SEVENTH FRAMEWORK PROGRAMME

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

WP12
User Access

Task 12.2
Develop Framework

Deliverable 12.5
1st release of web-based access portal

Task leaders
Abo Akademi (Turku BioImaging), ABO, FI
Ludwig-Maximilians-Universitaet Muenchen, LMU-MUENCHEN, DE

May 2012

- 2 -

Deliverable 12.5
1st release of web-based access portal

1. INTRODUCTION

As part of the task *12.2. Develop Framework*, WP12 will develop a web-based access portal for Euro-BioImaging, to support collection, handling, and reviewing of user research project applications. The steering committee of Euro-BioImaging has refined the scope of deliverable 12.5 during the Heidelberg 3rd Stakeholder meeting in January 2012 to gradually develop the content of the web access tool during the preparatory phase, and then to later launch the website when the EuBi structure with different nodes is in place. The decision whether the portal will be part of the Euro-BioImaging web pages, or rather an independent website, is currently under discussion.

WP12 screened examples and practices which are in use on web-based portals of a) imaging facilities for a research project submission, b) research grant foundations for grant proposal submission and c) scientific journals for an article submission. One example used was Finnish university system for course application submission (www.joopas.fi), a system developed by CSC – IT Center for Science (www.csc.fi).

During the WP12 breakout session at the 3rd Euro-BioImaging stakeholder meeting, the web access tool was subject of a lively discussion and the consensus is included in this first outline of the web access portal. In addition, WP12 consulted WP13 regarding the possibilities of linking the future Euro-BioImaging training e-repository with access portal functions, to also enable the submission of EuBI training applications through the access portal.

With this document, WP12 presents a ground plan of a future Euro-BioImaging access portal, including the outline, flowchart of the application procedure, and the estimated budget to construct the portal.

2. ACCESS PORTAL OUTLINE

2.1 General

The appearance of the access portal web pages has to be clear, inviting and user friendly. All the basic information should be easily found and effortlessly accessible with drop-down menus and action buttons directing the applicant to the desired information.
Regarding the user friendly interface, WP12 found the *AMMRF technique finder* to be a very useful example: http://www.ammrf.org.au/techniquefinder/. However, the AMMRF site did not contain a portal with a system for online application submission, application management or review procedure. According to WP12, these features would be desirable for the future Euro-BioImaging access portal, in order to make the portal effective and easy-to-use and to be in scope with the aims and the complexity of research draft handling procedures.

Basic information which should be clearly presented on the portal home/main page:

1. Euro-BioImaging Access guidelines
2. Funding information
3. Application
   - instructions for the successful application, also as a printable user guide
   - how the application will be processed
   - estimated decision time
   - link to the application submission pages

In a broader sense, the future web access portal could also been seen as a market place where the providers and users meet.
For a broader usage, the web access portal may contain the following additional features:

- Site finder
- Technology finder (similar to AMMRF)
- 'Frequently asked questions' menu as a fast help for the applicant to find additional information about the application procedure.
- 'Ask an expert' feedback tool. If the guidance on the pages, including the 'Frequently asked questions' does not contain enough information for the applicant, there will be a possibility to send more specific e-mail enquiries to the portal administrator*. There would be obvious benefits of having moderated, interactive pages for all the different techniques available. When needed, the researchers would get relatively fast feedback, help and advice for their technique.
- Educational elements, such as short introductions to techniques available and gateways to image repositories. Those can be employed for both professional training and basic education.
- Links to the EuBI nodes presenting their publications and picture libraries to exemplify what can be done in the given site. This would also be a good way to demonstrate the excellence and quality of the nodes.
- Technology transfer and success stories in repositories for industry purposes and case studies as examples for other researchers

* the administrator refers to a person/persons that are responsible to manage all the portal submissions and functions.

2.2 Site Finder and Technology Finder

The discussion during the WP12 breakout session at the 3rd Euro-BioImaging stakeholder meeting indicated the need for a Euro-BioImaging Node Map which helps the user/applicant to find the most suitable site to perform the intended research. To fulfil this requirement, WP12 proposes a service site finder function on the access portal. The applicant already knows which techniques and instruments are needed for his/her research but he may not know where to find them. The site

finder would consist of a database of all the Euro-BioImaging providers, i.e. the nodes with infrastructure details, with an internal tree structure. This would enable the users to search for the provider sites by selecting from alternatives given on the site finder interactive questionnaire.

