



## **Euro-Biolmaging**

European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences

### **WP5 Networking and Communications**

#### **Task 5.2**

Task 5.3: Foster the collaboration of Euro-Biolmaging and national user communities

#### **Deliverable 5.8**

Report on collaboration of Euro-Biolmaging working groups,  
scientific and national user communities

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## 1. Introduction

The design and establishment of a pan-European infrastructure for biological and medical imaging in a harmonized, coordinated and well-balanced way requires consideration of the expectations, needs and requirements of all interested stakeholders, in particular of the future infrastructure users. An effective choice of different communication channels enables every interested stakeholder to adequately participate in the process of shaping and operating Euro-Biolmaging. Here, we highlight the communication and collaboration strategies with working groups, scientific and national user communities.

In the last three years, Euro-Biolmaging has assembled a group of more than 1400 individual stakeholders from more than 30 European countries as well as from the US, India and Australia. These include scientists, representatives of European and national biological and medical imaging communities, universities, governmental and non-governmental research institutes, hospitals, as well as industry. Further stakeholders include local, regional and national authorities including those research councils and ministries in the European Member States responsible for education and research as well as dedicated research associations, societies and national organizations.

## 2. Euro-Biolmaging collaboration with working groups

The Euro-Biolmaging working groups comprise all different kinds of **stakeholders** including imaging infrastructure users, providers as well as representatives of national biological and medical imaging communities. Coordinated by the Preparatory Phase Work Packages, Euro-Biolmaging invited all interested stakeholders to participate in the respective working groups on

- Legal, Governance and Ethical Issues (coordinated by WP2)
- Finance Planning (coordinated by WP4)
- Advanced Light Microscopy – General Access (coordinated by WP6)
- Access to Innovative Technologies – ALM (coordinated by WP7)
- Molecular Imaging (coordinated by WP8)
- Access to Innovative Technologies – Medical Imaging (coordinated by WP9)
- Medical Imaging – Patient to Population (coordinated by WP10)
- Data storage and Analysis (coordinated by WP11)
- User Access (coordinated by WP12)
- Training (coordinated by WP13)

Imaging infrastructure users are particularly interested in the technical working groups WP6 to WP13. These working groups cover topics regarding the identification of imaging technologies and services to be offered by Euro-Biolmaging, user needs for access, access policies, training requirements for users and facility staff, infrastructure models for the various imaging technologies, technology specific criteria for access etc.

At the first **stakeholder meeting** in September 2009, these working groups assembled for the first time in the so-called break-out sessions chaired by the Work Package Chairs. First ideas about the objectives of the different working groups were discussed, and the results presented in the common summary session of all stakeholders at the end of the stakeholder Meeting. The outcome of the individual sessions was published afterwards on the Euro-Biolmaging website. The same format of break-out session for the individual working groups was realized at the 2<sup>nd</sup> (Oct 2010) and 3<sup>rd</sup> (Jan 2012) Euro-Biolmaging stakeholder meeting, again concluded by a common session with all stakeholders. At the 4<sup>th</sup> stakeholder meeting (Jan 2013, see also D1.9), the format was changed to have common sessions of related working groups:

*Session I on Medical Imaging:* coordinated by WP8, WP9, WP10, WP11, WP13.

*Session II on Biological Imaging:* coordinated by WP6, WP7, WP8, WP11, WP13.

*Session III on Euro-Biolmaging infrastructure model:* coordinated by WP2, WP3, WP4, WP12.

In 2013 discussions of working groups took place during the evening networking event.

After implementation, Euro-Biolmaging will continue to conduct annual stakeholder meetings to receive the direct input from the infrastructure users, the European science community and all related stakeholders for operating the infrastructure in the best possible manner.

In addition to the annual Euro-Biolmaging stakeholder meetings, working groups regularly meet once or twice per year to provide their input and feedback on the work package specific deliverables of the Preparatory Phase. The meetings are organized by the Work Packages and often take place as back-to-back meetings with related scientific conferences in the field. For example since May 2010, the ELMI meeting annually hosted dedicated Euro-Biolmaging sessions organized by WP6, WP7 as well as the Euro-Biolmaging Industry Board inviting important stakeholders to their working group meetings. Important issues such as the proof-of-concept studies or the discussion on identification of innovative technologies for advanced light microscopy were launched at these meetings of key stakeholders.

For medical imaging working group meetings of WP8, WP9, WP10 and WP11 took place in the course of the European Congress of Radiology (2010, 2011, 2012) and the Annual Scientific Meeting of the European Society for Magnetic Resonance in Medicine and Biology.

In summary, the Euro-Biolmaging working groups are an inclusive platform for all interested stakeholders such as the future users to get involved and help shaping the infrastructure model in the best possible manner to fit the needs and expectations of users, providers and funders.

