



WP1.D1.2 SNETP Database of Users Facilities

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Document information

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Summary

The present document is the description of the current EUFN database which identifies the facilities (R&D labs) of the European User Facility Network (EUFN) set up within the framework of the EU-OFFERR Project.

This database has three purposes as described hereafter:

- Update and consolidate the SNETP User facilities database per relevant categories.
- Set-up the European User Facility Network (EUFN) organized in topical clusters.
- Assess and consolidate the complementarity of services and access conditions within the different clusters.

This database has been elaborated with the support of SNETP platform within the contribution of European participants of the OFFERR project.

The European OFFERR project is ongoing since September 2022 and its duration is four years from 2022 to 2026.



OFFERR Project summary

The overarching objective of the EU-OFFERR project is to support the SNETP association to establish an operational scheme facilitating access for R&D experts to key nuclear science infrastructure – hereinafter referred to as “User Facilities” – through the channeling of financial grants provided by the Euratom Program. The beneficiaries of the scheme will be, first, the User Facilities to be funded directly from the OFFERR project for their services provided to projects selected through OFFERR calls, and second, the research teams that have successfully applied through the calls and were allowed to use the User Facilities for their project purposes – hereinafter referred to as “Visiting Teams”.

References

Ref.	Description
[R1]	EU OFFERR Grant Agreement n°101060008
[R2]	EU OFFERR Website https://snetp.eu/offerr-european-user-facility-network/
[R3]	THE OFFERR PROJECT: a User Facility Network to support nuclear infrastructure and education and in Europe. Abstract ANIMMA
[R4]	EU OFFER WP1.1 D1.1 Deliverable. EU submission 2022, dec.05 th
[R5]	OFFERR EUFN Database (version Feb. 2023)
[R6]	OFFERR EUFN Brochure (version Feb.2023)

Abbreviations and acronyms

ACRONYM	DESCRIPTION
EUFN	European User Facility Network
IP	Intellectual Property
OFFERR	eurOpean platForm For accEssing nucleaR R&d facilities
WP	Work Package
R&D	Research & Development
SNETP	Sustainable Nuclear Energy Technology Platform



1. OFFERR Project Overview

1.1 Introduction

OFFERR is a new European project [R1, R2]. The OFFERR acronym stands for eurOpean platForm For accEssing nucleaR R&D facilities. The main objective of the project is to set up a European User Facility Network (EUFN) and to establish an operational scheme facilitating access to key nuclear science infrastructure for R&D experts, and for students, through the channelling of financial grants provided by the Euratom programme.

OFFERR is a four-year long project that was submitted to the NRT-12 Euratom call in 2021; it was accepted in June 2022 and launched in September 2022. OFFERR will be very helpful for the scientific community by providing funding for sustaining critical infrastructure and by giving young researchers access to these facilities [R3].

1.2 Reminder of the needs

On the one hand, Europe has many facilities on its soil, but on the other, many of them are ageing. Some of our key infrastructures have been built 60 years ago. They have been launched to make the studies used to launch the first commercial nuclear reactors in Europe. Many facilities in the nuclear domain are quite old. Some of the key facilities have been closed due to safety or there is a need in Europe to fund and help user facility owners to keep their facilities in operation.

Our commercial reactors are now old, and our experimental facilities are mandatory to predict their ageing and help study Long Term Operation (LTO) issues. The network of nuclear facilities is also a key to study new build and the next generation of commercial reactors.

Energy production is a major issue in Europe, and because nuclear energy is a chance for us, we need to do our best to mutualize our efforts in the experimental field. This is the goal of the OFFERR project to build this European User Facility Network.

We also need to build new European nuclear infrastructure to prepare the future of research.

The OFFERR project will launch a call for application to use the facilities of the network. These applications with a high scientific value are the best way to use these facilities. Facilities and applications will be structured into clusters and evaluated by a panel of independent experts in the nuclear field. Only the best applications will be selected on the base of a transparent evaluation process. They will be funded, mainly through the Financial Support to Third Party process defined by the European Commission.



In the framework of the OFFERR project, financial support from EC (EURATOM) will be made available to User Facilities and Visiting Teams for transnational access. The financial support will be granted to proposals jointly prepared and agreed by the visiting team and the user facility after an independent validation and evaluation of proposals.

1.3 Project processing

The OFFERR consortium is made up of seventeen members including industrial companies, universities, and research centres like the Joint Research Centres (JRC).

OFFERR is coordinated by a utilities company, EDF.

The main aim of OFFERR is to fund applications that use the European User Facility Network (EUFN), with a dedicated budget of 7.2 million euros to finance these applications.

The OFFERR project is structured into seven work packages: set up of the User Facility Network, definition of the call for access to facilities, evaluation of the application proposals, interactions with other international initiatives, dissemination and exploitation of the results, management and communication, and management of the access to infrastructures.

It should be noted that, within OFFERR project, there are two types of proposals: fast-track and complex proposals.

Fast-track proposals are limited to a total OFFERR EC funding (User Facility + Visiting Team) of less than 50 k€ and a duration of the experimental activity (once started) of less than six months.

Fast-track proposals are subject to less conditions and their selection and evaluation should be simpler and faster. Several tens of FastTrack proposals are expected along the four years of the OFFERR project.

The complex proposals might have more conditions and require more time but can request up to 1 M€ OFFERR support. Less than twenty complex proposals are expected along the OFFERR duration and very few of them above 300 k€.



1.4 Applicant selection process

The text of the call and the different criteria (eligibility and evaluation criteria) are currently being written. The text of the first call for projects will be published by the end of March 2023.

Cut-off dates will be defined every six months.

- For fast-track applications, with a budget below 50 k€ and a duration below 6 months, the first cut-off date will be at the end of May 2023 and the first projects will be launched in August 2023.
- For complex applications, with a budget above 50 k€, the first cut-off date will be at the end of August 2023.

Then, the applications will be evaluated and selected. The possible application areas are the following:

- light water reactor sustainability,
- advanced fission reactors,
- waste and decommissioning,
- nuclear science,
- advanced nuclear fuels,
- innovation in instrumentation,
- Radioprotection and nuclear medicine.

