

**European Commission GREEN PAPER – COM (2011) 48*****From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation funding***Public Consultation

*“...Through the actions of the research infrastructures programme and building on the work of the European Strategy Forum for Research Infrastructures (ESFRI), a strong impetus has been given to the planning, preparation and construction of large scale research infrastructures, and to ensuring access to existing infrastructures. ...”*

as well as Question No. 25 - *How should research infrastructures (including EU-wide e-infrastructures) be supported at EU level?*

**Written Response****Euro-Biolmaging*****European Research Infrastructure for Imaging Technologies  
in Biological and Biomedical Sciences*****Preamble**

Euro-Biolmaging ([www.eurobioimaging.eu](http://www.eurobioimaging.eu)) - a large-scale pan-European research infrastructure project on the ESFRI Roadmap<sup>1</sup> - will deploy a distributed pan-European biological and biomedical imaging infrastructure distributed across Member States in a coordinated and harmonized manner. Euro-Biolmaging will provide an interdisciplinary, innovative environment for the use of imaging technologies in the field of life sciences and health research. By providing open access to and training in imaging technologies, and by sharing of best practice and image data, Euro-Biolmaging will enable world-leading investigators to conduct forefront research and training. By providing integrated access to imaging technologies employed in basic with those applied in medical research, Euro-Biolmaging provides the perfect environment to translate basic research into medical innovations. Euro-Biolmaging will become a pillar of the European Research Area (ERA) and the European Society and provide the foundation for innovative research to develop the

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<sup>1</sup> ESFRI, the European Strategy Forum on Research Infrastructures:  
<http://ec.europa.eu/research/infrastructures/>

solutions for the grand societal challenges. It will therefore make key contributions to the objectives of the Europe 2020 Strategy to closely link research and innovation and to increase European competitiveness. Euro-BioImaging will help to build a new economy based on knowledge and innovation and strengthen the European Research Area.

### **Suggestions**

To realize the benefits and pan-European added value, Euro-BioImaging will depend on streamlined and coordinated funding instruments at the European level. For the preparation of the future Common Strategic Framework (CSF) on EU funding of research and innovation, the Euro-BioImaging coordinators therefore call upon the European Commission to ensure that

- a new coordinated funding instrument is implemented at European level to support construction of distributed pan-European research infrastructures
- a new coordinated funding instrument is implemented at European level to support sustainable operation of distributed biological and biomedical pan-European research infrastructures, as operational costs will be significant in comparison to their costs for construction (estimated up to 20%/year for Euro-BioImaging)
- pan-European research infrastructures are rigorously selected based on scientific excellence and the needs of the user community, followed by a competitive renewal system that ensures sustainability and continuous excellence
- the role of Euro-BioImaging as a pillar of the ERA and as foundation for research to meeting the grand societal challenges is adequately taken into consideration in the implementation of the Innovation Union and the establishment of ERA
- funding for ESFRI research infrastructures and present as well as planned European research programmes – e.g. Innovative Medicines Initiative and Joint Programming - is closely coordinated to avoid duplications and lead to the best exploitation of European resources
- future research programmes include funding elements for trans-national user access to research infrastructures, long-term storage and accessibility of image data and training of research infrastructure users.

### ***Euro-BioImaging: Added value for Europe***

The mission of Euro-BioImaging is to provide a clear path of access to a complete range of essential imaging technologies for every biologist and biomedical scientist in Europe. By providing access to and training in imaging technologies, and by sharing of best practice and image data, Euro-BioImaging will become an engine that will drive European innovation in imaging research and technologies.

**ACCESS TO IMAGING TECHNOLOGIES:** Euro-BioImaging will allow European scientists to access a broad range of cutting edge imaging technologies they require to perform their research. Euro-BioImaging will guarantee that the investment in imaging infrastructure is used in the most cost effective and efficient way by applying Euro-BioImaging quality standards in management, access and service of imaging facilities.

**TRAINING:** Standardized and quality controlled education of tomorrow's scientists in applying advanced imaging technologies from the single cell to the entire human will be one of the major challenges in biology and medicine. Specific training programmes offering different levels of training/education by leading experts at Euro-BioImaging facilities will complement national efforts in education and Member States will benefit from the return of expertise.

**IMAGING DATA:** Biological and biomedical imaging will become one of the major data producers in the future and researchers are facing unprecedented challenges concerning data management and analysis. The Euro-BioImaging infrastructure will offer platforms for storing, remotely accessing and post-processing biological and medical imaging data on a large scale. By providing European standards for imaging data storage, data protection and analysis Euro-BioImaging will enable (1) the sharing of image data between different scientific communities from different countries, (2) the reuse of existing data in the light of new questions and (3) the advanced analysis of image data detached from their place of origin.

### ***Who is behind Euro-BioImaging?***

**Broad European support.** Euro-BioImaging already has a strong supporter base that comprises more than 180 partners from 26 European Member States and Associated Countries. Euro-BioImaging is formally endorsed by over 200 universities, research councils, funding bodies, ministries, and industry partners.

**Shaping national into European communities.** The Euro-BioImaging infrastructure project is the driving force to organize European biomedical imaging infrastructure communities. The first step in this process is the self-organization of national infrastructure providers to define the national needs and capabilities in imaging infrastructure. The second step is to form a pan-European

community of infrastructure providers that supports the Euro-BioImaging principles of coordination and harmonized infrastructure deployment, open access and highest training standards.

