Euro-BioImaging
European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences

WP 3 Process Plan

Task 3.3
Working plan including how to integrate new partners and future trends in biomedical imaging

Deliverable 3.8
Tool box for eligibility criteria for new partners

Task leader
MPG

May 2012

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1 Executive summary

Defining transparent, clear and comprehensible eligibility criteria for future Euro-BioImaging nodes is a key stage of the project, as this will define the framework for construction and upgrades of future Euro-BioImaging infrastructures as well as forming the basis for continuous evaluation of operating nodes.

Euro-BioImaging has identified three tools – the Euro-BioImaging Survey, the Proof-of-Concept Studies and continuous consultation with the national communities - to develop the criteria for future Euro-BioImaging nodes in an open and transparent way. There will be general criteria applied to all nodes consisting of the actual "eligibility" criteria for applications and the "review" criteria judging defined quality standards of the applying facility. In addition to those general criteria, imaging technology specific standards have to be determined. The aforementioned tools will especially play a part in defining those specific criteria for different biological and medical imaging technologies.

The toolbox emphasizes Euro-BioImaging's strategy to remain inclusive and open to all stakeholders and to foster extensive exchange on all project relevant issues. Keeping the process of defining the criteria for nodes open and transparent is of particular importance in order to enable a fair competition and comparability between applicants from different levels of infrastructure development (e.g. in regard of maturity, unequally developed European regions, biological and medical imaging technologies at different stages of development) and to form a sound basis for evaluating operating infrastructures to keep the utmost quality standard Euro-BioImaging is aiming to set.

The choice of tools compiled in this report will lead to identifying and refining transparent criteria for future Euro-BioImaging nodes and their evaluation when in operation. The first "Open Call for Nodes" (and every following call) will be based on those criteria and will be launched in spring 2013.

Keeping a certain level of flexibility for future adjustments might be useful, depending on feedback on the feasibility of the criteria from Euro-BioImaging nodes and/or their reviewers in the operating phase.

2 Introduction

Euro-BioImaging aims to implement a coordinated, harmonized and well-balanced pan-European infrastructure for biological and medical imaging that addresses the needs of its users and all relevant stakeholders.

An essential task of the working plan for implementation of the biological and medical imaging infrastructure is to define criteria for imaging facilities that wish to become part of the distributed Euro-BioImaging infrastructure as a node. The general criteria for all future Euro-BioImaging nodes will comprise technical and scientific excellence, the user need for and open access to the imaging technology, user training and the commitment of funder's support. Those general criteria will consist of the actual "eligibility" criteria for applications (threshold, quantitative, objective, yes/no criteria) and the "review" criteria judging requirements like the scientific and technical excellence of the applying facility (quality, narrative and subjective criteria). Based on these general principles, additional criteria will be applied to specific imaging technologies to take into account the differences between different biological and medical imaging platforms. Those will detail specific requirements in regard of user and provider training, access and operational models, data management and

other specific services. The tools identified in this report will primarily be applied when defining those technology-specific criteria in the biological and medical imaging community. Once defined for an imaging technology, the criteria will form the framework for nodes in this area of the future Euro-BioImaging infrastructure.

After having defined and published the criteria for future Euro-BioImaging nodes, the first "Open Call for Nodes" will be launched in spring 2013. As progress in different technology areas may occur asynchronously, several calls may become necessary to address the full range of imaging technologies needed by scientists. Later in the process open calls will be performed more frequently so that interested facilities can become partners of Euro-BioImaging without undue delays. For all further calls for nodes it is envisaged that identifying the specific criteria for an additional imaging technology is following the same principles determined for the "First Open Call for Nodes" and described in this report.

The proposals received will be evaluated on the basis of the criteria for nodes. A board of independent international imaging infrastructure experts will judge how well the applying facility addresses the criteria and recommend Euro-BioImaging nodes for construction. In the Construction Phase (2014 – 2017) Euro-BioImaging nodes will be newly constructed or existing facilities will undergo major upgrades based on the recommendations of the evaluation panel and the financial commitment of the funders.

The planning and construction of future nodes of the distributed Euro-BioImaging research infrastructure will be an open and transparent process aligned with the different phases of the Euro-BioImaging project. Accordingly, the process of identifying the criteria for nodes follows the same principles regarding transparency, comprehensibility and clarity as mirrored and proven by the tools described in this report.

3 About the deliverable and the Work Package task

3.1 Objective

Defining inclusion criteria for imaging facilities interested in participating in Euro-BioImaging is a major task of the Working Plan for implementation of the distributed infrastructure (*Task 3.3 Working Plan including how to integrate new partners and future trends in biomedical imaging*). The working plan will be integrated within the business plan (*D3.12 Final business plan,* due November 2013). The business plan will present the case for a harmonized approach towards a European infrastructure for biological and medical imaging as well as provide financial, legal and access models for existing infrastructure to be opened for pan-European access as well as for the new infrastructures needed to fill gaps in the existing landscape. It will make a compelling case for European Member/Associated States to invest into Euro-BioImaging.