Case example:
The starting question would be: "Are you interested in biological imaging or medical imaging?" The next question would depend on the answer to limit the choices. Now, if the applicant selects biological imaging, the next choices could be: "Are you planning to image experimental animals or tissues or cells?" and again based on the selection, more choices would appear until those sites are selected which can provide the required instruments and services.

Alternatively, it would be possible, and perhaps more easily implemented, to search for sites which provide the required technique with a keyword function selecting the keywords from the predefined lists. The site finder will process the request and then display an interactive map of the Euro-BioImaging nodes with the suitable sites marked. All the nodes on the map will be directly linked to the web pages of the sites to find more detailed information about the research possibilities in that facility.

If the applicant does not know the most suitable techniques or instruments, the access portal will contain a technology finder similar to AMMRF (http://www.ammrf.org.au/techniquefinder/). The technology finder tool could be analogous to the site finder, either consisting of an interactive questionnaire or functioning through a keyword search (see above). It will also be possible to learn about the available imaging techniques with the help of downloadable pdf-documents (for example http://www.bioimaging.fi/wp-content/uploads/2011/10/BlackBook.pdf). The technology finder will contain the above-mentioned 'Ask an expert' tool for consulting, if additional help is still needed before the applicant proceeds to selecting the sites.

For more experienced applicants, it will certainly also be possible to directly select the most suitable providers for the application directly, if the user already knows his/her preferred sites.

2.3 Project submission form

For the submission of the application, the user fills in the online form with the following details and steps:
- creation of a user account with username and password
- basic information about the applicant/s (names, institute, address). One or several researchers can be selected as corresponding applicants.
- basic information about the project: which technique(s), how long time the project will take, timeline, suggestion when it could be performed etc.
- research proposal with the detailed description of the project submitted
- the level of expertise the applicant has already acquired for the specific imaging modality and the requirements for a training from the node

- estimated budget
- possible appendices: CV, references, publication list etc.
- top 3 listing of the nodes where the applicant wants to perform the research. This listing function may help to decrease the demand to provide service slots in the most popular sites. If the most preferred site cannot take the project, it will be sent to the 2nd best option etc.

There has to be the possibility to save the application on the web access portal and return back to it as many times as the applicant wants, to continue working the same application process.
Finally the system will generate a pdf-file of the application which can be printed and signed, if necessary.

2.4. Processing the applications: evaluation and commenting

The submission pages are a restricted area, only accessible with user names and passwords. The applicants will receive the user names when creating their user accounts. Like applicants, portal administrators and evaluators will sign in with their own user names and passwords to acess restricted pages on the submission portal. Evaluators will have access rights only for those applications assigned to them. Site administrator(s) will have access rights to all applications and restricted pages and follow the submission and evaluation process. Suitable evaluators, or referees, (minimum 2 experts per application) will be selected through the keyword search from the database of experts who have been nominated to evaluate EuBI applications.

Evaluation, grading and commenting will also be done online, and the evaluators have a possibility to ask further details from the applicant at any stage with the evaluation and commenting function. While an application is under review, the system will send automatic e-mails to all the parties involved during the entire application process whenever the application enters the next step. The portal should also contain a tracking system to enable the applicant to monitor the status of his/her application after the submission.