### **Why Euro-BioImaging?**

- ✓ *Impact.* Euro-BioImaging will have a profound impact on the European Research Area, European health and quality of life as well as European competitiveness in key industry sectors (imaging technologies, biotechnology, medical technologies, pharmaceutical industry). Euro-BioImaging will maximize its ultimate impact through continuous evaluation.
- ✓ *Better return on investment for biological and biomedical imaging platforms.* Not even the best-funded institutions can any longer afford the complete range of imaging technologies they need to remain at the forefront of their respective research field. It is therefore critical that a plan is developed for sharing the costs of deployment and providing open access to such expensive but critically important technologies in order to obtain a better return on investment. By realizing the benefits of a coordinated deployment, Euro-BioImaging will decrease expenditures. Rather than having to fund only individual request for new imaging instruments, the much lower partial costs of accessing shared Euro-BioImaging facilities need to be funded.
- ✓ *Brain gain instead of brain drain.* The consequence of cuts in research funding will be devastating to research and threatens to cause a new generation of brain drain, because the best young scientists will quickly move to the best international environment for their research. Euro-BioImaging will make sure that Europe continues to offer cutting-edge infrastructure in biological and biomedical imaging to the next generation of scientific leaders and allow Europe to attract the best talent from other countries rather than losing its own.
- ✓ *Instant access.* The time required to establish advanced and powerful imaging platforms is substantial. Euro-BioImaging will allow researchers instant access to imaging instrumentation not available at their home institution.
- ✓ *Training by the leading experts.* Top-level expertise for many imaging techniques is hard to find and takes years of training to acquire. Euro-BioImaging will have coordinated training programmes for its infrastructure providers to ensure that the imaging technologies are offered with world leading expertise. Sharing expertise extends to shared best practices across Euro-BioImaging facilities, as well as repositories of methods, tools, protocols, software applications and image data that will make expertise widely available to the research community.

- ✓ *Better image data storage and analysis.* Image data is recorded across different biological scales, from sub-cellular structures to organs and in different biological models, from single cultured mammalian cells, via mouse to human tissues. The maturity of the ways image data is stored and used varies greatly amongst the research communities. The Euro-BioImaging infrastructure will offer platforms for storing, remotely accessing, sharing and post-processing biological and medical imaging data on a large scale.
- ✓ *Defragmentation, integration, and collaboration*  
Different geographical areas of Europe have vastly different qualities of research infrastructure. Europe will under exploit much of its potential if a large percentage of its research community does not have access to state-of-the-art technologies and is therefore not competitive. Euro-BioImaging will address this challenge and enable scientists coming from regions of less developed research infrastructure, to access cutting edge imaging technologies, expertise and training either by going to neighbouring regions or by setting up new infrastructure according to Euro-BioImaging standards regionally.
- ✓ *A platform for translational research.* The scientific communities of basic biological, molecular and medical imaging work closely together in Euro-BioImaging to integrate imaging technologies employed in basic with those applied in medical research. Such cooperative facilities will be ideal platforms for translational research and bring innovative new imaging technologies from bench to bedside.

#### ***How will the Euro-BioImaging benefits be realized?***

- *Euro-BioImaging will run through three consecutive phases.* In the *Preparatory Phase* (2010-2013) the legal, governmental and financial framework for implementation of the Euro-BioImaging infrastructure will be established. Technical and strategic information will feed into the elaboration of a comprehensive Euro-BioImaging construction plan, which will be the basis for the *Construction Phase* (2014-2017). Euro-BioImaging infrastructure nodes will be distributed across European Member States and will be deployed by either new constructions or major upgrades of existing facilities. In its final *Operational Phase* (from 2017 onwards) Euro-BioImaging will provide access to and training programmes in state-of-the-art imaging technologies and continuously review the quality of service.
- *Euro-BioImaging eligibility criteria.* An important element of the implementation plan for the Euro-BioImaging infrastructure, are eligibility criteria for imaging facilities that wish to become part of Euro-BioImaging. The principles for these criteria will be technical and scientific excellence, open access to imaging technology, and highest quality user training. Euro-BioImaging will develop European operational models that can be adjusted to the legal and administrative environments of the different Member States.

***What are the challenges for Euro-BioImaging implementation?***

The construction, operation and maintenance of Euro-BioImaging will mainly rely on funding by Member States.

However, securing funding for this research infrastructure exclusively from national instruments is particularly challenging, because of the strongly distributed nature of Euro-BioImaging. In addition, for biological and biomedical research infrastructures, operational costs will be significant in comparison to their costs for construction (estimated up to 20%/year for Euro-BioImaging). Sustainability of Euro-BioImaging will be endangered, if no appropriate central funding instruments on European level are in place in addition to those committed by Member States.

**The Euro-BioImaging coordinators call upon the European Commission to ensure in the future Common Strategic Framework (CSF) on EU funding that a new coordinated funding instrument for construction and sustainable operation of Euro-BioImaging is implemented at European level.**

**In addition they invite the European Commission to include funding instruments for trans-national user access, long-term storage and accessibility of image data and training and to establish a mechanism for rigorous selection of pan-European research infrastructures based on scientific excellence and on the community needs, followed by a competitive renewal system.**