



First version of the report on
networking and coordination model

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FIRST VERSION OF THE REPORT ON NETWORKING AND COORDINATION MODEL MILESTONE: MS12

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1. Introduction

The AMICI (Accelerator and Magnet Infrastructure for Cooperation and Innovation) H2020 project is charged by the European Commission with the challenging task of building the conditions for consolidating and exploiting such collaboration based on networking and coordination. AMICI will engage the Technology Infrastructure (TI), which is currently dedicated to European science-based accelerators and to large superconducting magnets with a new efficient and sustainable collaboration / production model by means of Cooperation and Innovation.

The overall goal of WP3 is to define the conditions of the coordination of Technological Facilities (TF) in the area of accelerators and superconducting magnets in order to harmonize their operation and increase their efficiency, to adapt to the development of present and future European Research Infrastructures and to establish a co-innovation platform with industry. This would finally lead to the establishment of the Accelerator and Magnet European Technology Infrastructure.

It is proposed that cooperation between existing major and active TFs can be used for the formation of a Core Group, with the incorporation of flexible links to smaller TFs as being an essential mechanism for improving innovation and support to smaller research centers and universities. Defining the eligibility criteria for the participation to this Core Group is the subject of Task 3.1. The goal of Task 3.2 is to investigate the possible networking and coordination models within the Core Group and between the Core Group and the other associated partners from academia and industry.

In this document the first version of the *Networking and coordination model* to be developed within task WP3.2 of the AMICI project is given.

Motivation and benefits from networking and coordination are quite considerable and are analyzed and studied by the whole AMICI project. This report focuses on tools for coordinating and networking activities.

2. Description and work plan

AMICI partners are integrated in collaborative efforts, either project related or as a consequence of long-term R&D programs. Thus a networking relationship already exists in principle. AMICI objective is to promote a more systematic way of collaborating. Within work package WP3.2 we are performing an analysis of how to improve, strengthen and develop existing networks. Networking activities will promote sharing of information and improving communication channels. Coordination is seen as providing assistance in searching for R&D and / or project partners, aligning the technical possibilities as well as complementarity of associated TFs, supporting the selection of objectives (outlining trends, future tasks) and fostering the definition of standards commonly used in the accelerator community. During the AMICI project realization, first approaches to coordinate accelerator and magnet development, assembly and testing environments have already appeared.

In the longer term the goal of AMICI is to propose of possible ways of industry and SMEs (Small and Medium Enterprises) involvement in the future coordination of distributed European TFs for accelerators and magnets, and create an efficient and coordinated network - ecosystem, in which already coordinated groups would be a strong core.

The work plan of WP3.2 covers understanding of concepts, analysis of the present situation and proposal for improvements by introducing networking and coordination tools.

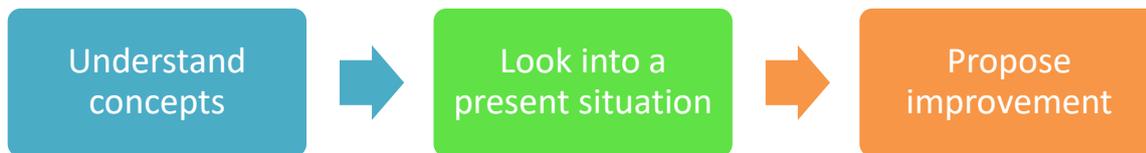


Figure 1: WP3.2 work plan outline .