### **3. Euro-Biolmaging collaboration with national biological and medical imaging initiatives in European Member States**

To trigger the formation of and the exchange with national imaging communities is one of the major achievements of Euro-Biolmaging so far: before Euro-Biolmaging had been initiated, imaging communities were fragmented and/or not organized at all. Since 2009, **20 national imaging communities** have been formed supported by Euro-Biolmaging. They represent the key stakeholders in Euro-Biolmaging and are the most important source of information and communication between Euro-Biolmaging and infrastructure users, providers and funders in the different countries.

#### National (Euro-) Biolmaging initiatives (as per February 2013)

- AT Biolmaging (Austria)
- Belgium Bioimaging / Flanders Biolmaging
- Biolmaging-PT (Portugal)
- BiolmagingUK
- Croatia Biolmaging
- Czech Biolmaging
- EuroBiolmaging-NL (The Netherlands)
- Finish National Imaging Infrastructure Network
- France-Biolmaging
- German Bioimaging / German Medical Biolmaging
- Greece-Biolmaging
- Biolmaging Hungary
- Imaging Platform Ireland NBIP
- Italian Bioimaging
- Luxembourg Biolmaging
- (N)Euro-Biolmaging Poland
- NorBiolmaging (Norway)
- Spanish Biolmaging
- Swedish Biolmaging
- Swiss-Biolmaging

These initiatives were launched to prepare and support their national imaging facilities and user communities for participation in Euro-Biolmaging, each community represented by a national coordinating person in the Euro-Biolmaging stakeholder meetings and working groups.

The national users communities are invited to actively participate in the national initiatives to directly express their thoughts and requirements for developing the national and European-level infrastructures.

It is expected that more national communities will organize themselves in the future and will participate in the Euro-Biolmaging activities.

The figure below shows the vital relation and communication between Euro-Biolmaging and the national communities.



In many cases the formation of the national imaging communities has already led to new investments in national imaging infrastructure as well as coordination activities and the inclusion of Euro-Biolmaging in 13 national research infrastructure roadmaps, in most cases as high priority infrastructure: Poland, Italy, Spain, France, the Netherlands, Hungary, Sweden, France, United Kingdom, Belgium, Finland, Czech Republic, Estonia.

Euro-Biolmaging will continuously support the coordination activities for **national imaging initiatives** of existing biological and medical imaging facilities to increase their visibility in Europe and beyond, exchange best practice on facility management user access and training, exchange new technical developments in the field, establish sustainable career options for facility managers, and provide a forum for common grant applications and research policy discussions especially regarding user access funding together with funders.

Due to the rapidly growing role of imaging technologies in life science research also already existing core facilities are expected to receive higher user numbers in the future. Euro-Biolmaging will provide coordination and support for all existing national imaging facilities in European countries by several key measures. First, Euro-Biolmaging will offer regular and regionally rotating **training** courses for imaging infrastructure users, which will increase the expertise in these technologies and their use in the life science community. Beyond user training, Euro-Biolmaging will establish training curricula for facility managers and technical staff to guarantee the highest level of expertise and service, which will be open for all European imaging facilities. This important training support and harmonization of user access and facility management will lead to higher user satisfaction and increased output of publication quality research data.

#### **4. Euro-Biolmaging collaboration and communication with imaging infrastructure users**

Besides the communication with users in working groups and national imaging initiatives, Euro-Biolmaging has addressed users directly in the European-wide survey in 2011 and in the Proof-of-Concept studies in 2012, to learn about their feedback on needs for access to imaging technologies and the operational model of the future infrastructure.

##### *Euro-Biolmaging Survey*

The results of the Euro-Biolmaging Survey prove that there is a significant unmet need of European scientists to access imaging infrastructure, training and data management. The response rate to the European-wide survey was much higher than anticipated and the final data set comprises complete data from 660 individual participants. The survey addressed imaging infrastructure users, providers, funders and industry representatives from biological and medical sciences. The main results of the survey in regard of identifying the unmet need of European scientists are:

- Many different innovative imaging technologies are requested by European scientists in the future.
- Users and providers identify the same technologies, which will be requested.
- Currently, most imaging facilities do not provide external access to visiting scientists, and very few facilities provide external access above 10% of their capacity.
- Users and providers expressed a significant request for training activities on advanced level.
- More than 60% of biological and medical scientists are willing to travel to access innovative imaging technologies.

Euro-Biolmaging will address this unmet need and provide open access to innovative imaging technologies to all European life scientists based on scientific merit of the user project. The survey results are available as a the Strategic Inventory Map published on [www.eurobioimaging.eu](http://www.eurobioimaging.eu) and were also included in the project deliverables D3.4, D6.1, D7.6, D8.6, D9.5, D10.5, D12.2, D13.1).