The beneficiaries of this scheme will be, firstly the User Facilities and, secondly the research teams.

The former are funded directly by the OFFERR project for the services they provide (depreciation, operational costs), and the latter will receive a part of the funding for eligible costs (travel, accommodation, subsistence).



2. The EUFN DataBase

2.1 Objective

The objective of the EUFN database is to set up a European Network of user-facilities (R&D labs in support of Nuclear Activities). This Network is proposed in support of SNETP.

In order to facilitate the preparation of such proposals, OFFERR requires that each of the candidate facilities for funded visits prepare a Factsheet. The Factsheet has three purposes:

- Providing a technical description of the facility to help visiting teams identify potential facilities matching the needs for the intended experimental activities. This is managed by a general technical page together with a more specific page for facilities of similar type,
- Reminding and to identifying potential technical conditions, of safety or administrative that could limit the feasibility of the proposed activities for the facility,
- Confirming the commitment from the facility owner to participate in the process of transnational access to facilities with the conditions of OFFERR and of the funding from EC/EURATOM.

The templates of the Factsheets for EUFN database elaboration are given through D.1.1 deliverable [R4].

2.2 Highlights

At the beginning of 2023, the first European User Facility Network for OFFERR project has been elaborated with around 185 facilities grouped into different technical clusters corresponding to different research areas.

The list of the main clusters identified in the database is reminded hereafter:

REFERENCE	DESCRIPTION
CL1	Neutronic Research Area
CL2	Radiation & Radiation Protection
CL3	Radiochemistry Research Area
CL4	Thermal Hydraulic Research Area
CL5	Material Research Area
CL6	NPP Safety Research Area
CL7	Modelling & Simulation Area
CL8	Nuclear Waste (EURAD)
CL9	Radiation Protection (PIANOFORTE)
CL10	Nuclear Materials (ORIENT-NM)
CL11	All

Table 1: list of clusters



Each of the facilities will be precisely described by a factsheet that gives information in different fields, and even information specific to the facility category, to help the applicants select the right facility and answer the call.

The catalogue of the facilities and the detailed factsheets will be easily accessible on-line on the OFFERR project website [R2]. Note that an illustrated catalogue is also proposed [R6].

The first set of EUFN Database production indicate the following characteristics:

- ✓ 185 facilities have been identified representing R&D institutes, industries and academics
- ✓ 20 countries & EU institutions (JRC) are represented.
- ✓ 1 to 45 facilities have been proposed by country.

The next table indicate the current status of OFFERR facilities database (v23 feb. 24th)

COUNTRY	OFFERR CONTACT POINT	ACRONYM	FACILITIES PROPOSAL
Belgium	jan.wagemans@sckcen.be	BE-x	6
Croatia	jakub.luley@stuba.sk	CR-x	1
Czech Republic	jiri.zdarek@ujv.cz	CZ-x	15
Finland	Arto.Kotipelto@vtt.fi	FI-x	9
France-EDF	charles.toulemonde@edf.fr	FR-Ex	5
France-CEA	Stephane.gaillot@cea.fr	FR-Cx	23
France-IRSN	Emmanuel.rougé@irsn.fr	FR-lx	17
Germany	joerg.starflinger@ike.uni-stuttgart.de	GE-x	24
Hungary	jiri.zdarek@ujv.cz	HU-x	19
Italy	gabriel.pavel@enen.eu	IT-x	4
Lithuania	gabriel.pavel@enen.eu	LI-x	3



Norway	To be precised	NO-x	1
Poland	jiri.zdarek@ujv.cz	PO-x	13
Romania	jiri.zdarek@ujv.cz	RO-x	3
Slovakia	jakub.luley@stuba.sk	SLOVK-x	11
Slovenia	jakub.luley@stuba.sk	SLOVN-x	3
Spain	Enrique.gonzalez@ciemat.es	SP-x	10
Switzerland	oliver.martin@ec.europa.eu	SW-x	1
The Netherlands	hunterlaar.nrg.eu	NL-x	1
UE-JRC	oliver.martin@ec.europa.eu	UE-x	11
Ukraine	oliver.martin@ec.europa.eu	UKR-x	2
United Kingdom	charles.toulemonde@edf.fr	UK-x	3
	TOTAL		185

Table 2: list of facilities proposal by each country

The picture hereafter indicates the number of OFFERR facilities proposed by each country.

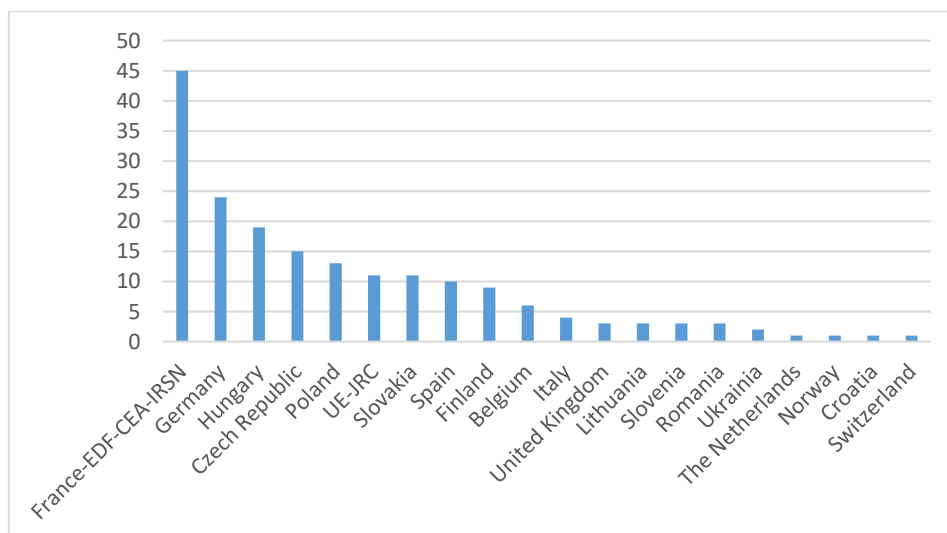


Fig.1 OFFERR Facilities proposal. Version 2023 feb.24th



2.3 Analyze of the OFFERR database:

i. Call of Areas & EUFN Clusters

The calls for the OFFERR project will be performed according to a list of thematic areas as described in the 1.4 §. The EUFN is build taking into account clusters & activities proposed by the facilities. In this context, a corresponding matrix between the list of areas & clusters is given hereafter.