3. Understanding the concepts

3.1. Networking

“Organizations have a networking relationship when they exchange information in order to help each organization do a better job.”¹

The network itself requires sharing basic information and keeping it up to date. Information can be shared directly through meetings and indirectly by a webpage and/or database and by calendar. A global calendar can be used to share information about events. On the webpage the description of entities, products, services and experts holding essential knowledge can be displayed and advertised. The contacts list can be used as a first step to initiate new collaborations outside of the network. These elements are used to create a network, as they help to acquire and exchange information. Calendar, description of an organization and other attributes like project involvements are often available in existing organizations. Communicating this public information and creating a broader network does not require significant expenditure of time and resources

The essence of the network:

- A network may connect partners working in the same field and even on the similar tasks. Sharing of information allows to align activities where- and whenever helpful.
- A network membership is based on eligibility criteria (for AMICI a connection with accelerators and magnets is required). Therefore common interest exists and is openly expressed.
- Connections with other networks exist e.g. AIDA – Advanced European Infrastructures for Detectors at Accelerators, EuCARD-2 – Enhanced European Coordination for Accelerator Research & Development.

¹ M. Axner, "Community Tool Box," [Online]. Available: <http://ctb.ku.edu/en/table-of-contents/implement/improving-services/coordination-cooperation-collaboration/main>. [Accessed 18 01 2016].

- Creating a network requires trust and confidence in the partners capabilities.

3.2. Coordination

“Organizations have a coordinating relationship when they modify their activities so that together, they provide better services to their constituents.”² and

“Coordination is the management of dependencies between activities. So actions are not supervised, just relations amongst them.”²

In WP3.2: *Networking and Coordination Model* we focus on organizational issues with regard to the coordination of activities between TFs, but not on the coordination of work performed (e.g. within a given project).

In a coordinated structure each member is responsible for his/her own adaptation to a plan or to directives. Forms of official communication have to be defined and agreed by all participants in order to avoid misunderstandings. Coordination is usually planning, organizing and execution of events. A coordinator supporting these activities does not have to be a person but could as well be a committee or a group, which AMICI could initiate.

4. An overview of the present situation

The examples of networking and coordination are likely to be used as an input to proposed solutions and for the model of coordination. Furthermore, weak points of the network of European TFs have to be overcome. This includes for example the strengthening of links between industry and Research Infrastructures (RIs).

In order to study the present situation two questionnaires were prepared and executed. Information about the model of coordination built up for the construction of the Research Infrastructures XFEL³ and ESS⁴, and of networking in AIDA⁵, TTC⁶, TIARA⁷ and EuCARD-2 was collected from CEA⁸, DESY⁹, FREIA/UU¹⁰, IFJ PAN¹¹, INFN¹² and STFC¹³.

There are similarities and differences in the existing coordination models. Comprehensive information was gathered, but only part of it is relevant for AMICI. There are advantages and

² R. Tolksdorf, "Models of Coordination"

³ European X-ray Free Electron Laser

⁴ European Spallation Source

⁵ AIDA-2020 (Advanced European Infrastructures for Detectors at Accelerators) H2020 INFRA-IA project

⁶ TESLA Technology Collaboration

⁷ Test Infrastructure and Accelerator Research Area

⁸ Commissariat à l'énergie atomique et aux énergies alternatives

⁹ Deutsches Elektronen-Synchrotron

¹⁰ Facility for Research Instrumentation and Accelerator Development/Uppsala Universitet

¹¹ Instytut Fizyki Jądrowej Polskiej Akademii Nauk

¹² Istituto Nazionale di Fisica Nucleare

¹³ Science and Technology Facilities Council



disadvantages of how the studied entities organize themselves. In order to identify possible improvements, weak points in the considered organizations are summarized below. In some cases, the current actions within AMICI project already bring some improvement, which should be sustained in the proposed future organization:

A. LACK OF DESCRIPTION OF SERVICES

Some basic information about possible enhancement of collaboration is provided by each TF but the complete description of services which could be provided is still missing. Industrial partners, research infrastructures or other TFs are often not able to find the required infrastructure and services easily. AMICI is already providing on its website a comprehensive description of the different technical platforms available at each TF. For the future, the goal could be to have at least also a complete and uniform description of the services that could be offered at each TF or, more ambitious, to provide a single entry point that would help selecting the most suited available TP responding to the need of the user.

