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**Second Report on the incentivised
knowledge transfer and feasibility work
with industry**

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- PP - Restricted to other programme participants & EC: (Specify)
- RE - Restricted to a group (Specify)
- CO - Confidential, only for members of the consortium

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Executive Summary

Incentivised knowledge transfer (IKT) is provided within the context of actions in subtask 11.5.3. IKT is available to industrial users when they request an experiment, which presents a level of uncertainty. In this case, the facilities can decide to grant a feasibility access to the user and run a rapid measurement, which can clear the doubts and help identifying the most appropriate way to proceed. This access mode has been established to reduce the risks associated with industry experiencing long feasibility and pilot studies and enable a following peer-review or proprietary access.

This second report on the incentivised knowledge transfer and feasibility work with industry aims at describing the use of this tool by the partners of the NFFA consortium. This report will give also an update of the actions already initiated and described in the first report.

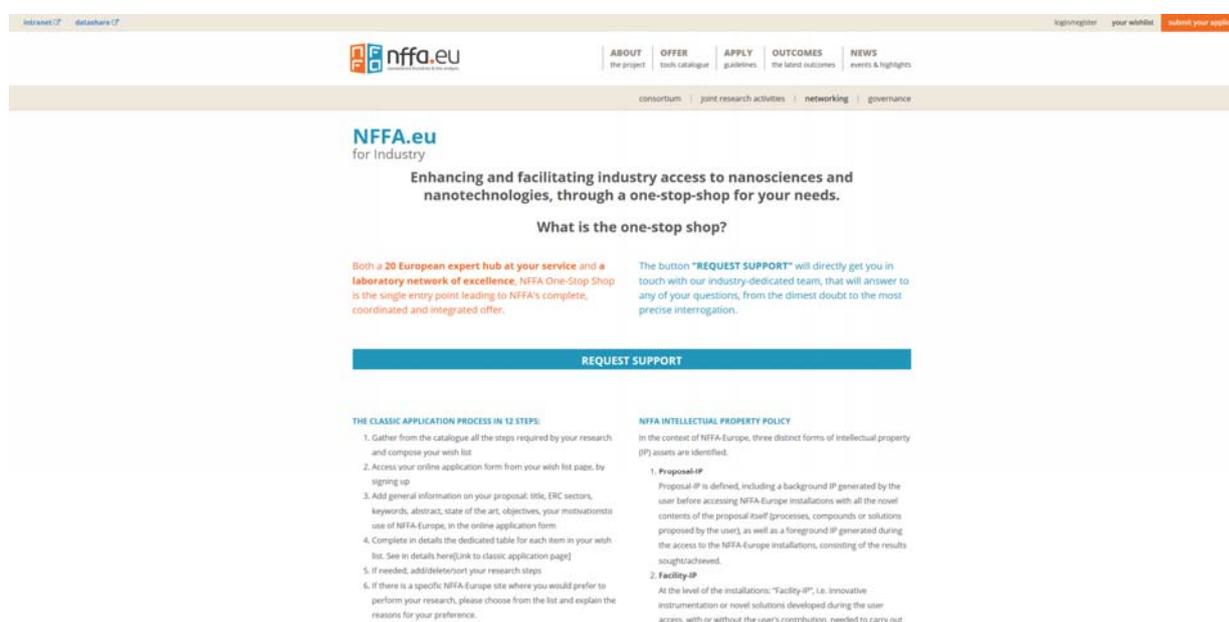
The main conclusion of the present report are the following:

- a) IKT was mainly established as a risk mitigation strategy to support the TNA access or, when needed a confidential access for large Companies (SME can already demand the results to be confidential).
- b) An advertising campaign have been put in place to outreach the industrial community, and the IKT was a key element of the NFFA strategy to engage with industry.
- c) Some IKT accesses have been realised along the project, but relatively limited with respect to the budget available.
- d) This is the proof that the transnational (TNA) programme worked very efficiently and that this access mode was adequate to satisfy the industrial need.

Furthermore, some suggestions are provided with reference to the impact of this tool with respect to the partner operations and the possibility to use this tool to better support the overall strategy of NFFA engaging with industry.

1. Note of context

1.1 Incentivised knowledge transfer for industry



The screenshot shows the NFFA.eu website interface. At the top, there is a navigation bar with links for 'ABOUT the project', 'OFFER tools catalogue', 'APPLY guidelines', 'OUTCOMES the latest outcomes', and 'NEWS events & highlights'. Below this, the main header reads 'NFFA.eu for Industry' and 'Enhancing and facilitating industry access to nanosciences and nanotechnologies, through a one-stop-shop for your needs.' A section titled 'What is the one-stop shop?' explains that it is a 20 European expert hub at your service and a laboratory network of excellence. A prominent blue button labeled 'REQUEST SUPPORT' is visible. Below the button, two columns of text describe the application process and intellectual property policy.