After the first call process foreseen in spring 2023, the list of areas, clusters & activities could be updated & adjusted, if needed.

	Call Areas	Light water reactor sustainability	Advanced fission reactors,	Waste and decommissioning	Nuclear science	Advanced nuclear fuels	Innovation in instrumentation	Radioprotection and nuclear medicine.
Clusters		CA1	CA2	CA3	CA4	CA5	CA6	CA7
CL1	Neutronic Research Area	X	X	X	X	X		X
CL2	Radiation and Radiation Protection Research Area	X	X	X	X	X	X	X
CL3	Radiochemistry Research Area	X	X	X	X	X	X	X
CL4	Thermohydraulic Research Area	X	X	X	X	X	X	
CL5	Material Research Area	X	X	X	X	X	X	X
CL6	NPP Safety Research Area	X	X		X	X	X	X
CL7	Modelling and Simulations Area	X	X	X	X	X	X	X
CL8	Nuclear Waste (EURAD)	X	X	X	X	X	X	
CL9	Radiation Protection (PIANOFORTE)	X	X	X	X	X		X
CL10	Nuclear Materials	X	X	X	X	X		X
CL11	All	X	X	X	X	X	X	X

Table 3: corresponding Matrix between clusters list & Call areas



ii. Clusters & Activities

The first elaboration of the database is based on Factsheets data received from candidate facilities. This list is completed with EDF enquiry (initial phase) through SNETP platform.

After the first round performed through the projects launched after the first call in spring 2023, new facilities proposals can appear, and in this case, they will be integrated in the updated version of the database.

Regarding the list of identified clusters, a cross checking of the facilities proposal can also identify some lacks in terms of representation of facilities in some topics. Applicants will have opportunity to select predefined clusters and corresponding activities or propose new ones. Periodically, the database will be updated and affiliation of the proposals to the clusters and activities will be evaluated.

The obtained statistics will help to identify research areas and topics with low interest in the calls and focus the interactive forums to promote OFFERRs' calls within the corresponding research communities.

REFERENCE	CLUSTERS	NBRE OF FACILITIES (PRIMARY CLUSTER)	NBRE OF FACILITIES (SECONDARY CLUSTER)
CL1	Neutronic Research Area	13	2
CL2	Radiation & Radiation Protection Research Area	27	6
CL3	Radiochemistry Research Area	13	7
CL4	Thermal Hydraulic Research Area	15	8
CL5	Material Research Area	76	14
CL6	NPP Safety Research Area	16	10
CL7	Modelling and Simulations Area	18	19
CL8	Nuclear Waste (EURAD)	7	6
CL9	Radiation Protection (PIANOFORTE)	0	5
CL10	Nuclear Materials (ORIENT-NM)	0	1
CL11	All	0	1
	TOTAL	185	79

Table 4: Facilities proposal versus primary & secondary clusters

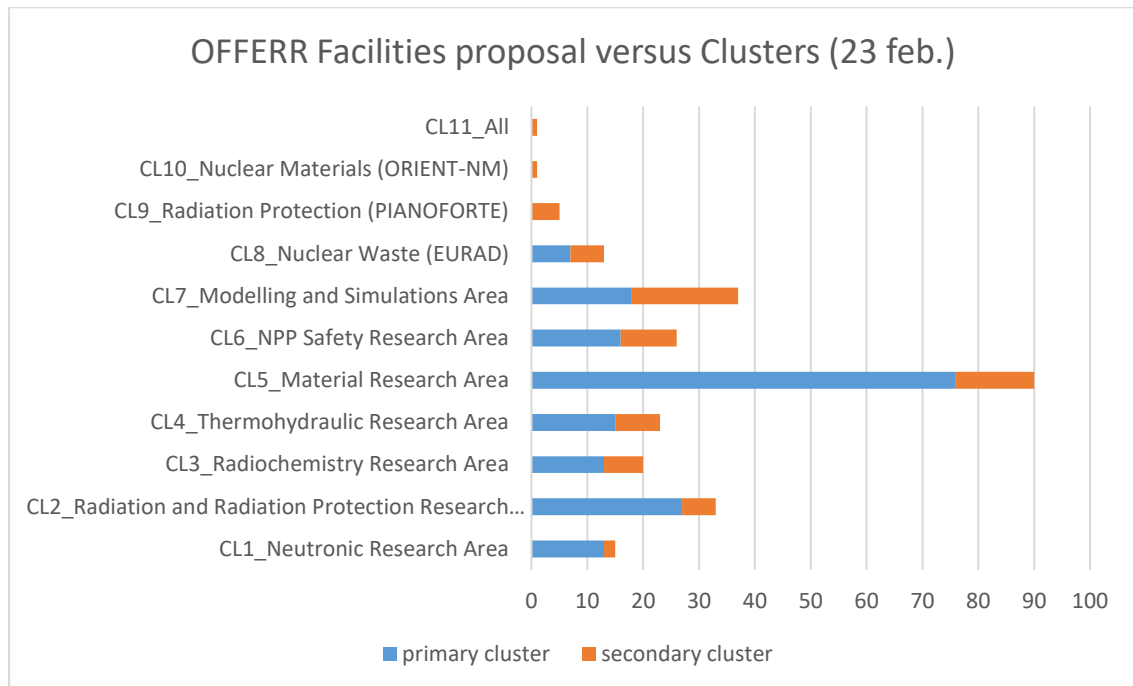


Fig.2: OFFERR Facilities proposal versus clusters. Version 2023 feb.27th

iii. Factsheets

The Factsheets template given through D1.1 deliverable have for objective to elaborate a set of data useful for future applicants (general information, management, specific nuclear data).

After the first round of the project, an analyse of the factsheets will be performed in order to try to simplify the input data requested to the facilities but sufficiently relevant to have a good overview of the facility and its capabilities in terms of technical description & operational process.