B. THE NEED FOR SUSTAINED LINKS

Usually, the links between organizations are created through common construction or R&D projects. This includes all types of connections – with other TFs, RIs and also industry. Moreover, strong links established by past projects are essential in sustaining collaboration. Nevertheless, there are often no webpages, databases or lists with co-operators, and links between project partners can become weaker or even disappear after a particular project is finished.

The networking with industry is sometimes difficult, due to different needs and approaches. To increase efficiency of tendering, more links between industrial partners and TIs are required. These links could be even international (non EU).

Clear visibility of potential partnerships exists in Germany and play an important role in project realization, for example during the construction of the European XFEL.

Establishing a network of companies having worked at the different TFs for the construction of different RIs would create sustainable links and help in searching the most suited partners in the future.

C. EXCHANGE OF INFORMATION IS CLOSED IN SMALL STRONG NETWORKS

C.1. THERE IS NO COORDINATION AT THE EUROPEAN LEVEL

All institutes take part in organizing and attending the international conferences, workshops, project meetings and R&D meetings to discuss future plans. However it is common that only well-known partners are invited to share new activities, thus there is only a small chance that new links in the network will be established.

The network created in AMICI could be a chance for any entity working in accelerator magnets domain to expand its grid of possible partners.

D. NOT STANDARDIZED FORM OF CONTRACTS

D.1. NO STANDARDS CONNECTED TO MAGNETS AND ACCELERATORS

The definition of a collaboration model is not straight forward but requires preparation of dedicated contracts depending on each partner and each case. This significantly slows down the settlement of contracts (e.g. beginning of XFEL and ESS construction). Being able to propose a common scheme for establishing different types of agreements would contribute to facilitate future collaboration. This issue is analyzed by the AMICI WP3.3 “*From cooperation to collaboration: elaboration of a collaboration agreement model*”, where different types of agreements are studied.

5. Proposed improvement

All above mentioned issues have to be taken into account and overcome, if possible. A lot of them are dealt with in the present AMICI efforts. Networking strongly depends on individual activities of each organization, thus there should be an initiative, which will encourage actions in the wider community. That is the basic motivation for developing a coordination model within AMICI.

5.1. Model of coordination

To handle those improvements coordination has to be established. Expectations are:

1. Providing better visibility
2. Providing easier access to TPs
3. Enhanced usage of TPs
4. Supporting sustainability of TPs
5. Extension of capability of TPs
6. Strengthening each partner
7. Harmonization of technology and knowledge transfer
8. Help in offering packages for industry

On the other hand, there are conflicting issues that coordination should cope with:

1. Losing decision power
2. Losing own funding
3. Losing own visibility
4. Losing TPs against own will

The proposed model of coordination is based on the combination of successful models from European countries. Shared responsibility, being aware of common needs with addition of standardization and a management team is suitable for the coordination of the European TI and will be able to handle the aspects and improvements outlined above. The proposed coordination model, called AMICI-2 in what follows, is sketched in **figure 2**.

The European TI network related to accelerators and magnets includes a Core Group (CG) composed of major Technological Facilities (TFs) fulfilling the eligibility criteria defined in WP3.1. A second circle of partners is constituted of smaller TFs not fulfilling all the eligibility criteria or working only partially in the domain, and of industrial partners and universities using regularly the CG TFs. A Coordination Team (CT), created from representatives of the CG members, will be in charge of coordination activities. CT supports communication within the network (Research Infrastructures (RI), Technological Facilities (TF), Universities and Industry). EU and governments will naturally be in contact with individual EU TFs, but CT will be able to strongly support the respective communication. All partners inside the network directly benefit from enhanced information exchange. TFs, RIs, Industry, Universities and Society from exterior can also benefit from contacts with the coordinated structure of TIs.

