

European Roadmap for Research Infrastructures

ESFRI Communication
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I – Background

Introduction

The Informal Competitiveness Council of 1-3 July 2004 "welcomed the Commission's proposal to develop a strategic roadmap for Europe in the field of Research Infrastructures for the next 10 to 20 years", and recognized that "in this context, ESFRI could play a role of increasing importance". At its meeting of 3 September 2004 in Amsterdam, ESFRI decided to give immediate priority to this request and started to prepare a European roadmap for research infrastructures.

The purpose of this ESFRI communication is to inform the scientific communities about the working methods and the processes to be used by ESFRI to prepare the roadmap.

What are research infrastructures ?

In the context of the ESFRI roadmap, the term "research infrastructures" refers to tools that provide essential services to the scientific community for basic or applied research. They may concern the whole range of scientific and technological fields, from social sciences to astronomy, going through genomics or nanotechnologies. Examples include libraries, databases, biological archives, clean rooms, communication networks, research vessels, satellite and aircraft observation facilities, coastal observatories, telescopes, synchrotrons, accelerators. They may be "single-sited", "distributed", or "virtual". What we are dealing with are the necessary tools for the future to do science in many areas at the cutting edge.

II – European roadmap for research infrastructures

Boundary conditions

The objective of ESFRI will be to provide an overview of the needs for research infrastructures of pan-European interest in different fields of science and technology. The roadmap will be used to facilitate decision-making by Member States and by the European Commission. ESFRI will not prioritise or decide on funding and location for future infrastructures. ESFRI wants to act as an incubator for the construction and exploitation of new large research infrastructures.

Working methods

To prepare the roadmap, ESFRI has set up three Steering Groups. The countries represented in ESFRI and the European Commission have been invited to nominate a delegate in each Steering Group. The Steering Groups are chaired by ESFRI members. In every ESFRI meeting, each chair will report on the progress in his/her Steering Group.

The present Steering Groups are covering the following areas:

- "Physical Sciences and Engineering" – Chair: John Wood (UK)
- "Biological and Medical Sciences" – Chair: Ruth Barrington (IE)
- "Social Sciences and Humanities" – Chair: Bjorn Henrichsen (NO)

ESFRI will regularly discuss the question whether it is necessary to set up a new Steering Group.

In a first stage, the Steering Groups will take stock of the existing roadmaps at national or European level in the fields concerned. For example, some Member States like the United Kingdom and Germany have already produced roadmaps for large facilities. In case European roadmaps already exist, ESFRI will examine their adequacy and completeness. The Steering Groups will also use as inputs the foresight studies made by the European Science Foundation (ESF) and the Global Science Forum (GSF) of OECD, as well as the recommendations made by advisory committees like EURAB or the NREN Policy Committee. They will collect information from formal groups of the scientific community (e.g. NuPECC for Nuclear Physics) as well as of the industrial community (e.g. UNICE), and will solicit the views of important stakeholders in the field of research infrastructures, like EIROforum (the collaboration of the major European Intergovernmental Research Organisations). They also will make use of information contained in contracts or studies supported by the European Commission.

In a second stage, where existing roadmaps are not available and where gaps are identified, ESFRI's Steering Groups will have the possibility to create dedicated Expert Groups as appropriate. This may be needed, for example, for domains where the scientific community is not yet structured, for cross-cutting domains at the frontier of the steering groups, for interdisciplinary fields or newly emerging fields. Members of Expert Groups will be nominated by Member States and European Commission. They may include non-European experts. Contrary to the situation in the Steering Groups (and ESFRI itself) the members of an Expert Group are not considered to be the delegate of a research minister.

The results of the work of the Steering Groups will be presented as an advice to ESFRI.

Criteria

A number of criteria will be used to select the research infrastructure projects that will be able to enter in the European roadmap. Some criteria may have to be tailored to the specific situation of the field; for instance, the financial threshold in the Steering Group "Physical sciences and Engineering" will differ from the one in the Steering Group "Social Sciences and Humanities". The criteria can be classified into several categories:

General criteria

The infrastructure projects to be included should:

- comply with the general definition given above;
- be new infrastructures or major upgrades of existing ones.

Scientific / Strategic criteria

The infrastructure projects should:

- correspond to a real need for the development of the field in Europe;
- be supported by the appropriate scientific community at European level;
- be of pan-European interest;
- be multi-user facilities offering an open access (physical or virtual) for scientists from all over Europe;
- be relevant at international level.

Technical and financial criteria

The infrastructure projects should:

- be timely and mature;
- be technologically feasible;
- open new possibilities or offer improved technological performance;
- have evaluated construction and operating costs;
- offer good possibilities for European partnership and commitment of major stakeholders.

The roadmap for new research infrastructures corresponds to the first stage in a stage-gate approach leading to the development of future research infrastructures in Europe. At this initial stage, the scientific / strategic criteria are the most important. In the subsequent stages, which will develop out of ESFRI, the technical and financial criteria would become more and more precise and important.

For example, a project proposal contains very often paragraphs on socio-economic consequences (including the aspect of technology transfer) and sometimes a site proposal. These paragraphs will become of importance in the decision-making and negotiation phase (post ESFRI).

Ensuring transparency and impartiality

A clear and transparent method will be used in the preparation of the roadmap. The overall process should provide all guarantees for impartiality and should be recognized by all stakeholders. A stage-gate approach with strict guidelines will be followed before a specific infrastructure can be included in the roadmap. This approach and the guidelines have to be developed by each Steering Group and submitted to ESFRI for approval. Once ESFRI has taken a decision on a roadmap, it will be immediately put on the ESFRI website.

Interested parties in the field will be given an opportunity to inform the process, but without influencing unduly the outcome. Workshops convened by the Expert Groups could play an important role in building the evidence and advancing discussion and agreement. The members of the Expert Groups will have to declare any conflicts of interest.

Timetable

The preparation of the roadmap will be an ongoing process, extending over several years. First meetings of the Steering Groups will take place on December 2004/January 2005. A first “opportunities list” will be presented to the Commission in March 2005 (in view of the preparation of the Seventh Framework Programme) and to the Member States.

After this, ESFRI will provide updated versions of the roadmap each year to the European Commission and to the Member States. It will help Member Countries or groups of Member Countries, or groups of Research Councils, in decision-making processes about research infrastructures. The European Commission intends to use this roadmap as a basis to establish a list of priority projects for new research infrastructures of trans-European interest, which will be regularly updated. This list will have to be approved by the Council. The priority projects will be developed with Community support within the Framework Programme for Research. In this context, it will be important that the Member States develop their own processes and timescales in parallel.

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