Project No. FP7 – 212348

NFFA

Nanoscience Foundries and Fine Analysis

D5.1

Scheme for training lessons for NFFA-RI staff

Work Package	**No.5**
Work Package Title	**Schemes of future dissemination activities**
Activity Type	**OTHER**
Lead Beneficiary	**No.3 CSIC-CNM**
Estimated P/Ms	**3**
Nature	**Report**
Dissemination level	**Public**
Delivery Date	**Contractual M 20 Actual M 20**
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Delivery Slip

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From	CSIC	17/02/10	Luis Fonseca
Reviewed by	All	01/04/10	All
Approved by	Coordination Board	01/04/10	CB

Document Log

Issue	Date	Comment	Author
0-0			
0-0			

Document Change Record

Issue	Item	Reason Change
1-0	Revision 1	Text improvements and paragraph addition in §3.2

TABLE OF CONTENTS

Deliverable D5.1: Scheme for training lessons for NFFA-RI staff

1. INTRODUCTION

1.1. Purpose of the document

The purpose of this document is to identify the training needs of the staff of the NFFA-RI and describe how they would be implemented in the NFFA Centres.

1.2. Application Area

The targets of this document are the members of the NFFA Project, the EC Project Officers, and the general public.

1.3. References

Description of Work (DoW). See at web site:
http://www.nffa.eu/FileObjectData.aspx?IdFile=11&IdCategory=8&IdParentCategory=&IdFullCategory=8

1.3.1. Objective of Work Package 5

- Develop actions aimed at increasing the amount of competences in nanoscience methods.
- Training of NFFA-RI staff to users access. Scientific and technological training of users involved in NFFA-RI activity
- Advanced training for nanoscience and nanotechnology operators and researchers.
- Dissemination material and writing of the NFFA book.

1.3.2. Description of work broken down into tasks

The following tasks are defined in WP5:

T5.1) Preparation of schemes for Training Lessons/courses for NFFA-RI staff, focused on transfer of know-how to potential users, optimisation of access within the NFFA facility, time sharing and use at LSF. Access to the NFFA-RI facility will require a specialized training of the staff researcher.

T5.2) Preparation of schemes for Training Lessons/courses for potential users, dedicated to the co-ordinated access to existing facilities within NFFA-RI. Specific training, with a full understanding of a common policy within the scientific/technical activity, will guarantee a fruitful use of the sophisticated tools available at the facilities. Researchers from collaborating institutions will, through short term visit/training courses, increase their knowledge in terms of potential use of the NFFA-RI tools. This will take place in the future

NFFA-RI operating facility. Schemes for periodic NFFA-RI summer schools and open conferences will be defined in order to reach the widest public and promote the use of the Data Repository.

T5.3) Writing and distribution of a book about the NFFA concept and its roadmap of development in the relevant fields of nanoscience. Publication and distribution of the NFFA book.

2. EXECUTIVE SUMMARY

This document describes the rationale behind implementing training schemes at the NFFA sites. Two communities will meet at those sites: NFFA scientific/technical staff and external users. Both are susceptible of being the target of specific training schemes. This deliverable deals with devising a training scheme exclusively for the NFFA staff.

The internal NFFA training is seen to serve two purposes. First, to assure safe and professional operation of NFFA sites. Second, to keep scientific and technical proficiency of NFFA staff. For the latter, the scientific environment of each site should be put into use, and the collective expertise of the high level scientists and technicians of the rest of NFFA sites should be put in common. For the former, NFFA staff should be trained to be the first ambassadors of the NFFA concept, and to meet user's expectations. It has to be taken into account that interests of the NFFA site research program itself may conflict occasionally with some user demands. For this reason, conflict of interest resolution should be part of the training.

The punctual or periodic nature of different training schemes is discussed. In any case, on going NFFA operation should help to refine and update some of the training topics, especially those leading to a 'best practice' approach to interaction with users.