2.4 Next Steps

The first Edition of the OFFERR database & report is delivered in February 2023 through this deliverable, named WP1 D1.2. Based on delivered factsheets till February 2023, around 185 individual infrastructures were primarily affiliated to identified clusters, from which 79 have also defined secondary affiliation. For each cluster, several activities were also proposed to specify types of experiments and equipment offered for collaboration. Totally from the 82 activities, 49 were selected as a primary or 23 a secondary activity by the contact persons. Moreover, contacted infrastructures had opportunity to propose their own clusters and activities, where new activities were proposed. More communication with the ‘infrastructures’ contact persons will be needed due to non-overlapping of some suggested cluster activities and selected activities. To have correctly assigned activities to the clusters is mandatory for correct selection of the reviewers for project proposals coming via open calls.



The OFFERR members propose to update the EUFN database every year after the first diffusion in March 2023.

Note also that a brochure of the OFFERR facilities will be also emitted [R6].

In a second step, a web site dedicated to OFFERR project integrating the list of facilities will be also proposed. Cf. <https://snetp.eu/eufn/>

2.5 Links with others Networks

At this time, the European User Facility Network built by OFFERR will soon be operational and ready to fund a sustainable network open to Europe (like PIANOFORTE, ORIENT-NM or EURAD European projects)

but also open to other international initiatives in the nuclear field like Framework for Irradiation Experiments (FIDES project, OECD) and Nuclear Science User Facilities (NSUF, USA).

Thus, the OFFERR project will help the nuclear community to build a more sustainable and safe future.





3. Appendixes

3.1 Identification of OFFERR network facilities (2023 feb.)

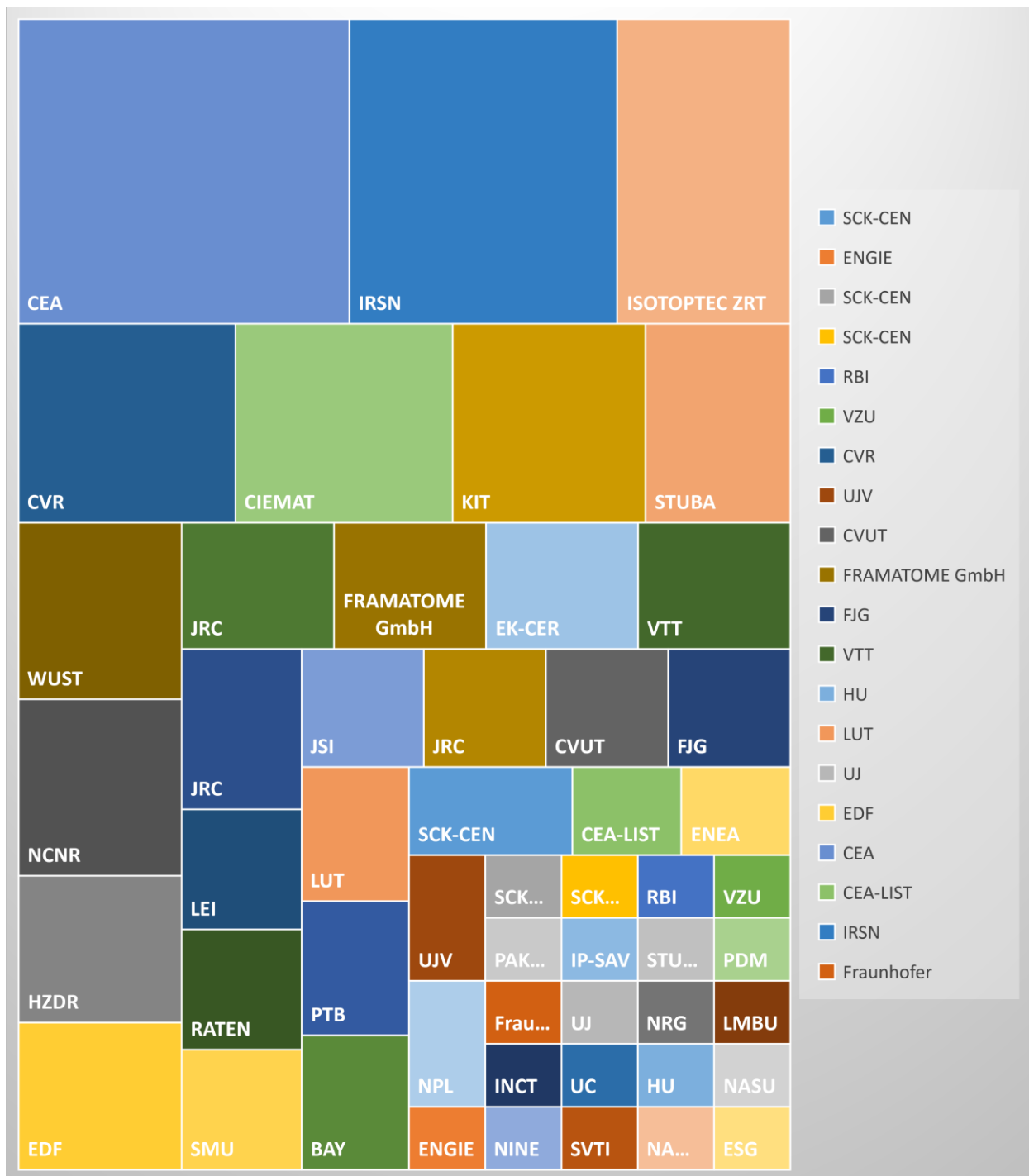


Fig.3: OFFERR infrastructures proposal within companies / Institutes



COUNTRY	LOCATION	COMPANY	LOGO	DESCRIPTION	FACILITIES PROPOSED
BELGIUM	Mol	SCK-CEN		SCK CEN Belgian Nuclear Research Center	3
BELGIUM	Linkebeek	ENGIE		Laborelec S.A, member of Engie S.A	1
BELGIUM	Mol	SCK-CEN		Eurad Platforms	1 <i>(link with Eurad)</i>
BELGIUM	Mol	SCK-CEN		Pianoforte Platform	1 <i>(link with Pianoforte Network)</i>
CROATIA	Zagreb	RBI		Ruđer Bošković Institute Željka Knezevic Medija	1
CZECH REPUBLIC	Plzen	VZU		Vyzkumny a zkusebni ustav Plzen s.r.o.	1
CZECH REPUBLIC	Husinec-Řež	CVR		Research Centre Rez	9
CZECH REPUBLIC	Husinec-Řež	UJV		UJV-Rez	2
CZECH REPUBLIC	Prague	CVUT		Faculty of Nuclear Sciences & Physical Engineering	3
FINLAND	Espoo	VTT		VTT Technical Research Center Ltd.	4
FINLAND	Helsinki	HU		Helsinki University	1
FINLAND	Lappeenranta	LUT		Lappeenranta University	3



