The structure of the website is based 100% on the text and visuals from the agreed FuSuMaTech proposal. This include a reference to Partner institute/company in the partner page (see http://fusumatech.web.cern.ch/partners).

Website structure and content is defined and built for :

- Target group: SC/magnet scientist & engineers, EU stakeholders, potential new partners.

Website will content the following tab:

- About | Background | Objectives | Implementation | Partners

Website will be a major tool for dissemination by:

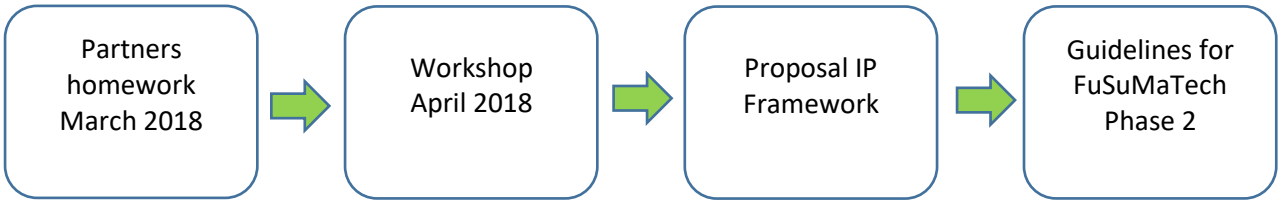
- Visibility and link via CERN KT website
- Links from partners (from your websites!)
- Reach out via LinkedIn Groups and CERN KT channels
- Push via personal social media channels of participants

5. IP WORKSHOP

The FuSuMaTech IP workshop is a major Deliverable of the FuSuMaTech CSA (namely FuSuMaTech Phase 1). It will be an "Information and Brainstorming" workshop. We all agree that in order to successfully prepare the follow up of FuSuMaTech (namely FuSuMaTech Phase 2) the IP aspects are a major issue and should be discussed at the very beginning. IP is not well known among scientists and they need to be educated. We expect that future EU boundary conditions for IP will be more or less the same that in Horizon H2020 rules. IP fundamental knowledge will be presented by Myriam Assas.
Also we challenged industry partners to bring IP specialists and we want to collect from the different actors their "IP opinion". In the FuSuMaTech Phase 2, we need an IP agreement for each subproject, not a unique scenario.
In order to make the IP workshop efficient, we also need to clarify a funding scenario for FuSuMaTech Phase 2.

The IP workshop will be held at CERN from the 18th to 20th of April 2018 in Idea Square (The purpose of IdeaSquare is to bring together people to generate new ideas and work on conceptual prototypes related to detection and imaging in an open environment). While not in peak use, it also can host special innovation-related events. Located in a technical hall (B3179) next to the Globe of Science and Innovation, it offers ad-hoc meeting space and rapid prototyping facilities for innovation-related projects).

The overall timeline of IP FuSuMaTech is the following :



The objectives of the IP workshop are :

- Everybody on same knowledge level for best practice in IP dissemination
- Various scenarios available, understood by FusuMaTech participants
- Help participants to agree on scenario for R&D&I subjects and demonstrator

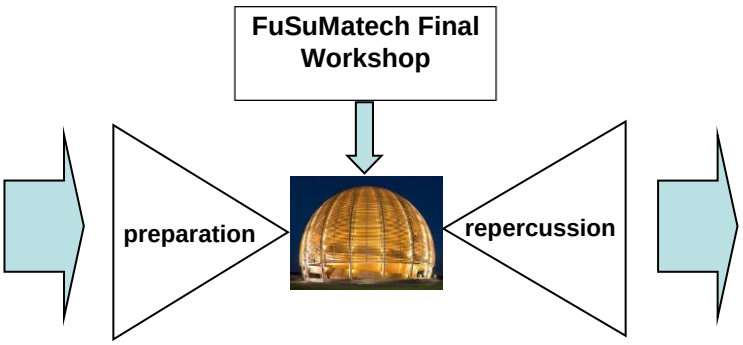
An *adhoc* commitee including CERN CEA and Industry will be created.

