

D4.2.1 PEL: Procedure for enabling the emergence and the launching of collaborative R&D projects in a sustainable way

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Excerpt from the minutes of our Milano Meeting on 2012/02/16:

“Concerning the first subtask, PEL, the charge of the subgroup would be to analyze how currently collaborative R&D projects emerge and are launched in our community. We have experience with several large collaborations based on different aggregating mechanisms to allow institutional collaboration. One of this is represented by the steering role performed by ESGARD leading to the publication of EC FP calls, where interested parties apply forming a consortium. Another common method is the subscription of bilateral or multilateral MoU, in several variants, where institutions agree on common objectives and on the sharing of the necessary resources to achieve them. These MoU could be intended to provide exchange of knowledge (e.g. the TTC Collaboration for SCRF R&D) or lead to exchange of hardware components and personnel, with specific rules set by the collaborating parties. In addition, these could be established by a bottom-up aggregation of groups with similar interests in different institutions, or stimulated through a top-down managerial process. Other collaborations explore different models (e.g. the CTF3 Collaboration following the CERN experiments model) and form the necessary bodies to carry and supervise their activities. Collaborative models exist also in EU countries to strengthen and coordinate the national R&D programs in a collaborative way (e.g. the ARD program by the Helmholtz institute for the German case). A first step towards the fulfillment of this task would be to review these models for collaborative work, highlight the merits and limitations of each of these instrument and try to reply to the question if these are sufficient (and TIARA should be modeled after one or more of them) or can we suggest to explore a different way, especially towards the long term coherence of the R&D objectives (i.e. the sustainability). The outcome of this brief survey would be summarized at the Madrid meeting, in order to draw conclusions”.

Emergence of collaborative R&D projects

Analysis of the current methods

The Accelerator community has a long tradition of performing collaborative efforts, both on the national level and in big worldwide context, in carrying R&D programs that allow the realization of large facilities for fundamental or applied physics. Different aggregation models, in a variety of different forms, are routinely followed to provide the framework for the necessary exchange of knowledge and resources. These models allow both the bottom-up aggregation of individual researchers or groups, and the top-down institutional steering towards the fulfilment of common strategic objectives.

Memorandum of Understanding

The signature of a Memorandum of Understanding (MoU) is one of the most common and rapid form of international institutional agreement that allows the exchange of knowledge and resources between scientific research organizations. These agreements are often based on a double-tier level: usually laboratories or scientific institutions sharing interests in similar sectors (e.g. in nuclear or high energy physics) sign at the top management level a generic brief agreement to “promote cooperation in scientific and technological exchanges” and provide a framework for:

- assignment of personnel for research activities
- collaboration in area of mutual interest
- exchange of equipment, instrumentation and know-how.

This top level agreement generally does not include technical content or make any commitment on resources or funding, leaving these to be decided on the basis of fund availability on a case-by-case basis. Intellectual property rules are also often left to a case-by-case analysis. Implementation of the actual scientific or technological activities within the scope of the MoU is left to Annex documents, where the specific rules concerning scientific/technical and financial aspect of the collaborative work are laid out, with the designation of the institutional contact persons.

MoUs are routinely used between our institutions for exchanges of personnel for scientific activities, and for the exchange of scientific hardware and know-how. In general R&D activities occurring under MoUs are not subject to an open and competitive peer-review process; usually the decision is taken internally at each participating institution during the setup of the Annex documents, without a competitive peer-review process, in most cases after consultation of internal evaluation bodies of the institution.

Multi-lateral MoUs between several institutions can set a world class collaboration framework in a particular scientific or technical area, as is the case for the TESLA Technology Collaboration (See <http://tesla-new.desy.de/about/>), which has the „mission (...) to advance Superconducting Radiofrequency Technology (...) and to keep open and provide a bridge for communication and sharing of ideas, developments, and testing across associated projects“. This Collaboration is active since the 90s, has been joined by many partners sharing a common interest in the SRF technology, and meets regularly in a yearly workshop. The TTC has been a key player in the technical advancement of the superconducting RF accelerator area.

EC FP Calls

Calls of the Framework Programs of the EC are another common method for the emergence and launching of collaborative R&D programs. Following the priorities set by the European Strategy Forum for Research Infrastructures (ESFRI) and by the European Strategy for Particle Physics, and in most cases assisted by the steering role of the European Steering Group on Accelerator R&D (ESGARD), several bids were successfully funded in the FP6 and FP7 of the EC, as large collaborative enterprises composed by many European R&D institutions.

Support for Projects participating to FP Calls is awarded after an evaluation process, which is based on expert peer-review. This process favours the emergence of excellent proposals by strong competition on the resources assigned by the calls.

ESGARD steering role and the ESFRI priorities have been instrumental to the success of this particular aggregation mechanism. However, sustainability and continuity of this type of support is an issue, as program applications can be proposed only in response to the publication of FP Calls (which follow primarily the financial planning of the Commission), it has a rather long deployment time (for the evaluation and negotiation stages and for the set up of the proper management structure in a Consortium), and there is no guarantee that at the end of a particular project there will be an opportunity for a timely continuation of R&D activities which need coordinated efforts for a long time range. Long time gaps in the support of programs can cause a loss of active partners for these long-range R&D enterprises.

I would add that a weak point of FP calls is that after negotiation cuts generally the programs do not get sufficiently reduced according to the cuts, and generally we end up with more work for less return.

The CERN Experiment model (as the CTF3)

We discussed at the meeting that one particular example is CTF3, which is organized and run under the CERN experiments model. I am not familiar with it, so I rely on the CERN WP4 member to make a short summary.

Aggregation at the national case: The ARD in Germany

Again, I don't know much here but it was discussed during the meeting that in Germany the ARD program is "stimulating" aggregation around accelerator research areas. It would be useful to summarize how it works and what we can learn from it.

Pro/Cons assessment table

Model	Pro	Contra
MoU	<p>Very effective for institution sharing a common interest in an area.</p> <p>Versatile tool, based on two-tier agreements to separate institutional agreements from rules regulating technical work.</p>	<p>Difficult to “aggregate” new partners that may bring contributions but who are not yet active in the area</p> <p>No peer-review, usually.</p>
EC FP Call	Peer-Review Process	<p>Timing is artificial, depends on financial availability of FP Program.</p> <p>Long process for evaluation, negotiation and setup.</p>
CERN Experiments ARD in Germany		

Proposal for TIARA procedure

To be discussed in Madrid.