



## **Euro-Biolmaging**

European Research Infrastructure for Imaging Technologies in Biological and  
Biomedical Sciences

### **WP13 Training**

#### **Task 13.2**

Defining operational rules for biomedical imaging training activities

#### **Deliverable 13.2**

Proposal for rules and requirements for the training program in biomedical imaging

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**IMG/UPF**

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## 1. Executive summary

The task of Work Package 13 (Training 13) is to define operational rules for training activities in biological and medical imaging (T13.2). This report presents the WP13 proposal for operational rules of training activities in the framework of the Euro-Biolmaging (EuBI) project. It is based on best practice of currently available training activities in biological and biomedical imaging and on existing quality assurance systems for higher education and continuous professional development (CPD). The document introduces two types of criteria: (A) specific training requirements related to an individual training activity, and (B) institutional criteria related to the rules of operation of the training provider. Specific training requirements are divided into two levels: (1) minimum requirements – mandatory for registering in the EuBI e-repository of training activities, and (2) ‘EuBI stamp of excellence’ requirements.

We presume that the evaluation process of training activities will be conducted by the future EuBI training office whose tasks will be defined in D13.5 (Month 30). Therefore, we designed at this stage a basic evaluation system. The evaluation process will have to be adjusted to be part of the future overall EuBI governance structure for the construction phase.

Furthermore, we introduce possible scenarios of cooperation with European Medicines Research Training Network (EMTRAIN). For that purposes we compare the proposed criteria with Innovative Medicines Initiatives (IMI) Education and Training Shared Quality Standards.

## 2. Introduction

The pan-European research infrastructure EuBI aims at ensuring access to cutting edge imaging technologies to all European scientists. During the preparatory phase (2010-2013) a concept of construction and operation of the pan-European distributed infrastructure will be created. The advanced imaging technologies used in biological and medical research require user training and staff expertise in order to be fully operative and exploited. Therefore, a strategic roadmap on training programmes in biological and medical imaging will have an essential impact on the concept of the future pan-European biomedical imaging infrastructure.

During the preparatory phase a coordinated, modular, and standardized multi-level training portfolio of courses, ranging from basic courses to top-level scientific workshops in different imaging technologies will be established. EuBI strives to promote high quality training programmes in biological and medical imaging. Throughout the project preparatory phase, a system of criteria for training activities will be developed and introduced. These criteria will be required to be met by all training providers who aspire to obtain the 'EuBI stamp of excellence', certifying high-quality standards and concordance with EuBI priorities of their training activities.

## 3. Objectives

The aim of this report is to propose initial draft of rules and requirements for training programmes in biological and medical imaging within the EuroBioImaging framework. It will be further elaborated during the preparatory phase. The proposal covers operational rules and quality requirements for training programmes in biological and medical imaging.

These requirements form a basis for:

- Guidance for providers of training programmes in biological and medical imaging in the process of designing, upgrading and enhancing training programmes.
- Guidance for users of the biological and medical imaging techniques assisting them in selecting the most suitable training activities.
- Evaluation of training programmes in biological and medical imaging that will apply for 'EuBI stamp of excellence' certifying that they fulfil the EuBI requirements.

## 4. Methodology of the proposal

We applied a combination of bottom-up and top-down approach in order to propose operational rules for training programmes in the EuBI framework (Fig. 1). For the objective of this report, we first made a benchmark at the good practices in already existing training activities in biological and medical imaging. We built our proposal on those best practices in operational rules of training providers that we acquired from the EuBI survey on biological and medical imaging that was

conducted in summer 2011. We gathered information on the content and on the operational rules of about 250 training activities in biological and medical imaging training activities.

As the second step we analysed available quality assurance and evaluation systems for CPD<sup>1</sup> training activities and higher education courses (Bachelor, Master and PhD). We identified the European Association for Quality Assurance in the European Higher Education Area (ENQA), IMI Education and Training Shared Quality Standard and EMBO Recommendation for the Practical Courses as the most relevant systems for our purposes.

This deliverable is closely interlinked with another WP13 deliverable (D13.4), which objective is to propose an optimal pan-European curriculum in biological and medical imaging. It will serve as a recommendation for higher education institutions that would like to implement such a curriculum.

We presented a first concept of rules and requirements for training programmes in the EuBI framework during the 3<sup>rd</sup> Stakeholders Meeting in January 2011. The main outcome of the discussion around this first draft was to obtain feedback from the experts within the WP13 and to ensure the correct alignment with the existing best practices adapted to EuBI necessities.