THE CLASSIC APPLICATION PROCESS IN 12 STEPS:

1. Gather from the catalogue all the steps required by your research and compose your wish list
2. Access your online application form from your wish list page, by signing IP
3. Add general information on your proposal: title, ERC sector, keywords, abstract, state of the art, objectives, your motivations and use of NFFA Europe, in the online application form
4. Complete in details the dedicated table for each item in your wish list. See in details here (link to classic application page)
5. If needed, add/delete/sort your research steps
6. If there is a specific NFFA Europe site where you would prefer to perform your research, please choose from the list and explain the reasons for your preference.

NFFA INTELLECTUAL PROPERTY POLICY

In the context of NFFA Europe, three distinct forms of intellectual property (IP) assets are identified.

1. **Proposal IP**
Proposal IP is defined, including a background IP generated by the user before accessing NFFA Europe installations with all the novel contents of the proposal itself (processes, compounds or solutions proposed by the user), as well as a foreground IP generated during the access to the NFFA Europe installations, consisting of the results sought/achieved.
2. **Facility IP**
At the level of the installations: "Facility IP", i.e. innovative instrumentation or novel solutions developed during the user access, with or without the user's contribution, needed to carry out

NFFA-Europe is equipped with a portal for industry, that is meant to harvest their needs and challenges (see the "REQUEST SUPPORT" button in the screenshot above), with a problem-solving approach to identify the most appropriate installations and assist the user in the submission of a well-structured proposal in terms of technical feasibility.

To help this interaction with industry, an incentivised knowledge transfer has been also put in place via the task 11.5. This access mode is proposed to industrial users when they request an experiment which presents a certain level of uncertainty/risk. Two main case scenarios:

- a) In case of a TNA access: to clarify some doubts which could compromise the technical feasibility;
- b) In case of a confidential access: to supply the company with a proof of concept/feasibility, demonstrating that the technique proposed is an adequate solution for their needs.

In this case, the facilities can decide to provide a feasibility access to the user to run a rapid measurement which can clear the doubts and help identifying the most appropriate way to proceed. The case A) is interesting for any kind of industry, while the case B) is mainly there for Large Companies, since the SME are allowed to keep their data confidential, also if the access is provided via the TNA.

NFFA-Europe address notable nanoscience research topics valuable to develop novel services for the users. In this respect, five Joint Research Activities with common needs across the consortium have been identified to advance on experimental, methodological, instrumentation and data management relevant topics. Although no requests have been requested so far, it is worth to remember that some of the JRAs outputs could be eligible for IKT to support technology transfer and industrial exploitation actions.

1.2 The special case of metrology

Among the objectives that NFFA addressed in its action there is the one to drive the development of “a common metrology for some selected techniques, where the reproducibility is not guaranteed” (subtask 11.1.4). Unfortunately, in general, it proved to be quite difficult implementing actions related to metrology via TNA. The reason is that, although useful and technically important, these actions are not considered scientifically excellent enough. For this reason NFFA granted the opportunity to carry on accesses supporting subtask 11.1.4, using some resources available in task 11.5.3, for feasibility access.

1.3 The budget available

Each node of NFFA-Europe has a dedicated budget to handle, under WP11, the task 11.5 Innovation and knowledge transfer for industry and the related activities. The feasibility studies is part of this task and can be financed with this budget. In following table 1, we report the initial budget for each node. The incentivised budget can support manpower cost for very limited access, but in no case will contribute for equipment rental/depreciation costs.

It is important to consider that there is no real budget allowed to IKT, nor specific KPIs dedicated to this task. The reason is that this access has been clearly conceived as an awareness tool to be used when and if necessary in the context of our activities of outreach to industry.

Table 1: the initial IKT budget for each node.

Summary	CNR	ESRF	CNRS	FORT H	Juelic h	K I T	LU	Pro mo sci en ce	PRUA B	S T F C	PSI	E P F L
Res PM	1	7	2	2	2		2		2		2	
Tech PM	4											
Travel	6000	18000	6000	6000	6000		6000		6000		6000	
Other goods/services	18000	13000	6000	6000	6000		6000		6000		6000	
Subcontracting												
TOTAL no overheads	45721	80581	26200	18400	26080	0	26000	0	24596	0	35000	0
TOTAL with 25% overheads	57151	100726	32750	23000	32600	0	32500	0	30745	0	43750	0

2. Status of IKT

2.1 IKT access with industry

Three cases of IKT access with industry have been carried out during the project so far, one at the ESRF, operated by the Grenoble node and two at the CNR-IOM operated by the Trieste node.