The criteria to become a node within the distributed Euro-BioImaging infrastructure have to be comprehensible, clear and absolutely transparent to achieve a fair competition and comparability between applicants from different levels of infrastructure development (e.g. in regard of maturity and experience), coming from unequally developed European regions and representing various biological and medical imaging technologies applied at different levels of refinement (state-of-the-art vs. bread-and-butter technologies). The procedure for continuous evaluation of operating Euro-BioImaging infrastructures - which will make sure that Euro-BioImaging nodes reach and maintain the upmost quality standards – will be developed based on the same criteria.

The main objective of Deliverable 3.8 is to describe the tools Euro-BioImaging has developed to define the criteria in an open, transparent and joint process under the premise of reaching Euro-BioImaging's main objective – providing access to a complete range of essential imaging technologies for every biological and medical scientist in Europe.

3.2 Results

One of the key principles of Euro-BioImaging is its inclusive and open nature towards all stakeholders at all stages of the project. This approach plays an eminent role in the process of choosing the right tools to identify and refine the criteria for future nodes and their evaluation when in operation. The need for the criteria being compiled in a transparent and comprehensible way is founded on three major arguments:

1) Competition between applicants
   The criteria are employed to determine how well an applying facility addresses them in order to select which imaging facilities are accepted as Euro-BioImaging nodes. Those imaging facilities that fail to address specific criteria or are evaluated below the threshold for inclusion may re-apply at a later stage. Research infrastructures that meet Euro-BioImaging's highest quality standards will be awarded the "Euro-BioImaging Stamp-of-Excellence"**.** It is expected that becoming a Euro-BioImaging node and obtaining the stamp of excellence will have a strong influence on funding decisions by national authorities and funding agencies, which – needless to say - in times of budget cuts and saving measures is a sensitive topic for each research infrastructure. Therefore, a strong competition between applying imaging facilities will be assumed. To avoid uncertainties, doubts or even discordance amongst applicants concerning their eligibility for Euro-BioImaging, the criteria that have to be met in order to provide open access must be absolutely clear and traceable to each applying facility.

2) Comparability between applicants
   There will be a broad range of applicants that wish to become Euro-BioImaging nodes. They will differ in regard to their level of maturity and experience (well established infrastructures vs. infrastructures that still need to be constructed and/or upgraded). Applicants will come from unequally developed scientific landscapes in Europe (e.g. Eastern Europe vs. Western Europe). Infrastructures will represent various biological and medical imaging technologies at different stages of refinement (well-known and established "bread & butter" technologies vs. brand-new and not yet fully established "innovative" technologies). To enable a fair competition and to show that Euro-BioImaging accommodates the challenge of defining general criteria for a very diverse group of applicants the highest level of transparency as well as giving each stakeholder a say in the definition process is crucial.

3) Evaluation of nodes
   Once an imaging facility has been selected to become a Euro-BioImaging node and is in operation it will be continuously evaluated to ensure that it maintains the highest Euro-BioImaging quality standards at any time. Boards of experts in the respective technical fields will be nominated by the Euro-BioImaging decision-making body (Member States' representatives), which will monitor and evaluate the existing infrastructures. The continuous evaluation will make sure that the technologies and services provided by Euro-BioImaging infrastructures are maintained at the cutting-edge and that they are needed and in demand by European scientists. This regular evaluation will be developed based on the eligibility criteria as well. Therefore, they – to a certain extent - also have to be flexible for further input and adjustment, which

might become necessary when running infrastructures check and report on the feasibility and validity of the criteria based on their best-practice experience.

Considering these needs for transparent, traceable and partly flexible criteria for nodes Euro-BioImaging has developed the following tools that help to define them by openly and continuously communicating with all stakeholders. Besides the need of identifying common criteria valid for all future Euro-BioImaging nodes, the toolbox particularly addresses the forming of the imaging technology specific criteria, which will be elaborated by each technical Work Package (WP6 to 11) using the following tools.

3.2.1 The Euro-BioImaging Survey

The first "Euro-BioImaging Survey" was broadly advertised and openly accessible on the Euro-BioImaging website from June 1st, 2011 to July 15th, 2011. 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. Imaging infrastructure providers are strongly represented, while the much larger number of users has been difficult to represent in this one-time survey.

The survey results have been published as a strategic review of the unmet user needs on the Euro-BioImaging website and are summarized in reports by the technical WPs (6, 7, 8, 9, 10, 12 and 13) for the European Commission.