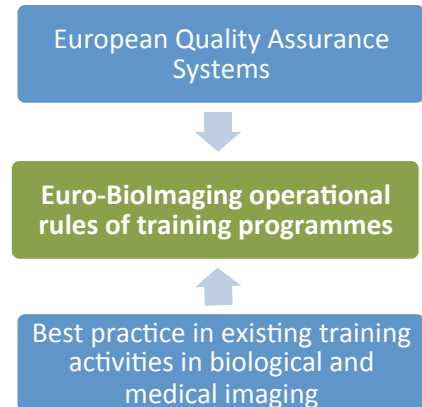
## 5. Operational rules of existing training activities - data from the survey

The data from the EuBI survey<sup>2</sup> showed that a majority of courses in biological and medical imaging are provided by universities (more than 40%), followed by public research institutions (more than 20%) and university hospitals (18%). The survey also revealed that **access rules to training activities** are applied by 2/3 of the providers. However, it exists a difference on those access rules mainly depending on the type of training activity performed and the provider in charge. In general, we may conclude that training activities provided by universities are designed for a concrete level of higher education programme (bachelor, master or PhD). Furthermore a pre-knowledge (participation in a preceding course) is usually requested to the participants. The second group of access rules is based on scientific competition and excellence of application. Applicants are requested to submit an application form usually consisting of a description of his/her project and research activity, a motivation letter, justification of needs for a specific technology (training), and demonstration of a potential to utilize the technology selected to be trained in in the future. The third group of access rules covers basic access rules such as a first-come first-serve principle and a preference to local participants.

<sup>1</sup> Continuous professional development

<sup>2</sup> For more details consult Euro-Biolmaging deliverable D13.1 (Report on survey on existing activities and key requirements for biomedical imaging teaching: Report on pan-European survey on existing activities and key requirements for biomedical imaging teaching)

Fig. 1 Methodology of the proposal



We found out that approximately 2/3 of providers had implemented an **evaluation system**. The universities are obviously the providers with the most elaborated evaluation systems which can be attributed to the formal accreditation processes established in higher education at EU and/or national levels. The evaluation of a training activity is usually executed independently by the university and/or is part of internal quality management system. ISO 9000 standards are implemented in some institutions. Nevertheless it is also quite common to use 'soft' means of evaluation that cover feedback forms, survey, interviews etc. The evaluation of the outcomes of a training activity (knowledge gained) has usually a form of a test or an exam.

## 6. Current quality and accreditation systems in Europe

Several initiatives aim to harmonise quality assurance systems of training programmes in the European Union. When preparing this report we have drawn on existing systems for quality assurance and accreditation and analysed their applicability for the EuBI project. The following systems were analyzed:

- European Association for Quality Assurance in the European Higher Education Area (ENQA)
- IMI Education and Training Shared Quality Standard
- EMBO Recommendations for Practical Courses

### 6.1 European Association for Quality Assurance in the European Higher Education Area (ENQA)



ENQA<sup>3</sup> is a membership association composed of quality assurance bodies from the European Higher Education Area member states (EHEA). ENQA produced a report on standards and guidelines for quality assurance in the EHEA<sup>4</sup>. The report covers standards and guidelines for internal quality assurance within higher education institutions, standards for the external quality assurance of higher education, and standards for external quality assurance agencies.

Standards and guidelines for internal quality assurance of higher education institutions are the most relevant for our purposes because our deliverable is intended for training providers in biological and medical imaging. It is out of the EuBI scope to introduce and to monitor operational rules of external bodies pursuing quality evaluations.

ENQA defines standards in the following areas:

- Policy and procedures for quality assurance
- Approval, monitoring and periodic review of programmes and awards
- Assessment of students

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<sup>3</sup> <http://www.engq.eu/>

<sup>4</sup> [Standards and Guidelines for Quality Assurance in the European Higher Education Area](#). European Association for Quality Assurance in Higher Education, 2009, Helsinki, 3<sup>rd</sup> edition.

- Quality assurance of teaching staff
- Learning resources and student support
- Information systems
- Public information

ENQA is designed as a complex quality evaluation system of universities and other higher education institutions. The detailed requirements are related to the organizational aspects irrespective of the field in which education is provided.

## 6.2 IMI Education and Training Shared Quality Standard



The European Medicines Research Training Network (EMTRAIN)<sup>5</sup> is a project funded under Innovative Medicines Initiative (IMI)<sup>6</sup>, a public-private partnership in pharmaceutical research. The aim of the EMTRAIN is to create a pan-European platform for education and training in medical research. EMTRAIN established collaboration with BMS ESFRI projects, including EuBI. Within the EMTRAIN project a set of quality standards for CPD courses was developed which is based on ENQA standards. The quality standards are used for self-evaluation by training providers and for helping users to orientate in a wide range of training activities. The criteria are assigned to each training activity in an 'on-course' database<sup>7</sup>.