The access portal flow chart (
Figure 1) depicts the application process on the web-based access portal.
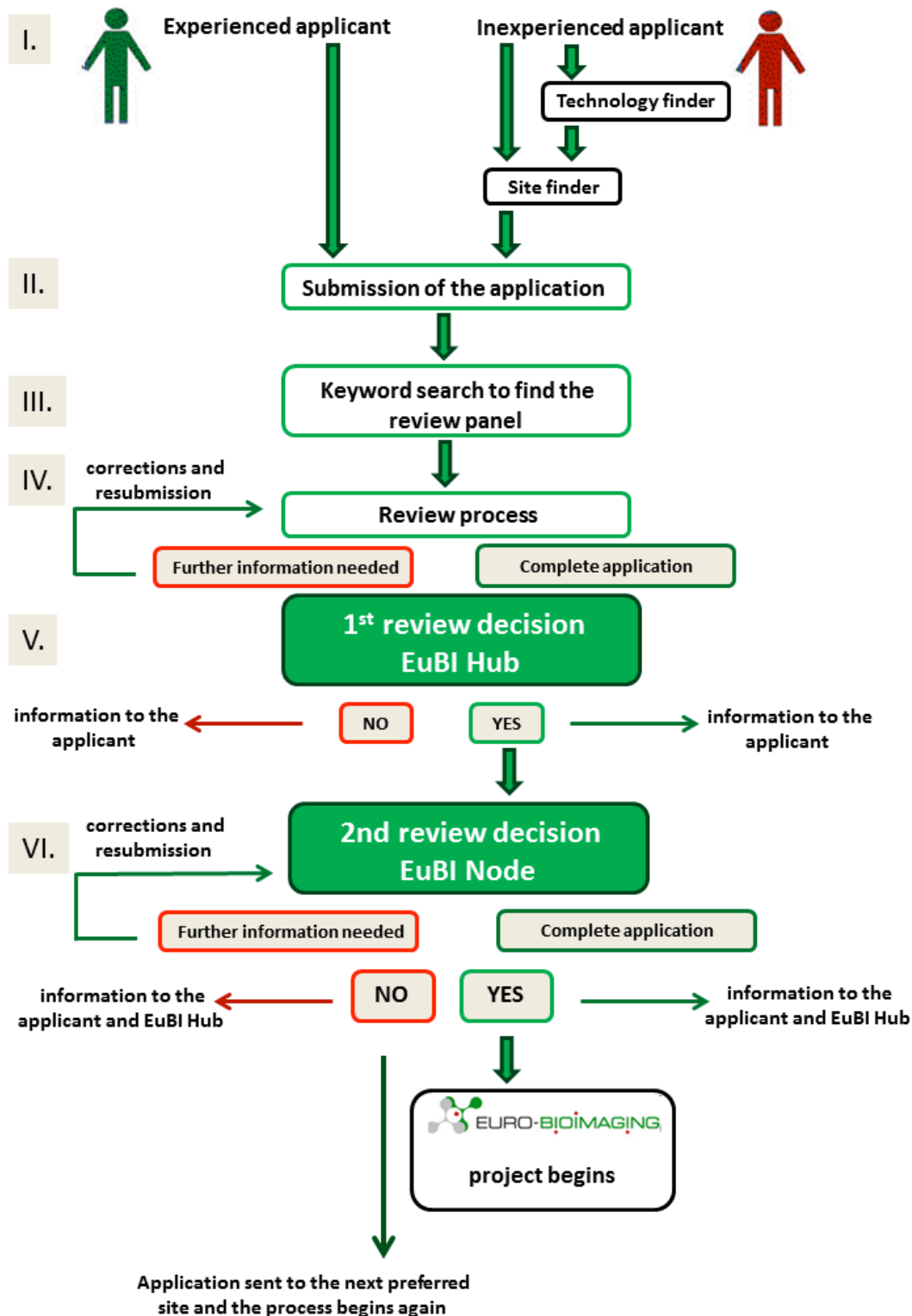
ACCESS PORTAL FLOW CHART

Figure 1 - Process flow chart of access applications

I. In step one the applicant without previous knowledge of the availability of the services/techniques starts the application procedure with ***the site finder*** function. The finder guides the applicant to find the closest suitable nodes where the desired technique is provided. If the applicant does not know the best technique for the proposed research, he/she can use **the technology finder** tool and consult imaging experts using the **'Ask an expert'** function before the site finder. On the other hand, if the applicant already knows which nodes he/she prefers, the site finder can be skipped and the application submitted with the top 3 listing of the selected nodes.

II. The applicant creates a user name and a password and logs in to the online application system in order to be able to fill in the project ***submission*** form.

III. The ***keyword search*** function is needed to help the portal administrator to direct the application to the most suitable ***reviewers***. The reviewers (2-3) should be experts in (at least one of) the desired technique(s) and should have no attachments with the applicant or the selected nodes to make sure that the review process is objective and transparent.

IV. In this step the ***review process*** begins and the applicant receives e-mail notification that his/her application has been taken into the process. During the review process the reviewers log in and open the application for evaluation in the editing window. At this stage the identity of the applicant remains anonymous. The on-line evaluation and commenting tool enables the effective and almost real-time communication between the reviewers, EuBI hub and the applicant. If the application requires modification or specifications, the reviewers have a possibility to ask for more information by using the request field and the system sends a notification to the applicant. After receiving the notification the applicant can log in to the system and add the supplementary information.

V. When the application is complete and evaluated, the ***first review decision*** is done in the EuBI Hub. The reviewers will be provided with precise review guidelines, specifying quantitative assessments of several categories. This review guideline will be public. The applicant receives information about the decision by e-mail including the quantitative assessments. If the decision is positive, the application is forwarded to the node for the second review.