Coordinator's tasks are tools for coordination and networking:

- **Serve** as the initial contact point for external user and industry.
- **Look for** gaps in all areas of AMICI 2.
- **Strengthen** AMICI 2 members applications for funds by creating joint applications.
- **Encourage** information sharing inside AMICI 2.
- **Become** an advisory group for EU in the domain.
- **Handle** a webpage, access privileges, an exchange platform, a calendar and CT meetings.
- **Respond to and share** 2nd circle network and EU requests within AMICI 2.
- **Coordinate** topics of meetings to prevent duplication inside AMICI 2.
- **Evaluate** new network partners of 2nd circle,
- **Evaluate** the performance of the coordination model.
- **Help** members of AMICI 2 to organize conferences and meetings and to create industry package offers (see **Erreur ! Source du renvoi introuvable.**); help both AMICI 2 and 2nd circle members to find collaborators.
- **Further develop** the scope of AMICI 2.
- **Establish, collect, improve and promote**, standards and templates.

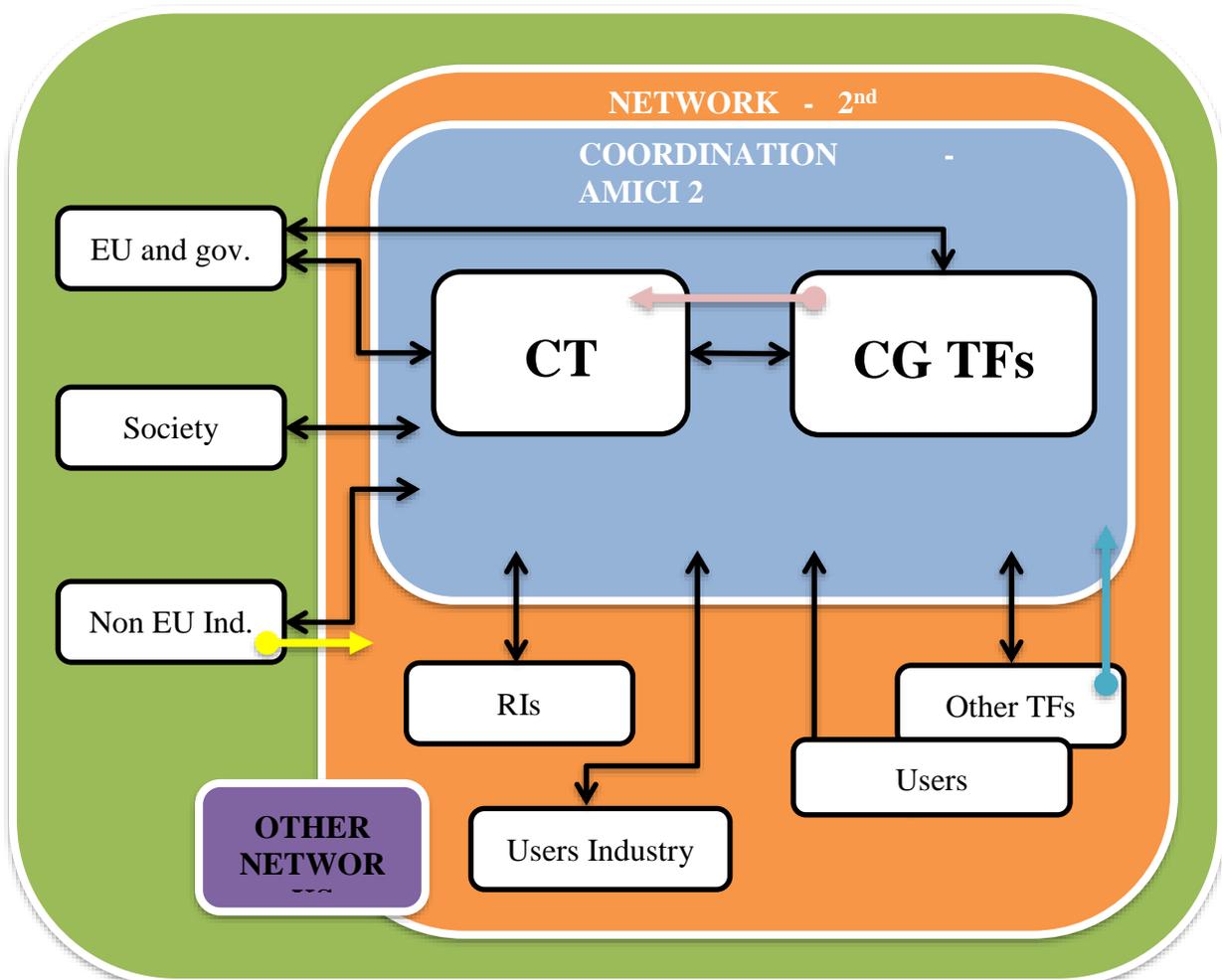


Figure 2: Graph representing the model of coordination and the channels of communication (black arrows). Blue area - coordinated EU TIs (AMICI 2), orange area - members of the network (2nd circle), purple area – other networks, green area – whole environment. Pink, yellow and blue arrows represent possible transfers.

- **Support** data-flow between all areas (see graph above).
- **Avoid** governance conflicts between the TI and the local TFs..
- **Propose strategy** for improved funding of coordinated AMICI 2 efforts.
- **Accompany** TFs in contacts with a government.

5.1.1. Coordination area (AMICI 2)

New partners must fulfill the requirements of the AMICI WP3.1: *Definition of eligibility criteria*. Requirements and tasks for AMICI 2 members are:

- **Build and improve** trust within AMICI 2 members.
- **Respect directives** of CT.
- **Willingness to provide** an input for the webpage/ database, the calendar, conferences, the exchange platform and standards establishment.
- **Keep-up-to-date** within environment.
- **Handle** meetings, conferences, industry package offers and resources sharing.
- **Assist and help** in looking for collaborators within AMICI 2.
- **Discuss and create standards, forms and templates** of calendars, meetings, contracts, channels of communication, descriptions, environment standards and specifications.