In view of defining the criteria for nodes, participants were – besides questions related to which imaging technologies are needed in general - specifically asked for their needs and their expertise regarding training activities, access rules, data management and funding concepts. The participants were also asked for their specific reasons not to permit open access to their imaging facilities, which provides Euro-BioImaging additional insights into what obstacles may need to be overcome or what conditions have to be fulfilled to nurture change. Always keeping in mind that the Euro-BioImaging survey does not display a comprehensive picture (due to the unavoidable sampling limitations) of the European research landscape, its final data set still forms a very important source of information to define the criteria for nodes. It provides clear directions and indications based on the input of European scientists regarding the quality standards that have to be met in order to successfully provide open access to the needed imaging technologies.

3.2.2 The Proof-of-Concept Studies (PCS)

From January to July 2012, Euro-BioImaging is conducting a series of PCS offering free access for users to 63 European advanced biological and medical imaging facilities in 16 countries. The participating imaging facilities have all committed to contribute free user access in kind to support the Euro-BioImaging Preparatory Phase. The unique opportunity of free access to a broad portfolio of the most advanced imaging methods had been broadly advertised and applicants from the PhD student level up to senior researchers were invited to submit their project proposals from October 1st to November 30th, 2011. In this short time frame, more than 230 proposals coming from European as well as international users were submitted, again surpassing all expectations and demonstrating the strong need for open access to biological and medical imaging infrastructure in Europe.

Proposals were evaluated for scientific merit by a panel of reviewers composed of experts from the Euro-BioImaging consortium and heads of the participating imaging facilities in each technology area. After this first evaluation, they were assigned to PCS sites by expression of preferred facility by the user as well as feasibility considerations. Finally, each facility selected from its assigned applications the user applications, which were invited for conducting the proof-of-concept study.

Besides insights into other project-relevant topics - such as to test-run the Euro-BioImaging concept in general and to further refine user needs for different imaging technologies – the PCS aims to elaborately test access and operational protocols and to refine the actual requirements for training, data storage and other technology-specific services for future Euro-BioImaging nodes. The best-practice knowledge gained will help to identify the best infrastructure models for different imaging technologies and to set up technology-specific standards for future nodes in the aforementioned areas (training, data management, access and operational models, other services).

In addition to the results of the survey the PCS will allow to further specify the criteria for nodes adding additional credibility through the strong practical aspect of the studies.

3.2.3 Consultation with National Imaging Communities

Since early 2010 self-organization of biological and medical imaging communities at the national level started in most European Member States particularly with the goal of supporting Euro-BioImaging and to achieve the pan-European integration of national imaging communities.

The following national networks of existing imaging facilities and major infrastructure providers have already formed and in several cases, this has already led to significant national investments (e.g. FR, SE, IT, PL, ES, NO, CZ) or application for national investments (CH, DE, FR, NL, IE, UK, BE, IL – see Deliverable D4.1 *Report on funding sources for the construction and operation of Euro-BioImaging*):

BioImaging UK
Belgian BioImaging
Czech BioImaging
Cro(atian)-BioImaging
EuroBioImaging-NL
Finnish National Imaging Infrastructure Network
France-BioImaging
German EuroBioimaging
Greece-BioImaging
Imaging Platform Ireland NBIP
Italian Bioimaging
(N)Euro-BioImaging Poland
NorBioImaging (Norway)
Portuguese BioImaging
Spanish BioImaging
Swedish BioImaging
Swiss-BioImaging