In the future, a condensed survey will be published on the Euro-Biolmaging website and will remain open throughout all stages of the project. This condensed survey will focus on the need for (new) technologies, their applications and configurations and will allow users (and providers) at any time to provide their judgment regarding current unmet imaging technology needs. Based on the imaging technologies that have been identified to be the most needed by European scientists in the preparatory phase, this survey will enable Euro-Biolmaging to easily identify changes and new trends in the field and react accordingly by adding such 'improvements' to the portfolio of the infrastructure.

### *Proof-of-Concept Studies*

To test the Euro-Biolmaging infrastructure model, its strengths and weaknesses, refine standardized execution and access protocols and prove that a distributed imaging infrastructure offering open access could boost European life science research, Euro-Biolmaging performed Proof-of-Concept studies (PCS) in 2012. This unique opportunity of free access to a broad portfolio of the most advanced imaging methods had been broadly advertised e.g. in *Nature* and *European Radiology* by WP5. Applicants from the PhD student up to senior researcher level submitted their project proposals. Together with the survey, this activity most directly provided concrete “hand-on” input and feedback from the large and diverse European user community in biological and medical imaging.

This test operational phase turned to a fantastic success:

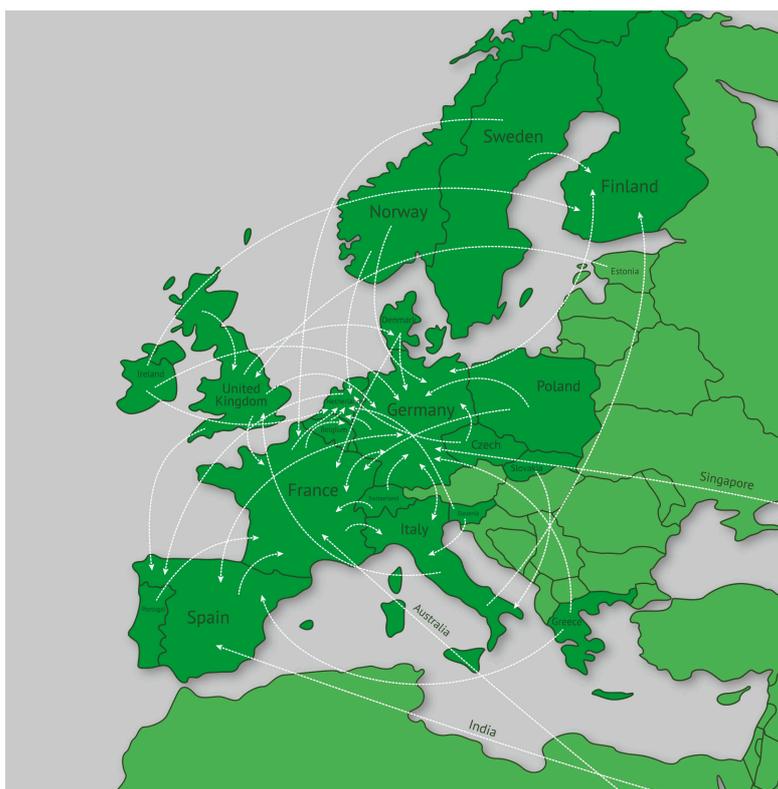
- 63 established facilities committed to contribute free user access in kind to support this Euro-Biolmaging initiative
- 41 Facilities from 14 European countries hosted users
- 228 researchers from 25 European countries and abroad (academic and industry) applied
- 110 user projects were accepted and conducted at the imaging facilities

The major results of the PCS in regard of refining the unmet needs are summarized here:

- The Euro-Biolmaging operational and access model works.
- Over 70% of users rate the validity of the obtained results to be very good to excellent for publication, and over 90% state that the benefit was worth the effort of traveling.
- The users requested access to many different imaging technologies, confirming the Euro-Biolmaging survey results.
- The staff efforts for user management, sample-preparation and hands-on user training were in most cases much higher than anticipated.
- For providing external access in the future, additional service staff is needed.
- 97% of the participating facilities would offer open access in the future after capacity upgrade.
- In total, more than 60% of all PCS users applied for transnational access, 89% left their hometown for obtaining access (see illustration below).

AND

- 99% of the users would make use of Euro-Biolmaging open access facilities in the future!



Euro-Biolmaging proof-of-concept studies –  
Transnational access to  
innovative imaging technology platforms.