The following set of 9 quality criteria for CPD course has been introduced:

- I. University accreditation or an equivalent system for approving, monitoring and reviewing the training offered.
- II. A system for quality assurance of teaching staff.
- III. Regular review of the quality assurance/quality control process and demonstration that the training is further developed in light of this review.
- IV. Defined and transparent admission criteria.
- V. A predefined set of teaching objectives, leading to defined learning outcomes.
- VI. The facilities, infrastructure, leadership and competences available for the support of student learning should be adequate, appropriate and up to date for the training offered.
- VII. Assessment of the students' achievement in accordance with the agreed learning outcomes of the training offered.
- VIII. A system for collecting, assessing and addressing feedback from learners, teachers, technical/administrative staff and programme/course/module managers.
- IX. Availability of appropriate and updated reference material.

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<sup>5</sup> <http://www.emtrain.eu/>

<sup>6</sup> IMI supports following projects devoted to training: SafeSciMET, EMTRAIN, Eu2P, PHARMATRIN. More information available at <http://www.imi.europa.eu/>

<sup>7</sup> On-Course database – a comprehensive on-line catalogue covering 2 400 training course in biomedical sciences maintained by EMTRAIN

EMTRAIN also monitors external accreditation of training providers. In the database 'on-course', an indication, whether a provider of the course is recognised by scientific and professional bodies and whether university accreditation (including ECTS credits) applies to a course, is available.

### 6.3 EMBO Recommendations for the Practical Courses



EMBO provides a granting scheme for practical courses<sup>8</sup> whose aim is to promote transfer of new methods and emerging techniques to scientists. A course applying for an EMBO grant should be consistent with the following EMBO recommendations for the organisers:

- More than one organizer.
- Topic that is demanded by the research community and not covered by many courses.
- Sufficient duration to cover the topic in depth.
- Venue with suitable facilities and accommodation onsite.
- Max 25 participants for a practical course, max 120 participants for a workshop.
- Max 15% participants from the host country.
- No pre-defined participants.
- Sufficient time for discussion and interactions between participants.
- Poster sessions desirable.

Applicant submits an electronic application. The application is evaluated by two members of the EMBO Course Committee. The final selection of projects to be funded is made by the committee. Participants of a course are transparently selected based on their CV, abstract describing their research and explanation of the importance of the course for their research work. Preference should be given to early-career researchers. Regional and gender balance should be also assured. After the course finishes, the participants evaluate the course and give feedback by using an EMBO standardised on-line evaluation tool. The anonymised results of evaluation together with EMBO recommendations for improvement of the course are sent to organizers to improve the next run of the course.

### 6.4 Applicability for the Euro-Biolmaging

- ENQA

For the purposes of EuBI we find this system rather demanding and not applicable in its whole scale. Our main target group in training will be end-users, at least at an early stage of the EuBI infrastructure, so we prefer to concentrate on evaluation of individual training activities rather than institutions. In our opinion information on a concrete training activity and possibility to compare basic features of different training activities will be more beneficial for users.

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<sup>8</sup> <http://www.embo.org/programmes/courses-workshops/practical-courses.html>



- IMI

We find most IMI quality criteria and the whole concept of evaluation of training activities to be very relevant for EuBI. Requirements focus on ensuring high quality of individual training activities. Except for the strong requirement for university accreditation, this approach is in line with EuBI quality assurance strategy targeted at individual training activities.

- EMBO

The EuBI aims to promote pan-European / transnational access to training in biological and medical imaging. For that purpose EMBO recommendations provide an inspiring concept of promoting cross-border cooperation between training providers and equal participation of scientists as regards geographic coverage in courses. This could be an excellent model for advanced level practical courses and workshops focusing on specific technologies that are being served by and taught at Euro-Biolmaging nodes.

## **7. Proposal for operational rules of training activities in biological and medical imaging in the Euro-Biolmaging Framework**

For the purposes of this proposal we have taken into account three possible scenarios of assuring the quality of training in biological and medical imaging. The first scenario introduces an independent quality assurance system within the EuBI infrastructure. The two other scenarios are based on a possible cooperation with EMTRAIN.