- **Outline** trends in the domain.
- **Create** industry package offers.
- **Develop and strengthen** consistent environment by respecting all elements of the coordination model and the networking.

5.1.2. Network area (2nd circle)

Members of 2nd circle will establish a network with AMICI 2. The coordinated structure of TIs will allow for improved communication. Clear visibility and direct contact with both CT and TIs are the benefits. Members will be able to join AMICI 2, by fulfilling requirements listed above. Large number of links between AMICI 2 and entities from 2nd circle is an aim of networking. Tasks for 2nd circle members are:

- **Be** compatible with the domain.
- **Share** a description, a contact info and a basic information about achievements, plans and needs.
- **Promote** information sharing.
- **Extend** a list of possible tender participants and cooperators.

5.2. Industry package offers

An industry package offer is an idea to encourage industrial participation in projects. One of the obstacles of an industrial participation is that it demands custom production reorganization for dedicated series. If a series is short, it becomes unprofitable for an industrial partner. The package is a joint application of few TFs to extend collaboration to a profitable size for an industrial partner.



6. Summary

In this report on the *Networking and coordination model* a structure for the future environment of AMICI 2 is proposed. The structure consists of a Core Group with Coordination Team surrounded by a 2nd circle network.

Currently, work on more detailed structure and organization, with in particular the definition of the role of the different partners is performed. The results of this work will be reported as one of AMICI project final Delivery.

6.1. Outline of further studies

There are several questions listed below to be widely discussed and studied:

- Is the proposed structure accepted?
- Are the tasks and duties to strict/to weak?
- Is the model understood by authorities?
- Can non-EU industry be a part of the AMICI 2 or only the 2nd circle?
- Is a contract needed for realization of the coordination model?
- What type of a contract is the best for this coordination model?
- What are the best channels of communication for each connection on the graph?
- How to introduce AMICI 2? As a project, a group, a part of the model or an organization?