ESRF

The feasibility has been granted to a large tyres manufacturing company, which was interested to evaluate the possibility to use USAXS for the characterisation of some novel methodologies of lattice synthesis from aqueous system.

The incentive allowed the possibility to exploit 1 shift on the beamline ID02. The reason for the need of a feasibility access was that the company was potentially interested to operate a proprietary access or to put together a proposal for TNA, but before this, they needed to understand if SAXS was a suitable technique for their needs.

The experimental results have been promising and the data have been analysed by the company. Nonetheless, this access did not generate any further activity.

CNR-IOM

Up to now, the incentivised access for industry, has been used two times. The first time at the beginning of 2017 a big company operating in the field of industrial chemistry asked for the feasibility of Inverse Photo-Emission measurements. After an accurate writing of a Confidential Agreement on information and samples, the test has been carried out at the CNR-IOM labs in Trieste and a report was provided to the company, that subsequently asked for a quotation of a full experimental campaign. After the quotation provided by CNR, the company did not proceed to the final order.

The second time, at the end of 2018 an industry working in the field of biomedical materials and devices applied to the help-desk accessible on the NFFA-EU website, asking for technical information on Scanning Auger-electron Microscopy analysis or other microscopies with chemical sensitivity. CEA/LETI and CNR-IOM provided an extended discussion on the Forum opened by the help-desk, and a feasibility test has been carried out using X-ray Photo-Emission Electron Microscopy at CNR-IOM. At the end the SME decided to apply for a proprietary research directly to the Facility.

2.2 IKT access for metrology

Within the framework of ad-hoc access dedicated to support actions in metrology, an action has been carried out for the Cluster Beam Deposition (CBD) technique. It was decided to perform a comparison study of CBD, by applying the same recipe on similar apparatuses located in different access sites: one in Trieste at the Elettra synchrotron laboratory and one in Milano at UNIMIL partner premises. The work is still in progress. The activity planned for comparing the synthesis of advanced nanostructured materials, in particular by implementing similar recipes in similar Cluster Beam Deposition apparatuses, is in progress. A report will be provided and published on the NFFA-IDRP.

2.3 Promotion and use of IKT access

In the first half of the NFFA-Europe programme, the incentivised feasibility access has been poorly exploited, since the focus has been mainly placed on the dissemination and building awareness. As a result, a set of actions have been proposed:

- 1) clarify the modus operandi to exploit this tool with all the TLNet partners
- 2) fix clear objectives and better identify the potential industrial partners that could benefit from this access mode from the TNA programme
- 3) increase visibility on this tool also communicating with the industrial liaison offices of partner organisations
- 4) continue communicating on feasibility.

All those actions have been addressed by the Grenoble node, which is leading the task 11.5. The partners of the NFFA consortium have been informed about the opportunities offered by sub-task 11.5.3, the budget available and the way to use it. A marketing strategy has been defined to indicate the main industrial target that could benefit from this activity. Moreover, the feasibility instrument has been highlighted in the various outreach actions carried out for industry. Finally, a communication, that describe the opportunity, has been addressed to the TTO Circle (run by the EU Commission) and the IMKTT working group (run by the EIROForum).

3. Conclusions

The main conclusions matured with this typology of access offer is that the real interest in carrying out specific and professionally high level test was only concerning very confidential issues, with the perspective to apply for a proprietary research. As a matter of fact, whenever such a stringent confidential constrain does not exist, for the company is easier to apply for a normal proposal for open access and to proceed with the conventional process of technical and scientific evaluations. The high percentage of proposals submitted in connection with industry, as well as their success, in both case around the 10% of the total amounts, a score which double our initial target, may be a proof of such a conclusion.

Furthermore, we have to point out a major conclusion matured from feedback received by the partners, following the campaign of information mentioned in the last chapter (2.3). The partners clearly declared that the feasibility tool is quite inconvenient because they do not have the possibility to recover the full access costs (like for normal TNA), but only the manpower. Moreover, for what is about the use of this tool for stimulating TNA access, the providers are not motivated to communicate about this opportunity with their industrial contacts, because, in the case in which the access will be granted, due to the rule of transnationality, the access will not be carried onat their facility and this means that the effect of the trust established by the feasibility will be largely mitigated. In this respect, the main lessons learned are three:

- 1) A feasibility access is an effective tool for risk mitigation. As any risk mitigation tools, its success should not be measured in terms of the extent of use, but more in terms of opportunity enabler.
- 2) the use of the ikt should be part of an integrated outreach action to industry, centrally coordinated by the task leader, since the partners are not motivated to push this opportunities with their local industrial communities due to the rule of transnationality.
- 3) The IKT is not attractive for access providers because it costs more than TNA.