

RESEARCH INFRASTRUCTURES

Objective

Optimising the use and development of the best research infrastructures existing in Europe, and helping to create in all fields of science and technology new research infrastructures of pan-European interest needed by the European scientific community to remain at the forefront of the advancement of research, and able to help industry to strengthen its base of knowledge and its technological know how.

Rationale

Research infrastructures play an increasing role in the advancement of knowledge and technology and their exploitation. The importance of such infrastructures is already well established in areas such as energy, space and particle physics and is increasing in other areas. For example, radiation sources, data banks in genomics and data banks in social science, observatories for environmental and space sciences, systems of imaging or clean rooms for the study and development of new materials or nano-electronics, are at the core of research. They are expensive, need a broad range of expertise to be developed, and should be used and exploited by a large community of scientist and customer industries on a European scale.

The development of a European approach with regard to research infrastructures, including computing and communication based *e*-infrastructures and virtual infrastructures, and the carrying out of activities in this area at Union level, can make a significant contribution to boosting European research potential and its exploitation and contributing to the development of the European Research Area.

While Member States' role will remain central in the development and financing of infrastructures, the Community can and should play a catalysing and leveraging role by helping to ensure wider and more efficient access to, and use of, the infrastructures existing in the different Member States, by stimulating the development of these infrastructures, and their networking, in a coordinated way and by fostering the emergence of new research infrastructures of pan-European interest in the medium to long term. In this respect, the European Strategy Forum on Research Infrastructures (ESFRI) plays a key role in identifying needs and a roadmap for European research infrastructures.

Activities

Activities carried out in this field will be executed in the whole field of science and technology. They will be implemented in close cooperation with the activities taking place in the thematic areas to ensure that all the actions undertaken at European level in the Community framework respond to the needs for research infrastructures in their respective area including international cooperation.

The activities will be the following:

- **Support to existing research infrastructures**
 - *integrating activities* to structure better, on a European scale, the way research infrastructures operate in a given field and promote their coherent use and development, in particular through trans-national access, to ensure that European researchers, including researchers from industry and SMEs, may have access to high performing research infrastructures to conduct their research, irrespective of the location of the infrastructure

- *research e-infrastructure* by fostering the further development and evolution and global connectivity of high-capacity and high-performance communication and grid infrastructures and reinforcing European high-end computing capabilities, as well as encouraging the adoption by user communities where appropriate, enhancing their global relevance and increasing the level of trust and confidence, building on the achievements of GEANT and Grid infrastructures and based on open standards for interoperability.

- **Support to new research infrastructures**

- *construction of new infrastructures and major upgrades of existing ones focusing mainly on preparatory phases* to promote the emergence of new research facilities in accordance with the principle of "variable geometry", building primarily on the work conducted by ESFRI¹.
- *design studies*, through a bottom-up approach of calls for proposals, to promote the creation of new research infrastructures by funding exploratory awards and feasibility studies for new infrastructures.

Infrastructures projects proposed for funding in this respect will be identified on the basis of a series of criteria including in particular:

- Added value of Community financial support
- Inability of existing mechanisms to achieve the objective
- Scientific excellence, notably, capacity to offer a world level service in response to the needs of users from the scientific (academic and industrial) community throughout Europe.
- Relevance at international level
- Contribution to technological development capacity
- Contribution to developing European Research Area
- Contribution to developing 'research-based clusters of excellence'
- Technological and organisational feasibility
- Possibilities for European partnership and strong financial and other commitment of Member States and major stakeholders, considering the possible use of EIB loans and Structural Funds
- Construction and operating costs evaluated.

As far as the construction of new infrastructures is concerned, the potential for scientific excellence of the convergence regions as well as the outermost regions should be taken into account, whenever appropriate. An efficient coordination of the Community financial instruments, Framework Programme and Structural Funds in particular, will be ensured. Local and regional authorities should be closely involved in discussions concerning the construction of these infrastructures.

¹ The European Strategy Forum on Research Infrastructures (ESFRI) was launched in April 2002. ESFRI brings together representatives of the 25 EU Member States, appointed by Ministers in charge of Research, and a representative of the European Commission. The countries associated with the Framework Programme for Research were invited to join in 2004.