FINLAND	Jyväskylä	UJ		University of Jyväskylä	1
FRANCE	Renardieres Chatoux	EDF		Electricité de France	5
FRANCE	Saclay Marcoule Cadarache	CEA		Commissariat à l'Energie Atomique et aux Energies Alternatives	21
FRANCE	Gif sur Yvette	CEA-LIST		CEA-LIST Institute	2
FRANCE	Cadarache , Saclay	IRSN		Institut de Radioprotection et de Sûreté Nucléaire	17
GERMANY	Munchen	Fraunhofer		Fraunhofer Gesellschaft zur Förderung der angewandten Forschung	1
GERMANY	Dresden	HZDR		Helmholtz-Zentrum Dresden-Rossendorf	5
GERMANY	Karlsruhe	KIT		Karlsruher Institut für Technologie	8
GERMANY	Braunschweig	PTB		Physikalisch-Technische Bundesanstalt Braunschweig	3
GERMANY	Karlstein	FRAMATOME GmbH		Framatome GmbH	4
GERMANY	Jülich	FJG		Forschungszentrum Jülich GmbH	3
HUNGARY	Budapest	BAY		Bay Zoltán Nonprofit Ltd for Applied Research	3
HUNGARY	Budapest	EK-CER		Centre for Energy Research	4



HUNGARY	Debrecen	ISOTOPTEC ZRT		ISOTOPTEC ZRT., Ede Hertelendi Laboratory of Environmental Studies	11
HUNGARY	Dunaújváros	PAKS II		Paks II Competence Center at the University of Dunaújváros	1
ITALY	Piacenza	ENEA		ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development	2
ITALY	Lucca	NINE		Nuclear and Industrial Engineering	1
ITALY	Milano	PDM		Politecnico di Milano	1
LITHUANIA	Kaunas	LEI		Lithuanian Energy Institut	3
NORWAY	Aas	LMBU		Norwegian University of Life Sciences	1
POLAND	Świerk-Otwock	NCNR		National Centre for Nuclear Research (NCBJ)	6
POLAND	Wrocław	WUST		Wrocław University of Science and Technology	6
POLAND	Warsaw	INCT		Institute of Nuclear Chemistry and Technology	1
ROMANIA	Pitesti - Mioveni	RATEN		RATEN - State Owned Company "Technologies for Nuclear Energy"/Institute for Nuclear Research	3
SLOVAKIA	Piešťany	IP-SAV		Institute of physics - Slovak Academy of Sciences	1
SLOVAKIA	Bratislava	STUBA		Slovak University of Technology (Institute of Nuclear and Physical Engineering)	6
SLOVAKIA	Bratislava	STU MTF		Faculty of Materials Science and Technology in Trnava	1



SLOVAKIA	Bratislava	SMU		Slovak Institute of Metrology	3
SLOVENIA	Ljubljana	JSI		Jožef Stefan Institute	3
SPAIN	Madrid	CIEMAT		Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)	9
SPAIN	Cantabria	UC		University of Cantabria	1
SWITZERLAND	Wallisellen	SVTI		Laboratory is part of the Nuclear Inspectorate department at SVTI	1
THE NETHERLANDS	Petten	NRG		ORIENT-NM	1
UE	Karlsruhe	JRC		Joint Research Centre	3
UE	Geel	JRC		Joint Research Centre	4
UE	Petten	JRC		Joint Research Centre	4
UK	Teddington	NPL		National Physical Laboratory - Teddington	2
UK	Rotherham	NAMRC		Nuclear AMRC	1
UKRAINE	Bolsunovska	NASU		National Academy of Sciences of Ukraine	1
UKRAINE	Kiev	ESG		Energy Safety Group LLC (ES Group LLC)	1

Table 5: OFFERR Facilities proposal versus companies



3.2 Recall of the WP1 process

Cf. [R1] Extract

STEP 1: CREATION OF THE USER FACILITY NETWORK & CLUSTERS

The European User Facility Network (EUFN) is created via a call of the SNETP Association to its members and beyond to gather all key user facility owners in the database interested in providing access to their infrastructure as part of the OFFERR public call and in exchanging with their counterparts. The consolidation of the User Facility database will build on previous efforts of Euratom projects and other existing initiatives of the OECD-NEA, IAEA, EC-JRC and other EU projects such as NUGENIA+, GENTLE, etc. The categorisation of the database will be inspired by the recently updated database of the ENEN+ project that covers 16 countries and a dozen of facilities categorised in different fields (Mechanics/Material, Reactor physics, Thermal hydraulics, etc. but also in radiation protection, medical applications, waste and disposal and decommissioning). This database will be updated regularly during the project implementation. The preferred option to be active member of the UFN is to be or become member of SNETP association. Therefore, the project will encourage as many facility owners as possible to become SNETP members. The project will also engage dialogue with MEENAS15 and IGDTP16 to find ways to complement the on-going work within their respective PIANOFORTE17 and EURAD18 projects in compliance with the Horizon Europe and Euratom rules. The User Facility Network will be structured under WP1 (T1.1) in categories that will be aligned to be coherent with the GIF, OECD and IAEA R&D infrastructures nomenclature¹⁹. The expertise of different User facilities will be coordinated around clusters, which will be managed by the partners involved in WP2 and monitored by the members of the SNETP Infrastructure committee. Clusters will aim at identifying synergies and optimisation of efforts to reach the objectives of the project (in particular HLO3) – see Step 2.