EMTRAIN is considering the extension of the on-course database so that it would provide a trans-infrastructural platform for quality assurance of training activities within BMS ESFRI projects. The on-course database would then cover training activities of all BMS ESFRI projects. The discussion on closer cooperation between EMTRAIN and BMS ESFRI projects, including implementation of IMI quality standards within BMS ESFRI projects and use of on-course database as the common e-repository for training activities of participating BMS ESFRI projects is in an early stage. Therefore we cannot envisage at this stage how deep the cooperation will be and under what conditions it would be possible for BMS ESFRI projects to accede the EMTRAIN initiative.

The training in the EuBI framework will focus primarily on training of users of infrastructures containing primarily high level hands-on workshops and courses located directly at the core facilities (sometimes, but not necessarily, also in university locations). This type of training activities changes dynamically as technology evolves rapidly. Therefore one of the topics that will be addressed together with EMTRAIN will be the possibility to adapt the criterion “University accreditation or an equivalent system for approving, monitoring and reviewing the training offered”. We will discuss with EMTRAIN the possible replacement / extension of university accreditation criterion by the “EuBI node accreditation”. Then we would test the suitability of the “on-course” database for EuBI training needs in a proof-of-concept.

For this reason, we have prepared this paper for a 1<sup>st</sup> scenario with the possibility to incorporate EuBI system for quality assurance of training activities into EMTRAIN framework in the future.

### 1<sup>st</sup> scenario – independent system within EuBI infrastructure

EuBI will introduce its own operational rules for training activities and will evaluate the compliance with the rules by using its own systems such as submission system, e-repository etc.

This system is described in this report.

### 2<sup>nd</sup> scenario

EuBI will introduce its own operational rules which will be compatible with IMI quality standards. EuBI will evaluate the compliance with EuBI standards with EMTRAIN close cooperation (on-course project) by taking advantage of EMTRAIN software and already establish evaluation procedures.

### 3<sup>rd</sup> scenario

EuBI, as well as other participating BMS ESFRI projects, will delegate its competence of introducing and evaluating of operational rules of training activities to EMTRAIN.

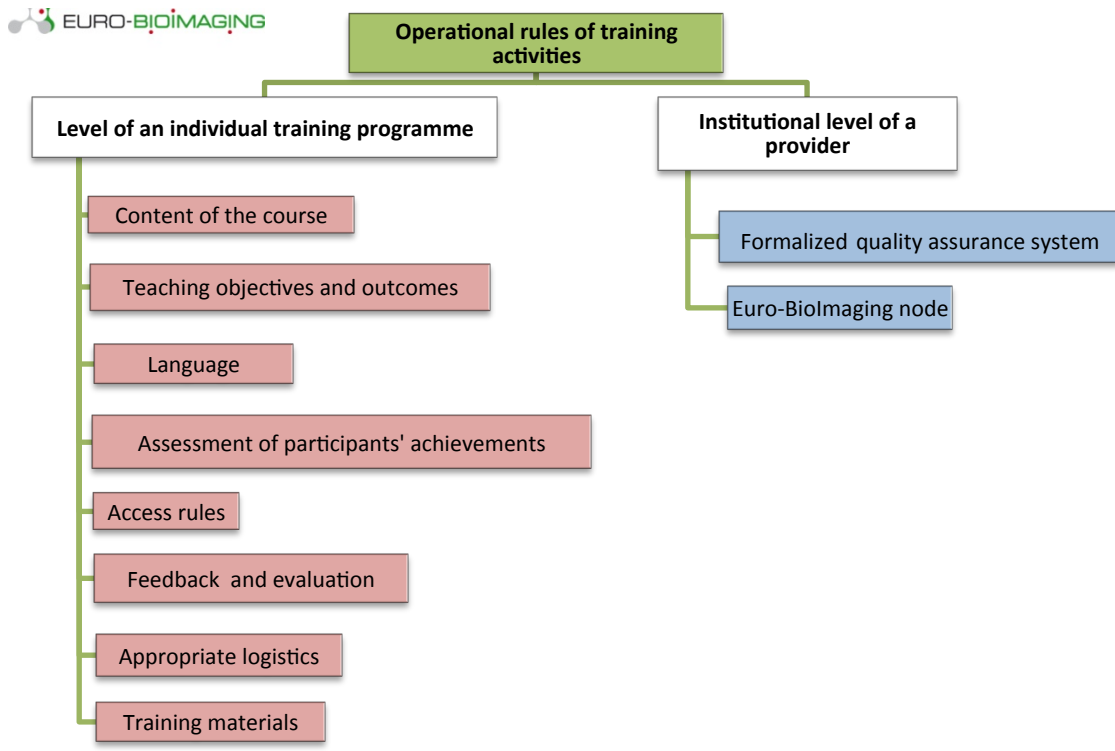
Our priority is to design a system of operational rules that would be sufficiently flexible and adaptable for different types of training activities ranging from conventional face-to-face courses to new types of training activities such as webinars and interactive on-line courses. We also aim to introduce a minimum set of requirements for training activities that would allow users to get transparent and comparable basic information on a training activity.