3. SCHEMES FOR TRAINING LESSONS FOR NFFA STAFF

3.1. Rationale of training schemes at NFFA sites

It is advisable that any state of the art user facility has a training program and NFFA is not an exception. Moreover, NFFA particularities (nano-orientation, geographical distribution and close links to partnering Fine Analysis Large Scale Facilities) recommend thinking about the nature and objectives of such training, and what schemes will optimally exploit those particularities in order to provide the best training and education platform possible.

In the NFFA scenario two communities come together - staff researchers/technicians and external users - with the appointed objective of extracting maximum profit from the available technical infrastructure and shared brain power. To accomplish this goal certain preparation and training is needed for both groups.

A sketch of the type of training topics and actions involving internal staff and external users is depicted in Figure 1. The goal is to assure a lively environment from a scientific and technological point of view while facilitating to the external users the access to the material and human resources needed for developing their approved projects.

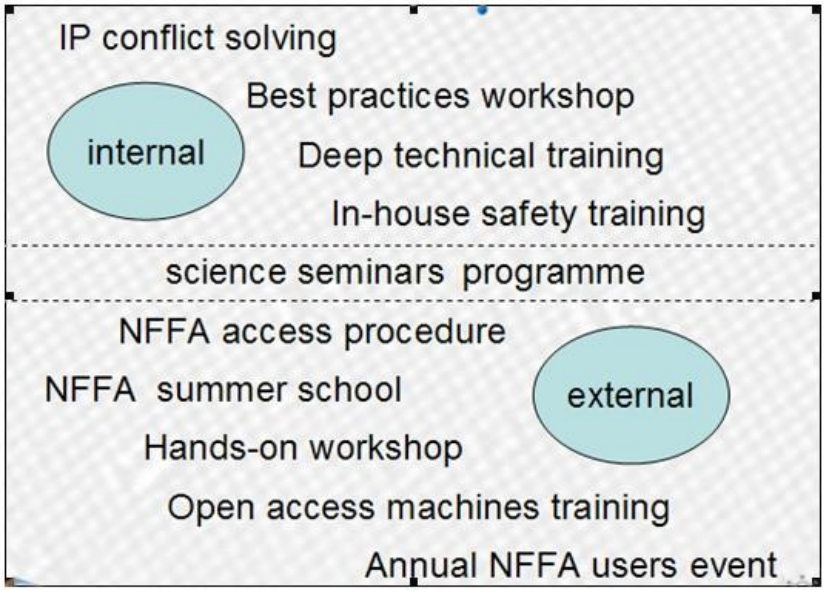

Figure 1. Generic training topics and events in connection with the NFFA internal and external potential audience

This deliverable deals with training schemes for NFFA staff in order to assure an efficient and smooth NFFA operation. A fellow deliverable will deal with the training schemes aimed to external users to achieve the same goal. Additionally, this second deliverable also will consider wider outreach and educational actions to better empower the NFFA concept.

Non-surprisingly, both, staff and external users will share common training topics in some cases. The basic difference between them will be the periodicity of such courses and the degree of detail attained. Certainly for any common topic NFFA staff will be trained to a deeper level (at least as deep as to become good trainers themselves when interacting with external users)

3.2. Objectives of an internal training scheme

The generic objectives of the internal training schemes are therefore

- assuring overall safety operation avoiding personal damages and equipment damages by misuse
- guaranteeing flexible operation of the facilities
- assuring an adequate interaction with the users
  - How to organize and monitor the different user access modes (open, limited, remote and e-access)
  - How to adequately transfer know-how
- keeping (and improving) the internal best practices and quality standards

The training activities should be devised in a way that reinforce the specificities of NFFA such as the distributed nature of NFFA infrastructure, the abiding to common metrology standards, the intention to set up a meaningful Repository and encouraging its use, and the terms of the User Agreement regarding intellectual property

It is worth noticing that NFFA internal staff, both researchers and technicians, has a double mission:

- they have to act as guides/trainers/supervisors/necessary collaborators of external users
- they have to pursue a defined in-house scientific program

Certainly they should excel in both missions while avoiding conflict between these two roles. For that reason, the training that NFFA staff will receive will be aimed at making them proficient in the exploitation of the technical capabilities of the NFFA site(s) for their own sake and for the external users sake, at making them apt to give assistance to external users, and to avoid conflicts of interest with those users that may be working in similar topics than the staff scientists themselves.