Organisations engaged in the UFN will share basic information on their available R&D infrastructures, in particular the conditions for access. For this purpose, each User facility will prepare a factsheet containing short description, approximate availability, contact persons, costs of the tests, etc. The UFN will be consolidated upon the assessment of the information provided by the User facility owners in the factsheet and upon the dialogue with the OFFER project consortium. The accepted factsheets will be considered as a commitment of cooperation on behalf of the User facility owner to the achievement of the OFFERR project objectives.



STEP 2: IDENTIFICATION OF COMMONALITIES AND GAPS BETWEEN USER FACILITIES

The clusters will be created to gather user facilities with similar technical areas and capabilities (e.g. Thermal hydraulic, modeling & simulation, Reactor physics, Fuel safety, Nuclear data, etc. but also in radiation protection, medical applications, waste and disposal and decommissioning). The main objective is to identify major gaps, complementarities and harmonisation potential between different user facilities (WP1, T1.2).

Clusters will also be a space for discussions between potential applicants within the “OFFERR interactive forum” (WP2, T2.2). Remote support to applicants and research teams will be facilitated to identify appropriate User facilities, similar project initiatives or call for joint actions (i.e., grouped test, or similar). Remote webinars will be organized to facilitate interactions (WP2, T2.2).



3.3 List of identified technologies, clusters & activities

Cf. [R4]

- Type of experiments performed in the facility: The answer is to be selected from a list displayed by the excel file for this question. The different types could depend on how to use the facility (instrument) and the type of results obtained. Examples: Gamma source, Sodium loop, HLW Lab, Radiochemistry lab, Accelerator based neutron source. The actual list of options can be found in the page 4 of the Factsheet (see in the next section).
- Secondary type of experiments performed in the facility: To be included in case more than one type of experiments can be performed in the facility. Use the same format and options as for the previous item.
- Keywords for fields of applications: Keywords that can help potential visiting teams to identify candidate facilities complementing the two previous items with free text. This can be used to indicate more than two types of experiments, when the type of experiments is not in the selectable list, or more specific types of experiments. It is also convenient to include areas where the facility had been used before.
E.g.: Neutronics, Thermal-hydraulics, Safety, Waste management, Fuel fabrication, ... The answer is expected as plain text.
- Cluster that could use the facility: The answer is to be selected from a list displayed by the excel file for this question that includes the list of clusters of facilities identified in the project (OFFERR clusters). The facility should select the cluster the closest to the use of the facility. For versatile facilities, the options of ALL clusters or generic super-clusters are provided. The actual list of options can be found in the page 4 of the Factsheet (see in the next section).
- Secondary cluster that could use the facility: To be included in case more than one cluster can use the facility, using the same format and options as for the previous item.
- Technologies of application: The answer is to be selected from a list displayed by the excel file for this question that includes: GEN II, GEN III (+), GEN IV, Medical, Other, Fission, ALL.
- Secondary technology of application: In case more than one technology can use the facility, using the same format and options as for the previous item.



The list tab (page) includes four lists.

The present values for the current version of the EUFN database are recalled hereafter:

LIST 1: TECHNOLOGIES

REP	DESCRIPTION
T1	GEN II
T2	GEN III(+)
T3	GEN IV
T4	Medical
T5	Other
T6	All
T7	Fission

LIST 2: MODE OF OPERATION

REP	DESCRIPTION
OP1	Experiment fully run by the facility
OP2	Experiment run by facility operators with materials or equipment from the visitors
OP3	Experiment run by facility and visitors together
OP4	Experiment run only by visitors

LIST 3: CLUSTERS

REP	DESCRIPTION
CL1	Neutronic Research Area
CL2	Radiation and Radiation Protection Research Area
CL3	Radiochemistry Research Area
CL4	Thermohydraulic Research Area
CL5	Material Research Area
CL6	NPP Safety Research Area
CL7	Modelling and Simulations Area
CL8	Nuclear Waste (EURAD)
CL9	Radiation Protection (PIANOFORTE)
CL10	Nuclear Materials ORIENT-NM
CL11	All



LIST 4: TYPES OF EXPERIMENTS PERFORMED IN THE FACILITIES WITHIN CLUSTERS

CL1	NEUTRONIC RESEARCH AREA
CL1.1	Neutron Sources
CL1.1a	Research/School reactor
CL1.1b	Critical/sub-critical assemblies
CL1.1c	Radio-isotope source
CL1.1d	Accelerator based neutron source
CL1.2	Reactor physics experiments (non-reactor)
CL1.3	Neutron detection/detectors
CL1.3a	Fission Chambers manufacture & tests
CL1.4	Neutron dosimetry
CL1.5	Nuclear data and neutrons reactions
CL1.6	Neutron radiography and tomography
CL1.7	Post Irradiation Examination
CL1.8	Forensic
<i>CL5.11</i>	<i>PIE. Post Irradiation Examinations</i>
<i>CL7.3a</i>	<i>Modelling Neutronics</i>

CL1_Neutronic Research Area – List of Main Activities

CL2	RADIATION AND RADIATION PROTECTION RESEARCH AREA
CL1.1	Neutron Sources
CL1.1b	Critical/sub-critical assemblies
CL1.1c	Radioisotope source
CL1.1d	Accelerator based neutron source
CL1.5	Nuclear data and neutrons reactions
CL2.1	Radiation Sources/Irradiation Facilities
CL2.1a	Gamma sources
CL2.1b	Proton sources
CL2.1c	Heavy ion source
CL2.1d	Positron source
CL2.2	Radiation detection/Dosimetry
CL2.3	Shielding
CL2.4	X-ray radiography/tomography/spectroscopy
CL2.5	Gamma Spectrometry
CL2.6	Analytical platforms
CL2.7	Databases
CL2.8	Radionuclide metrology
CL2.9	Testing and characterisation of detectors for radioactivity measurements
<i>CL5.11</i>	<i>PIE. Post Irradiation Examinations</i>
<i>CL5.8</i>	<i>Nuclear Fuel</i>
<i>CL5.9</i>	<i>Sensors Manufacture & Tests</i>