We propose to use a two-level system of criteria for evaluating training activities within the EuBI context (Fig. 2):

- **Specific training requirements** (binding requirements) - criteria related to an individual training activity.
- **Institutional criteria** (additional criteria) - criteria related to the institutional aspects of a provider of a training activity.

The scientific communities in biological and medical imaging expressed their main interest in practical and theoretical face-to-face courses in the pan-European EuBI survey, therefore the quality criteria are mainly targeted at this type of training activities. However, they may be easily modified for other types of training activities as well.

Fig. 2 Operational rules



### 7.1. Requirements related to an individual training activity

Operational rules related to an individual training activity constitute the core quality criteria we will assess within EuBI. We propose two levels of criteria:

- ‘Minimum requirements’ – to fulfil these set of requirements is mandatory for registering in the EuBI e-repository of training activities

‘Minimum requirements’ will contribute to dissemination of information on available training activities in biological and medical imaging. We will also map current availability of courses, which will provide supportive information for gap analysis in training. We would like to match training supported by EuBI with emerging imaging technologies as identified in our survey.

- ‘EuBI stamp of excellence’ requirements

We believe that a set of requirements for obtaining the ‘EuBI stamp of excellence’ may be used by providers as a reference tool of quality criteria for preparing training activities in biological and medical imaging, even if they do not aspire to apply for an ‘EuBI stamp of excellence’ but may head towards ‘EuBI stamp of excellence’ in the future.

### 7.1.1. Minimum requirements

In order to be listed in a reference web resource for training in biological and medical imaging, the following minimum set of requirements will have to be fulfilled:

- Relevant content of a training activity
- Basic identification information on the activity and its provider (title, organiser, place, date, access rules, fees, target group, short annotation)

The aim is to provide an inclusive all-embracing platform for promoting all types and levels of activities in biological and medical imaging with a potential to identify new training activities useful for future needs of the imaging community. This information should also assist users in simple searching for suitable training activities.

### 7.1.2. 'Euro-Biolmaging stamp of excellence' requirements



These requirements will have to be met by an individual training activity in order to become 'an activity under the auspices of the EuBI project'. This recognition will indicate a high quality training activity both as regards the content and organizational aspects.

Prerequisite conditions for training activities assigned with 'EuBI stamp of excellence':

- Content covering imaging technologies served by EuBI
- Open access to training activities for users
- Compliance with access rules defined by EuBI
- Course taught in English
- Comprehensive description of a training activity, including learning outcomes (as defined by the EuBI training office)
- A system for collecting, assessing and addressing feedback from participants and teachers in place (as defined by the EuBI training office)
- Suitable venue for training activities providing all the necessary facilities, accommodation and competent supportive/administrative staff
- Available and updated high-quality training materials

As an example, this is a model record for a training activity in the EuBI e-repository:

Compulsory fields:

<b>Title</b>		
<b>Annotation</b>		
<b>Location</b>	<b>Dates (from - to)</b>	
<b>Provider</b>	<b>Contact details</b>	<b>Course website</b>
<b>Target audience</b>	<b>Access rules – fees, availability of bursaries</b>	

Additional fields (for informative purposes only):

Detailed course description – learning outcomes (knowledge and understanding, skills and abilities, judgement and approach), course prerequisites, teaching methods, supporting training materials	Accreditation	EuBI node
	ECTS credits Position in the education system (Bachelor, Master, PhD, CPD)	Formal quality assurance system

## 7.2. Additional criteria related to the institutional aspects of a training provider

Quality criteria related to the institutional aspects of a provider are important indicators of overall quality and performance. The universities, which are the ones providing the highest number of training activities, usually comply with EHEA standards and guidelines for the quality assurance or with standards that are implemented in national accreditation procedures for higher education programmes. Compliance with these standards is a reliable indicator of the quality of the processes of the institution.

In our opinion, it is questionable to establish a special set of detailed requirements at the institutional level and evaluate them within EuBI infrastructure. Therefore we suggest not imposing specific requirements of training providers at the institutional level, but rather building on existing quality assurance schemes. We propose to monitor two criteria for the purposes of the EuBI training strategy:

- The first criterion will monitor whether a provider of a training activity has implemented a formalized quality assurance system.
- The second criterion will indicate whether a provider is a node of the EuBI infrastructure.