NFFA direction will assure that a good training team is available to fulfil the training objectives. Proper trainers can be found in the NFFA managing team for the administrative, mode of operation and user interaction issues. For the technical part, proper trainers shall be found among the recruited staff itself that in many cases will be top level experts in their field, while external trainers will be specifically appointed for others. For the latter a good relationship with the local academic environment or associated nearby nano-labs will be instrumental.

An important aspect is the full alignment of the NFFA centres in technical competences. This means that as new relevant equipment/new software new methods become available at one centre, the training on it should be extended also to the technical staff of other centres with direct competences on such methods and equipment. In this way NFFA technical staff will be able to operate also in all centres in case of need or for special projects that require to be carried out at more then one centre. This includes obviously also the possible case of temporary unavailability of some instrument/method due to failure or maintenance at one given centre. The alignment principle will allow the NFFA technical staff to be operational at the multiple sites of the distributed facility.

3.3. Punctual training to assure safe and professional NFFA operation

In order to achieve those objectives, the specific training may contain the following topics:

- NFFA generic concept, mode of operation and scientific/technical offer to the NFFA site, scientific/technical offer of associated LSF, and scientific/technical offer of possible associated nano-labs
- Safety training: civil building and lab operation
- Clean Room operation protocols

- In-depth technical training about in-house processes/equipment according to the different areas of competence (nanolithography and pattern transfer, material growth and synthesis, metrology, nanomanipulation, and nano-bio procedures as defined in WP3, for instance)
- Resolution of conflict of interests. Degree of involvement with users. User agreement clauses.
- Repository feed and use guidelines

With the exception of the in-depth technical training, the above training actions may be short (briefing type) or document based. After such training NFFA staff should be able to proceed in a safe and professional manner and to meet any reasonable expectation of NFFA external users. All the mentioned actions are rather punctual in time, only to be repeated for new recruitments or when changes in internal policies/protocols occur.

3.4 Periodic training to keep the staff technical/scientific proficiency

More periodic actions are also advisable to promote the continuous technical and scientific training of NFFA staff. These other actions may take the following form:

- Technical workshops about current and future techniques associated to NFFA operation.
- Science seminars program

In the first case, the fact of having a common infrastructure plus some more advanced pieces of equipment in the different NFFA sites should be exploited to keep the proficiency of the staff involved in the different areas of NFFA interest (as, for example, the ones specifically described in WP3 and enumerated in the previous section).

In the second case, such seminar program should be linked to the local science program of each NFFA site and will be driven by (and also addressed to) staff researches taking advantage of the NFFA environment and thus involving external users, as well as visiting experts and guest speakers.

3.5 Improving internal practices

Every time a certain period of time elapses it will be useful to organise an internal NFFA event aimed at analysing the different experiences collected after interaction with users in order to build up (first) and to update (later on) an internal ‘best practices’ document. User opinion expressed at annual NFFA user’s forum will be certainly taken into account.

All this information will also help to update and refine some of the courses of section 3.3.

4. SUMMARY AND CONCLUSIONS

Training schemes aimed to the NFFA staff are described in this deliverable. The objective of such internal training is to assure a safe, flexible and up to internal standards and up to users expectations operation of the facilities, across the whole set of methods and instruments available at the ensemble of NFFA facilities. They are divided in punctual training actions to make the staff apt to give assistance to external users, and periodic training actions to keep the staff proficiency taking advantage of the lively scientific environment that is expected to be created around, and among, NFFA sites. Also best practices when interacting with users will be periodically reinforced and updated as a result of internal workshops held to put in common issues arising from daily operation at the different NFFA sites. Conflict of interest resolution is one of those issues to be considered since NFFA staff is expected to be giving service to users but also pursuing a science program on its own.