The success of the PCS providing open access to distributed imaging infrastructure in Europe supports the Euro-Biolmaging concept to open up the imaging infrastructure landscape and build a set of strongly interlinked Euro-Biolmaging Nodes offering at least 50% of their newly developed capacity to external users. As showed here by the PCS, this model will boost research of the European life scientists by increasing their publication rate and supporting technology development.

### **5. Euro-Biolmaging collaboration and communication with imaging communities outside Europe**

In the global research arena, large-scale infrastructure projects with similar approaches like Euro-Biolmaging already exist or their launch has been triggered by Euro-Biolmaging. Euro-Biolmaging has started the dialogue with the international partners in the bioimaging field, leading to signed collaboration agreements and concrete plans for collaborations.

### *Australian Microscopy & Microanalysis Research Facility AMMRF*

On February 1st, 2012, Euro-Biolmaging has signed an official collaboration framework with the Australian Microscopy & Microanalysis Research Facility (AMMRF) on exchange of best practice in training, user access and facility management. At the same date, a first workshop on infrastructure operation, training programs, web-tools, and sharing of best practice took place already and further activities (course on CLEM in 2013, exchange of staff, common online training tools) are planned. The AMMRF is a well-established multi-node, open access national research facility with 9 years experience in the leadership and operation of distributed research infrastructure in Australia. The collaboration is strongly supported by the Australian Government. Máire Geoghegan-Quinn, the EU Commissioner for Research, recognized during her visit at the AMMRF that the distributed network is an excellent model for the EU research environment: "The work that is being undertaken here at the AMMRF ... is an excellent example of the importance of creating critical mass in key technologies, which is crucial to enable us to respond globally to the grand challenges facing the planet." <sup>1</sup>

### *Collaboration with India Biolmaging*

In September 2012, the new and inclusive network called India Biolmaging of Indian biological imaging facilities was inaugurated which will create a sustainable national infrastructure by opening resources to Indian users, and creating national and international visibility by speaking with one voice to stakeholders, funders and international collaboration partners such as Euro-Biolmaging. Similar to Euro-Biolmaging, a major focus of India Biolmaging will be optimizing user access to imaging facilities, developing future common training activities for users as well as high-level training for facility staff in all aspects of facility management, and developing common solutions for image data storage and analysis. The Euro-Biolmaging Project Management was represented at the launch event in Bangalore and together with the India Biolmaging Coordinator Prof. Jitu Major has started working on a draft collaboration agreement.

## **6. Communication and integration strategies for Euro-Biolmaging users**

The following communication tools all serve the purpose to continuously increase the visibility of and awareness for Euro-Biolmaging in the European science community comprising more than 500.000 life scientists ([www.estat.eu](http://www.estat.eu)):

### *Website*

The website <http://eurobioimaging.eu/> is the central information tool for external (scientific communities, general public, stakeholders) and internal communication (project partners). Besides a broad range of information on Euro-Biolmaging working groups and contacts the site also provides an internal section for persons that may have a strong interest in the project. The Euro-Biolmaging website has already proven to be a popular, highly dynamic and valuable communication forum. The normal metrics (hits/number of site visits, ranking in most popular search engines etc) of assessing the success of web sites continually evaluates the effectiveness of the Euro-Biolmaging web site (e.g. 3427 unique website visitors in period Jan-Feb 2013).

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<sup>1</sup> <http://www.ammrf.org.au/news-and-media/network-news-events/european-commissioner-visits-the-ammrf/>

### *Newsletter*

The Euro-Biolmaging Newsletter is being published bi-annually since May 2011. It highlights facts and developments of Euro-Biolmaging and is being sent out to all 1400 stakeholders. In addition, the Newsletter is also available on the website <http://www.eurobioimaging.eu/>. As of today, four editions of the newsletter have been published.

### *Euro-Biolmaging at Meetings, Conferences and Actions through Professional Societies*

Euro-Biolmaging has already organized special sessions in relevant conferences (e.g. European Congress on Radiology, 2011 and 2012, in Vienna; International ELMI meetings on Advanced Light Microscopy, in 2010, 2011, and 2012). Moreover, since 2009, Euro-Biolmaging representatives regularly participate in relevant national meetings and conferences to introduce Euro-Biolmaging and to provide the latest developments.

## **7. Conclusions**

Euro-Biolmaging has developed and already successfully applied various strong communications tools to address the large user community of life scientists in Europe. In particular the direct involvement of users in identifying the needs and testing the infrastructure model developed into the most valuable measures of the Preparatory Phase, i.e. the survey and the Proof-of-Concept studies. From the beginning, the user community in all European countries expresses highest support for the Euro-Biolmaging concept and eagerly awaits implementation in order to finally get access to cutting-edge imaging instrumentation and by this being enabled to perform world-class research.