This information will provide users with a sufficient picture on operational rules provided by a provider. Monitoring of the above mentioned two criteria will not impose additional administrative burdens on the providers because it will build on existing institutional evaluations.

### 7.3 Summary of Euro-Biolmaging criteria

The criteria introduced in previous chapters are summarized in the following table. Furthermore description of different options for each criterion and their eligibility for 'EuBI minimum criteria' and 'EuBI stamp criteria of excellence' is indicated.

Criterion	Outcome
<b>Content of the course</b>	
<ul style="list-style-type: none"> <li>Course covers imaging technologies served by EuBI.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'. <sup>9</sup>
<ul style="list-style-type: none"> <li>Course covers other areas related to imaging.</li> </ul>	Course fulfils criterion for being enlisted in e-repository.
<ul style="list-style-type: none"> <li>Content of the course does not have any relation to imaging.</li> </ul>	Course is not eligible for 'EuBI stamp' and EuBI repository.
<b>Definition and transparency of the access rules</b>	
<ul style="list-style-type: none"> <li>Open access to the course + compliance with EuBI access rules.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>Restricted access to the course.</li> </ul>	Course fulfils criterion for being enlisted in e-repository.
<ul style="list-style-type: none"> <li>No information on access rules available in course description.</li> </ul>	Course is not eligible for the 'EuBI stamp' and EuBI repository.
<b>Language</b>	
<ul style="list-style-type: none"> <li>Course is taught in English</li> </ul>	Course fulfils criterion for the 'EuBI stamp' and EuBI repository.
<b>Predefined set of teaching objectives and outcomes</b>	
<ul style="list-style-type: none"> <li>Course has a comprehensive description prescribed by the EuBI training office.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>A short description of the course is available.</li> </ul>	Course fulfils criterion for being enlisted in e-repository.
<ul style="list-style-type: none"> <li>No description of the course is available.</li> </ul>	Course is not eligible for the 'EuBI stamp' and EuBI repository.
<b>Application of a feedback / evaluation system from participants and teachers</b>	
<ul style="list-style-type: none"> <li>A feedback system is implemented.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>No feedback system is implemented.</li> </ul>	Course fulfils criterion for being enlisted in e-repository.
<b>Assessment of the participants' achievements</b>	
<ul style="list-style-type: none"> <li>Formal assessment is implemented.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>Informal assessment is implemented.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>No assessment is implemented.</li> </ul>	Course fulfils criterion for being

<sup>9 9</sup> If a course fulfils criteria for 'Euro-Biolmaging stamp' then it is automatically eligible for being enlisted in e-repository of training activities.

	enlisted in e-repository.
<b>Venue with suitable training infrastructure</b>	Training facilities, accommodation, competences of support staff
<ul style="list-style-type: none"> <li>Venue offers all necessary infrastructure for training.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>Venue provides partial infrastructure. Some of the services are not available on-site.</li> </ul>	Course fulfils criterion for being enlisted in e-repository.
<ul style="list-style-type: none"> <li>No information about the venue of the course available.</li> </ul>	Course fulfils criterion for being enlisted in e-repository.
<b>Available and updated training materials</b>	
<ul style="list-style-type: none"> <li>Updated training materials are available for students.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>No training materials available for students.</li> </ul>	Course fulfils criterion for being enlisted in e-repository.
<b>Quality system applied by the institution</b>	
<ul style="list-style-type: none"> <li>Provider has a formalised quality system that is recognized externally.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>Provider has an internal quality system.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>Provider has not implemented a quality system.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<b>Euro- Biolmaging Node</b>	
<ul style="list-style-type: none"> <li>Provider is a EuBI node.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.
<ul style="list-style-type: none"> <li>Provider is not a EuBI node.</li> </ul>	Course fulfils criterion for the 'EuBI stamp'.

## 8. Comparison of proposed quality criteria on training with IMI Education and Training Shared Quality Standard<sup>10</sup>

We compare compatibility of proposed criteria for training activities within EuBI framework with the IMI standards because as we mentioned previously, IMI quality standards may create a suitable framework for quality assurance of training activities in biomedicine.