VI. In the ***second review decision step*** the node managers receive the applications for evaluation. The evaluation procedure is similar to the previously described in step IV, i.e. the nodes have rights to ask further information if needed. The node adds an assessment only with respect to feasibility of the project. It takes the final decision whether the project can be carried out at the selected node. A negative decision deviating from the quantitative assessments has to be justified towards both the central EuBI hub and the applicant. Again, all parties are informed by the system. In case the node cannot accept the applied project, it will be automatically forwarded to the second preferred site and the step six will be repeated there. If the project is accepted at the node, the node manager contacts the applicant, details are agreed and the project can begin.

2.5 Practical considerations

The application system should be absolutely transparent, and the portal must include a log function which keeps record on all the actions taken. Confidentiality and security issues are of high priority and shall be considered carefully when the functions of the portal are designed.

The portal will collect user statistics which are available for EuBI and all the participating sites upon request for reporting purposes. One important function required for monitoring and assessment of the excellence of nodes as well as reporting to funding organisations is a publication repository and an acknowledgement system. For this purpose, WP12 suggests that the access portal system could automatically send reminders to users to submit information about publication resulting from the work done using EuBI services. The publication information would then be included in the repository.

The web-based access portal requires functional technical support to keep the portal running, and solve any practical problems arising during submission and processing of applications.

Importantly, the evaluation must be fast and information about evaluation process length must be easily available for the applicant. Also, evaluators and sites have to be committed to follow the timelines and rules of the access procedures. Applicants should not contact sites and should not need to do so before the decision on their application.

According to WP13, the access portal could also be used for submitting applications to training activities provided by the EuBI hub or "EuBI certified" courses held at EuBI nodes in the future. For this purpose, a separate course/training application submission page would be created. This issue will be further developed during the preparatory phase.

Last but not least the scope of Euro-BioImaging aims to comprise IT related services. This aspect will be of major importance and influence and is subject to vivid discussion and rapid development. These software and IT related services, provided within Euro-BioImaging will most likely be included in the same web access portal, if only by a linking separate access tools from a common starting page, to yield one common platform towards users.

3. TECHNICAL REQUIREMENTS AND ESTIMATED BUDGET

For drafting a summary about the technical details and budget for establishing a functional web access portal, WP12 consulted 5 different experts at the Turku universities working in information technology. As the web access portal is still in its planning stage, presenting a detailed budget is not possible. However, a rather accurate proposal can be presented in light of current status of information. We estimate that the access portal must be capable of processing approximately 5500 project submissions and possibly also 3000 training course applications annually.

This comprises a mid term perspective. Since not all parts of IT solutions are easily scalable while in operation, it is necessary to consider a reasonably scaled design right from the beginning.

Technical costs:
According to the IT experts, it would be wise to build the system over the existing open source CMS (Content Management System) or framework like Drupal, CodeIgniter, Django and Python, or similar systems. As a remark, Joomla was not considered very convenient for this purpose, especially because of their lack of support. The open source softwares MySQL or PostgreSQL were considered to be the best options for building a database. Thereby, the technical costs are almost only for the server space fees, which should be reasonable (not estimated).

Personnel costs for the portal development and maintenance:
The fully functional and an intelligent portal system will be rather large containing a lot of data, and the precise testing is required before launching the portal. Building an internal database is time-consuming and must be carefully planned. Therefore, a need for a professional developer and a web designer is a requisite. Thus, WP 12 suggests that it would be beneficial that at least two persons should work with the project development for one person year, of which 6 months for a full-time developer and 6 months for a full-time web designer who will design the page layout and its functions. In addition, a coordinator will be responsible for collecting the scientific content (e.g. the node information, data for image and article repositories). This would need approximately one half-time person for one year (50%)

Cost estimation:
Development:
(excl server space)

6mo 100% developer	*~30k €*
6mo 100% designer	*~30k €*
12 mo 50% coordinator	*~30k €*
Total	~ 90 k€

Maintenance costs:
The maintenance of the portal includes keeping the database and softwares up-to-date. In addition, also a fast and efficient technical support is essential to keep the web pages functional. Moreover, the site requires continuous administration by dedicated persons who have access to all online processes and their task is crucial for the portal management.

At this stage the estimated need for maintenance and technical support is unknown. The costs are also dependent on the party who is responsible for the maintenance (the original implementers or outsourced service). WP12 also tried to estimate the needs for the administrative personnel months per year, however, this depends on the final structure and volume of the portal.

Cost estimation:
The rough estimation would be ~5-10k euro/year for technical support
~150k euro/year for administration (approximation: minimum 3 persons)

Privacy protection issues:

Security issues should be carefully considered and planned. These are subject to ongoing discussions and thus not finally included in the present report.