CL2_ Radiation and Radiation Protection Research Area– List of Main Activities



CL3	RADIOCHEMISTRY RESEARCH AREA
<i>CL1.1c</i>	<i>Radioisotope source</i>
<i>CL2.1</i>	<i>Radiation Sources/Irradiation Facilities</i>
<i>CL2.1a</i>	<i>Gamma sources</i>
<i>CL2.8</i>	<i>Radionuclide metrology</i>
CL3.1	Radiochemistry
CL3.2	Nuclear fuel chemistry
CL3.3	Radiopharmaceutical chemistry
CL3.4	Radiotracers
<i>CL5.11</i>	<i>PIE. Post Irradiation Examinations</i>
<i>CL5.1a</i>	<i>Destructive testing</i>

CL3_Radiochemistry Research Area – List of Main Activities

CL4	THERMOHYDRAULIC RESEARCH AREA
CL4.1	Cooling media loops
CL4.1a	Water loop
CL4.1b	SCW loop
CL4.1c	Sodium, NaK loop
CL4.1d	LBE or Lead loop
CL4.1e	Gas loop (He or CO ₂)
CL4.1f	Molten salt loop
CL4.2	Fuel assembly or heat exchanger mock-up
CL4.3	Advanced temperature measurements
<i>CL5.11</i>	<i>PIE. Post Irradiation Examinations</i>
<i>CL6.17</i>	<i>Thermo-fluidynamics</i>
<i>CL7.3b</i>	<i>Modelling Thermohydraulics</i>

CL4_Thermal Hydraulic Research Area – List of Main Activities



CL5	MATERIAL RESEARCH AREA
<i>CL2.1</i>	<i>Radiation Sources/Irradiation Facilities</i>
<i>CL2.1a</i>	<i>Gamma sources</i>
<i>CL2.4</i>	<i>X-ray radiography/tomography/spectroscopy</i>
<i>CL4.1c</i>	<i>Sodium, NaK loop</i>
<i>CL4.1d</i>	<i>LBE or Lead loop</i>
CL5.1	Non destructive testing
CL5.1a	<i>Destructive testing</i>
CL5.2	Mechanical testing
CL5.3	Material Production or Processing
CL5.4	Material structure and metallurgy
CL5.5	Corrosion and environmentally-assisted cracking (EAC) testing
CL5.6	Chemical analysis
CL5.7	Advanced manufacturing technology
CL5.8	Nuclear fuel
CL5.8b	Irradiated materials
CL5.9	Sensors Manufacture & Tests
CL5.10	Oxidation tests
CL5.11	PIE. Post Irradiation Examinations
CL5.12	Decommissioning
<i>CL6.17</i>	<i>Thermo-fluidynamics</i>
<i>CL7.3b</i>	<i>Modelling Thermohydraulics</i>

CL5_ Material Research Area – List of Main Activities

CL6	NPP SAFETY RESEARCH AREA
<i>CL5.11</i>	<i>PIE. Post Irradiation Examinations</i>
CL6.1	I&C Area
CL6.2	External Hazards
CL6.3	Internal Hazards
CL6.4	Full-scope simulator
CL6.5	Decommissioning
CL6.6	Robotics
CL6.7	Severe accidents
CL6.8	Aerosols behaviour
CL6.9	Shaking table
CL6.10	Thermal Ageing
CL6.11	Fire Experiments
CL6.12	Loca Bundle test
CL6.13	ATF cladding material test
CL6.14	Hydrogen mitigation
CL6.15	Passive auto-catalytic recombiners
CL6.16	Pool scrubbing
CL6.17	Thermo-fluidynamics
CL6.18	Materials Ageing

CL6_ NPP Safety Research Area. List of Main Activities



CL7	MODELLING AND SIMULATIONS AREA
<i>CL1.1a</i>	<i>Research/School reactor</i>
<i>CL1.1d</i>	<i>Accelerator based neutron source</i>
<i>CL2.4</i>	<i>X-ray radiography/tomography/spectroscopy</i>
<i>CL2.5</i>	<i>Gamma Spectrometry</i>
<i>CL5.11</i>	<i>PIE. Post Irradiation Examinations</i>
<i>CL6.17</i>	<i>Thermo-fluidynamics</i>
<i>CL6.8</i>	<i>Aerosols behaviour</i>
CL7.1	Engineering simulations
CL7.2	Digitalization and virtualizations
CL7.3a	Modelling Neutronics
CL7.3b	Modelling Thermohydraulics
CL7.3c	Modelling Thermomechanics
CL7.3d	Modelling Material structure
CL7.3e	Modelling Multi-physics
CL7.3f	PSA
CL7.4	Post-treatments
CL7.5	Numerical Methods
<i>CL10.1</i>	<i>All</i>

CL7_Modelling & simulation Area NPP. List of Main Activities

CL8	NUCLEAR WASTE (EURAD)
<i>CL2.1</i>	<i>Radiation Sources/Irradiation Facilities</i>
<i>CL3.1</i>	<i>Radiochemistry</i>
<i>CL3.2</i>	<i>Nuclear fuel chemistry</i>
<i>CL5.11</i>	<i>PIE. Post Irradiation Examinations</i>
CL8.1	Decontamination media testing and development, separation chemistry

CL8_Modelling & simulation Area NPP. List of Main Activities

CL9	RADIATION PROTECTION (PIANOFORTE)
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CL9_Pianoforte. List of Main Activities

CL10	NUCLEAR MATERIALS (ORIENT-NM)
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CL10_Nuclear Materials. List of Main Activities



3.4 Factsheet template

Cf. [R4]

The preparation of the Factsheet started by identification of needs from previous experiences in the projects CHANDA, ARIEL, ENEN+ and CONCERT. Several drafts had been reviewed with the comments given in the OFFERR-WP1 Kick-off meeting (2022/09/08) and the technical progress meetings of WP1 (2022/10/12 and 2022/11/10).

There will be several Factsheet formats:

- For the collection of data, the Factsheet is an excel document (that can be converted to word). This format will be the main reference for the present deliverable.
- In addition, to display the final version of the Factsheet it will be possible to access them as webpages or as formatted documents (most probably pdf and html).