### 8.1. Criteria related to the individual training activity

Criterion	IMI Criterion
Content of the course	Yes, partially EMTRAIN catalogue of scientific areas is not sufficiently detailed for EuBI purposes (areas covered – Imaging, Microscopy) but expansion of thesaurus and keywords is projected.
Definition and transparency of the access rules	Yes

<sup>10</sup> [http://www.on-course.eu/cpd\\_quality\\_criteria.htm](http://www.on-course.eu/cpd_quality_criteria.htm)

Language	Yes
Predefined set of teaching objectives and outcomes	Yes
Application of a feedback system from participants and teachers	Yes
Assessment of the participants' achievements	Yes
Venue with suitable training infrastructure	Yes
Available and updated training materials	Yes

## 8.2. Additional criteria related to institutional aspects of a provider

Criterion	IMI Criterion
Quality system applied by the institution	Yes
Euro- Biolmaging Node	Not yet This criterion is not listed in IMI standards but it would be possible to cover this criterion under the field "Professional/scientific organizations that recognize this institution".

The comparison shows that a vast majority of the proposed EuBI criteria for training activities is consistent with those from IMI quality criteria selection. Modification of on-course database which provides a platform for analysis of compliance of training activities in biomedicine with IMI quality standards would be necessary in areas specific to EuBI, e.g. further expansion of on-course thesaurus (implementation of MESH headings for imaging technologies), incorporation of EuBI infrastructure into list of professional bodies that recognize the providers (EuBI node, 'EuBI stamped' training activity). EuBI work package 13 (Training) has been participating in EMTRAIN Strategic Board meetings where the EMTRAIN cooperation with BMS ESFRI projects is discussed.

## 9. Evaluation procedure of training activities in Euro-Biolmaging infrastructure

We assume that the evaluation process for the 'EuBI stamp' will be conducted by a future EuBI central governance body. The concrete evaluation procedure will be defined at a later stage as a part of the definition of the role and tasks of a training office (Deliverable Euro-Biolmaging Training Office: Structure and operational rules of a specialized training office D13.5 – due at month 30).

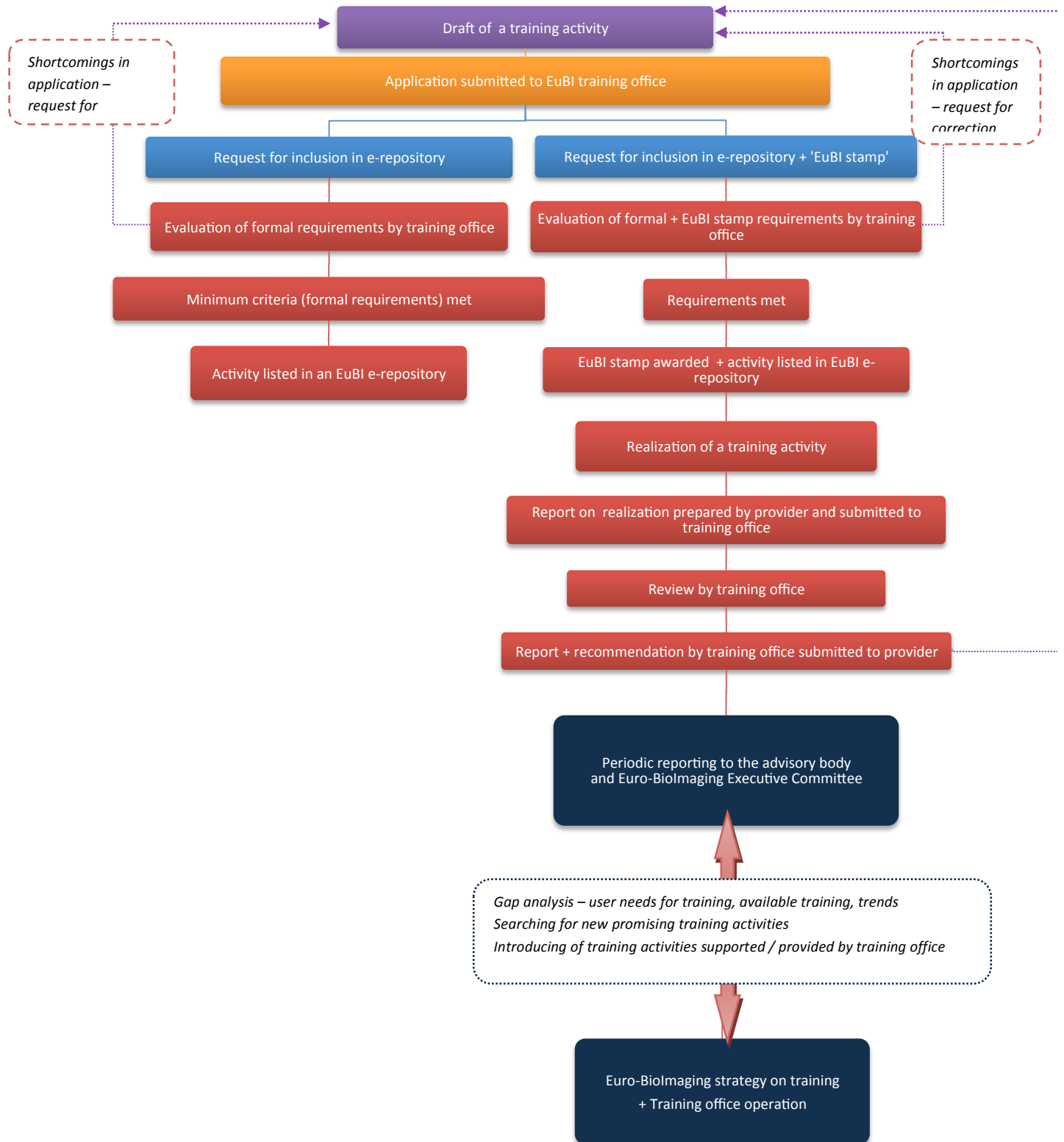
An evaluation process within EuBI could run as follows: The EuBI training office creates a standardized electronic form. A provider that wishes to receive an 'EuBI stamp of excellence' for its training activity completes the form and submits it to the EuBI training office. The office evaluates and verifies the information provided and if all requirements are fulfilled, a training activity is awarded with the 'EuBI stamp'. The provider is granted the right to use the 'EuBI stamp' – EuBI quality certificate. Sites that have been already certified will be periodically reviewed by the central EuBI advisory body and evaluation scheme (to be defined in the EuBI governance procedures) to ensure that they continue to meet the EuBI stamp of excellence criteria.