6. FINAL WORKSHOP

6.1. Aim of the Final Workshop

Being the single most important part of the project's dissemination plan, it is reasonable to some extent to structure the Dissemination Plan around the organisation and the implementation of the final workshop. Communication tools and actions of FuSuMaTech have to be planned and organised in such a way that the workshop gets maximum attention.

The final FuSuMaTech workshop will be held in CERN GLOBE April the 1st 2019, which symbolises the Open Method of Coordination substance, represents the corner stone of the project communication with respect of the following diagram:



The communication actions before the FuSuMatech Final Workshop will be focus on this event. All actions after will be aimed at further dissemination of the results of the project and the conference's outcomes.

6.2. Communication preceding the workshop

The primary dissemination products targeted at external receivers mentioned in the table are these:

1. The final workshop
2. Announcements and invitations to this workshop
3. The final report
4. The "executive summary" of this report
5. A Flyer distribute to
    a. EU Policy Makers
    b. Fusumatech Industrial Network
6. Press information concerning the different media groups
    a. Scientific press about project, community of applied superconductivity, …
    b. "commission community media" – press read by commission people (RTD-info, Europa …)
    c. General public

6.3. Final Workshop structure

Basics: 1-day long workshop at CERN Globe, around 75 attendees
Composition: all FuSuMaTech partners (legal & expert), all member-state representatives, EC and MoP representatives, industrial companies, general public
Objectives: official presentation of the FuSuMaTech Phase 1 results and of FuSuMaTech Phase 2 guidelines
Structure:

- inaugural session (including general presentations)
- working groups sessions (prospective, industry, legal implementation) and report
- final session

Conference preparation agenda:
Designation of the organisation: October 2018
Designation of the scientific committee: October 2018
Official announcement: December 2018 (including a first agenda draft)
Logistic works (reservations): from January 2019
Second draft agenda (once speakers have confirmed their participation): Mars 2019

6.4. Actions to be undertaken after the FuSuMaTech Final Workshop

The basis of the Brainstorming on the future of the FuSuMaTech initiative is the list of questions:

- Should we create a « FuSuMaTech » collaboration and write a MoU between Institutes and companies? This MOU should be light and dedicated to intentions and definition of the future.
- How to manage the opening of FuSuMaTech to new companies and new institutes in phase 2? : new Institutes (INFN , TUT , …) and new companies (ANTEC….) should apply to Phase 2 together with existing consortium.
- How to keep the liaising with large global companies of the domain in the world
- Should the FuSuMaTech initiative become an “inclusive” project or a “non-inclusive” project liaising with actions launched on diverse funding’s?
- What are the EU calls for the FuSuMatech Phase 2? Is the FET Proactive the right one? Are there residual calls in the H2020 suitable to specific FuSuMaTech actions, like the cryogenic database?
- What the possible national funding for some actions?

The actions to be undertaken after the Final Workshop will be based on the answers to these questions.

7. RESOURCES

The Dissemination Plan is a concern for all partners institute / company, work groups, committees and boards involved in the FuSuMaTech project.

All partners provide the resources for dissemination; however, CERN will be Lead beneficiary for Dissemination. In the Description of Work, the allocation of resources for dissemination activities was described as follows:

Table 5 - Allocation of resources for dissemination

Product	Planned resources	Partner	Comment
Website	2 days / month	CERN, CEA, all partners	Maintained 3 years after the project end for supporting the project impacts
Reports	2 days / month	CEA, CERN	Initial and Final Dissemination and Exploitation plan
Final workshop	1 day / month (last 6 months)	CEA, CERN	Scheduled on the 1st April 2019 at CERN Globe
Final workshop outcome	2 weeks	CEA, CERN	Report of all presentations
Participation in selected conferences	2x 1 week per event	All partners	ASC Seattle 2018, MT26 Vancouver 2019, EUCAS Glasgow 2019
Presentation material (incl. flyers, slides,…)	2 weeks	All partners	
Video recording	1 week per event	CEA, CERN	At selected events
Press and media contacts	3 weeks	CEA, CERN, all partners	At selected times

This table includes all dissemination products mentioned in the Description of Work. During the course of the project, it has been pointed out that there is a need for additional communication work. Activities and proposals for activities include:

- press and media material
- presentation material, including flyers and slides
- news section in the website