		GENERAL TECHNICAL PART OF THE		FACTSHEET	
		Version of the Factsheet	1	Date of template	12/11/2022
	Mandatory	Description of the data	Type of data	Value	Explanation, range, examples
G1	ALL	Identification of the facility	Text		Name of the facility, owner institution and detailed address
G2	ALL	Local Contact person(s)	Text		Name , position, e-mails, telephone and any other form of contact
G3	ALL	Generic technical description	Text and graph		Not too long (half a page) but including references and web pages for details. Specific detail parameters for a given application in the corresponding specific data tab + illustrative pictures and logo
G4	ALL	Mode of operation	Text from list	Experiment run by facility and visitors together	Experiment fully run by the facility, run by facility operators with materials or equipment from the visitors, run by facility and visitors together, run only by visitors
G5		Planning considerations	Text		Typical duration, lag period, schedule and periods of the year for experiments. Possible flexibility
G6	ALL	Type of experiments performed in the facility	Text from list (may be empty)	Accelerator based neutron source	Types from the perspective of how to use the facility (instrument) and type of results obtained. Examples: Irradiation facility, TH loop, Hot Lab, Radiochemistry lab, Neutron source,...
G6b		Secondary type of experiments performed in the facility	Text from list (may be empty)	Neutron radiography and tomography	
G7		Keywords for fields of applications	Text free	Neutronics, Nuclear Data	Fields where the facility results had been used. E.g.: Neutronics, Thermalhydraulics, Safety, Waste management, Fuel fabrication,...
G8	ALL	Cluster that could use the facility	Text from list	Modelling and Simulations Area	List of clusters (OFFERR clusters) that could use the facility
G8b		Secondary Cluster that could use the facility	Text from list	Neutronic Research Area	
G9	ALL	Technologies of application	Text from list	All	GEN II, GEN III(+), GEN IV, Medical, Other, Fission, ALL
G9b		Secondary technology of application	Text from list		
G10		Examples of success proposals for the facility	Text		Brief description of previous success projects with references and contact persons of the facility and of the visiting team.
G11		Applicable norms, standards and support	Text and graphs		Standards needed/available (Electronics, DAQ, gas, cooling,...). Special support services or instruments.



GENERAL MANAGEMENT PART OF THE OFFERR FACTSHEET						
		Mandatory	Description of the data	Type of data	Value	Explanation, range, examples
M1		ALL	Facility offered for FastTrack activities	YES/NO	YES	Can your facility accept proposals for FastTrack activities? Note that FastTrack activities are limited to less than 50 k€ financing from OFFERR and less than 6 month access to the infrastructure.
M2			Unit cost estimation	Numeric value with units (€/day, €/analysis, #days, #samples,...)		Unit cost applicable to the OFFERR activities (per hour, day, neutron, analysis, irradiation, sample,...) or maximum duration of a FastTrack (50k€) experiment. For complex proposals the estimation might be a range or another indicative form. Note that the cost for OFFERR can be only a fraction of the total cost if the facility has other sources of financing for these types of activities. Also note that in no way these unit cost can be taken as a tariff for commercial applications.
M3		ALL	Amount of access committed by the facility to OFFERR	Text		Minimum annual or total amounts of resources, time or procedures committed by the facility
M4		ALL	Commitment of the facility owner to provide technical support and administrative information	YES/NO	YES	This commitment is required to fulfil the corresponding obligations to the EC from the project. Includes providing actual costs or updated actual unit costs
M5			Applicable IP and data protection protocols of the facility	Text and references		Data can/must be publicly available or they are limited to the visiting team and the facility? to the members of OFFERR? to other collectives?
M6			Eventual requirements of insurance for people or materials	Text and references		Eventual requirements of insurance for people or materials when accessing the facility. Also provide information if people or equipment are covered by any insurance during their presence in the facility
M7			Safety procedures, limitations and rules	Text and references		Limitations and rules to be applied (for personnel (training), samples, equipment,...). Management of radioactive materials imported, used or produced in the experiments.
M8			Safety conditions (non radioactive)	Text and references		Fire, temperature (high or low), pressure, fluids, mechanical and heavy loads, electricity and HV, magnetic fields, underground experimental areas, confidentiality limitations, ... ?
M9		ALL	Owner is beneficiary or member of SNETP	YES/NO	YES	
M10		ALL	Formal commitment	Name and position		Acknowledge the estimations and commitments. Name and position of the person authorizing the commitments.
M11		ALL	Revision of the Factsheet	Version number		(Major.Minor) New minor revision if data is modified without significant changes for potential experiments, otherwise new major revision
M12		ALL	Date of the revision	Date		



SPECIFIC PART OF THE FACTSHEET FOR (N, LCP) SOURCES FOR NUCLEAR DATA MEASUREMENTS				
	Description of the data	Type of data	Value	Explanation, range, examples
SND1	Type of particles produced by the source	Particle name		Might be neutron, proton, alpha, other light charged particle (lcp). There could be several particle types, in this case the block of data should be repeated.
SND2	Neutron or ion source energy spectrum	Description, Range, value, graph		Description: Discrete, Quasi-monoenergetic, wide range, thermal, fission, fusion,... Value(s) in case of discrete energy spectrum, text plus graph in other cases. A reference could be provided in addition.
SND3	Intensity of the neutron/ion source	Numerical value		The units should be indicated and explained if necessary.
SND4	Time structure of the neutron source at target and for the accelerator current	Description text values (and graph)		Continuous, pulsed, duty cycle, repetition frequency
SND5	Size / mass / activity acceptable for targets/samples	Numerical value(s)		Indicate the limitations in size, mass or activity for samples to be acceptable in the facility
SND6	List of accessible experimental areas and/or available irradiation rigs	Description text and graph		Description including main features, graphical illustration and reference for additional details
SND7	Specific backgrounds in the target area	Description text and graph		Facility backgrounds (gamma, neutrons, charged particles,...) indicating the space, temporal and energy distributions. References for additional details.
SND8	Potential risks for detectors/samples near the irradiation area	Description text		For example is there a halo, beam tails or the scattered particles that could degrade the performance or permanently damage the detectors (like neutrons on HPGe)? Are there any risk from temperature, mechanical or chemical conditions for the samples or the detectors?



3.5 Attached File

OFFERR Project - WP1
EUFN Database
Brochure
2023 February, first edition

Cf. <https://snetp.eu/eufn/>