EuBI quality certificate can be used in all materials related to a training activity. The activity will be recorded in the EuBI training e-repository. After a training activity finishes, a provider collects the feedback from all participants using a standardized procedure, summarizes and comments on the



collected information (including suggestion for improvements), and submits a standardized report to the training office for a final assessment. A whole procedure is illustrated in Fig. 3.

Fig. 3 – Scheme of the evaluation process



## 10. Conclusions

This deliverable is presented in the half of the EuBI preparatory phase. So it is important to highlight that the quality assurance system in detail will be further developed closer to the end of preparatory phase. We should take into account also emerging initiatives striving for closer cooperation and harmonization of training in biology and biomedicine. In our opinion, IMI quality standards may already create a good starting point for a harmonized evaluation of training activities across different BMS ESFRI projects. In this context cooperation with other BMS ESFRI projects and EMTRAIN will be further intensified.

EuBI aims to establish a pan-European coordinated training system in biological and medical imaging. It will contribute to a better awareness on training in imaging among all scientists in biology and medicine. By introducing standards for training activities under EuBI umbrella, a high quality of training will be assured overall Europe. Thus EuBI will promote transnational access to training.

We believe that we lay foundations of pan-European training in biological and medical imaging. It will be a dynamic system that would allow analysis of trends in training in imaging and react on them across Europe. We assume that the key role in training in biological and medical imaging will be played by future EuBI nodes although we want to cover also directly relevant training activities provided outside of EuBI infrastructure.

We are convinced that this document might be useful for training providers in biological and medical imaging because it gives them an initial framework on how the EuBI foresees quality assurance of training activities that will be provided under EuBI umbrella. It should serve mainly as guideline for training providers in biological and medical imaging at this stage.

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### List of abbreviations:

BMS	Biological and Medical Sciences
CPD	Continuous Professional Development
D	Deliverable
ECTS	European Credit Transfer System
EHEA	European Higher Education Area
EMBO	European Molecular Biology Organization
EMTRAIN	European Medicines Research Training Network
ENQA	European Association for Quality Assurance in Higher Education
ESFRI	European Strategy Forum on Research Infrastructures
EuBI	Euro-Biolmaging
IMI	Innovative Medicines Initiative

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T	Task
WP	Work Package

**References:**

ENQA report on Standards and Guidelines for Quality Assurance in the European Higher Education Area. Helsinki, European Association for Quality Assurance in Higher Education. 3<sup>rd</sup> edition (2009).

Klech, H., et al. European initiative towards quality standards in education and training for discovery, development and use of medicines. Eur. J. Pharm. Sci. (2011), doi:10.1016/j.ejps.2011.12.005

European Medicines Research Training Network (EMTRAIN). <http://www.emtrain.eu/>

EMBO Practical Courses: Advice for organizers. <http://www.embo.org/programmes/courses-workshops/advice-for-organisers.html>