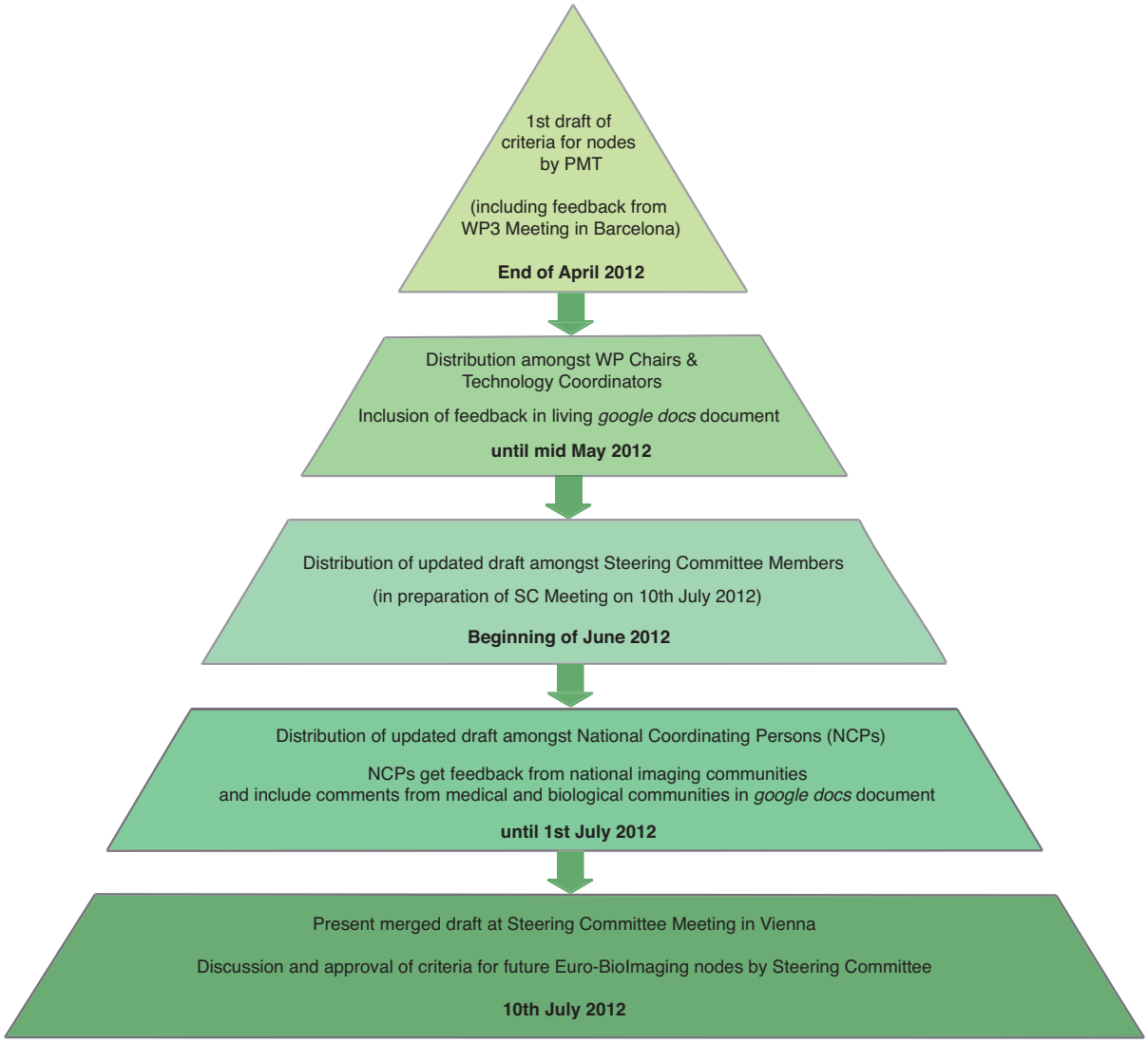
The national imaging communities have appointed national coordinating persons who are responsible for communication between their respective community and Euro-BioImaging. Besides facilitating contact to the national contact persons, Euro-BioImaging actively communicates and exchanges with national imaging communities by continuously

participating at national meetings and inviting their national coordinating persons to Euro-BioImaging Work Package meetings.

In regard of defining the criteria for future Euro-BioImaging nodes the close exchange and collaboration with the national communities is of particular interest, as they will accompany and look at the defining process with their "national eye" making sure that inequalities between applicants from different European regions with unequally shaped scientific landscapes are considered in order not to disadvantage any potential partner.

3.3 Status quo and timeline

Based on the three tools described above a first draft of the criteria for future Euro-BioImaging nodes has been created and broadly distributed already. Following Euro-BioImaging's principles of inclusiveness and transparency a clear process for further refine- and improvement of the initial draft has emerged illustrating the extensive discussion and consultation with all relevant stakeholders:



4 Conclusion

Defining transparent, clear and comprehensible criteria for future Euro-BioImaging nodes is a key stage of the project, as this will lay the framework for construction and upgrades of future Euro-BioImaging infrastructures as well as the continuous evaluation of operating nodes afterwards.

Euro-BioImaging has identified three tools – the Euro-BioImaging Survey, the Proof-of-Concept Studies and continuous consultation with the national communities - to develop the eligibility criteria for future Euro-BioImaging nodes in an open and transparent process. Considering that there will be general criteria valid for all nodes and imaging technology specific standards the aforementioned tools will especially play a part in defining the specific criteria for different biological and medical imaging technologies.

The tools chosen show that Euro-BioImaging fully accommodates the fact that continuous input from and exchange with all partners especially on such key positions of the project is essential to make Euro-BioImaging a success. The toolbox emphasizes Euro-BioImaging's strategy to remain inclusive and open to all stakeholders and to foster extensive communication on all project relevant issues.

The effective choice of tools compiled in this report will lead to identifying and refining transparent criteria for future Euro-BioImaging nodes. The first "Open Call for Nodes" (and every following call) will be based on those criteria and the process that led to identify them. The first "Open Call for Nodes" will be launched in spring 2013. Future adjustments to the criteria might be advantageous depending on feedback from Euro-BioImaging nodes and/or their reviewers in the operational phase.