GUIDE FOR APPLICANTS

InnovaXN: Doctoral programme for innovators with X-rays and neutrons

A Horizon 2020 MSCA-COFUND Programme

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1 About InnovaXN

1.1 Summary

InnovaXN is a doctoral training programme bringing together the expertise of large-scale research infrastructures with the R&D needs of European industry.

Supported by an H2020 MSCA COFUND Programme, 40 PhD students will study a wide variety of subjects driven by industry challenges, focussed on exploiting the advanced characterisation techniques of the large-scale European facilities in Grenoble, the ESRF and ILL.

1.2 Introduction

InnovaXN is a doctoral training programme for innovators with synchrotron X-rays and neutrons, that provides an exceptional training opportunity for 40 PhD students. Through collaborations with industry, innovation will be the central theme of the programme. The research training is driven by pre-competitive R&D exploiting synchrotron X-rays and neutrons, in close collaboration with an industrial partner for each PhD project.

The InnovaXN Programme will launch two calls for fellowships, each recruiting 20 PhD students, the first in February 2020 and the second in February 2021.

The official start dates of the fellowships are 7 September 2020 for cohort 1 and 6 September 2021 for cohort 2. These dates represent optimal start dates for the PhD students; some variation may be permitted depending on each project's specificities, the PhD student's needs and the thesis supervisor's agenda.

What are InnovaXN's goals?

- To train young researchers in advanced synchrotron X-ray and neutron techniques in an international, innovative and multidisciplinary environment
- To create a community of uniquely-skilled ambassadors to industry by recruiting and training 40 international PhD students
- To bridge the knowledge gap between Europe's world-leading research infrastructures and the industrial world
- To contribute to the development of breakthrough technologies for science, industry and society

InnovaXN is open to students from a wide range of disciplines including chemistry, life sciences (biochemistry, medicine), materials science, engineering, environmental science and physics. The PhD students will receive employment contracts at the ESRF or the ILL (each will recruit half of the students). The PhD students will be hosted in Grenoble at the EPN-Campus site for most of the duration of their research period but with a period of secondment to the site of the industry partner for at least three months to gain experience of working in industry. PhD students will be co-supervised by

industrial partners. The PhD student will work at the premises of the industrial partner and so gain valuable work experience.

1.3 Partners

InnovaXN is a H2020 Marie Skłodowska-Curie Actions supported project, led by the ESRF with the ILL and the University Grenoble Alpes as partners.

The ESRF and the ILL share a physical site, called the European Photon and Neutron Science Campus (EPN-Campus) with the European Molecular Biology Laboratory (EMBL) Grenoble Outstation and the Institut de Biologie Structurale (IBS). Over 300 scientists and engineers specialised in R&D using X-ray and neutron techniques are based on the site. The EPN Campus is at the heart of Grenoble's GIANT Innovation Campus (http://www.giant-grenoble.org/) that also includes the national research institutes CEA and CNRS, the Université Grenoble Alpes (UGA), and Grenoble Ecole de Management (GEM) and numerous companies, particularly from the high-technology sectors of semiconductors and pharmaceuticals.

European Synchrotron Radiation Facility (ESRF)
The ESRF is a large-scale research infrastructure providing synchrotron X-ray light for cutting edge science for academic and industrial user communities. It is located in Grenoble, France, with an intergovernmental agreement at its basis. It is supported and shared by 22 countries. The ESRF is one of the world's largest synchrotron science centres. Every year, about 9,000 scientists from around the world travel to use its extremely brilliant X-rays for research including life sciences, materials science, chemistry and physics. The 600-strong ESRF staff is from 40 nationalities, mutually benefiting from the rich and diverse backgrounds, cultures and languages. An ongoing upgrade, the ESRF's Extremely Brilliant Source (ESRF-EBS) has been selected as a Landmark by the European Strategy Forum on Research Infrastructures (ESFRI) for the 2016 Roadmap and reiterated in the 2018 roadmap, recognising the strategic importance of the ESRF's pioneering new-generation synchrotron ring.

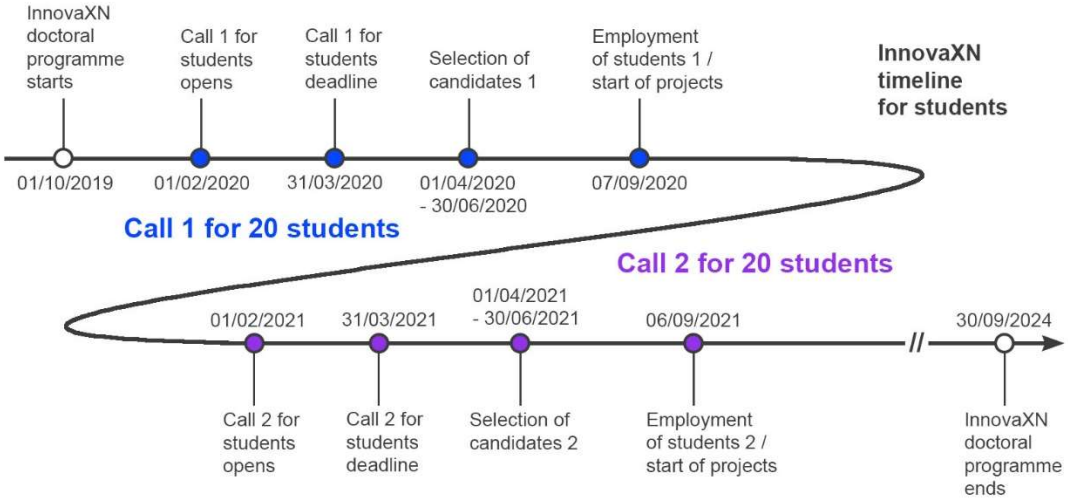
The Institut Laue-Langevin (ILL)
The ILL is the world's flagship centre for neutron science and technology, providing scientists with a very high flux of neutrons feeding some 40 state-of-the-art instruments, which are constantly being developed and upgraded. As a service institute, the ILL makes its facilities and expertise available to visiting scientists. Every year, about 1400 researchers from over 40 countries visit the ILL. Research focuses primarily on fundamental science in a variety of fields including condensed matter physics, chemistry, biology, nuclear physics and materials science. The ILL also collaborates closely and at different levels of confidentiality with the R&D departments of industrial enterprises. ILL is funded and managed by France, Germany and the United Kingdom, in partnership with 10 other countries.

The Université Grenoble Alpes (UGA)
UGA is one of France's leaders in higher education and research. A comprehensive, global university, UGA enrols about 45,000 students each year in its high-quality academic programmes, and maintains 80 research centres of all disciplines. As an

international leader in both pure and applied research, UGA also benefits from a uniquely innovative setting. Its researchers enjoy ties to a thriving local community of international businesses and industry. Its IDEX project is focused on creating a single world-class university from multiple Grenoble institutions. This project aims to reinforce its capacity to attract leading scholars and students, develop ground-breaking research and competitive curricula and promote a specific identity focused on innovation.

2 Recruitment and selection process

2.1 Timeline



2.2 How to apply?

Candidates will be required to submit their application electronically via the ESRF Recruitment web portal.

An application comprises the following elements (to be completed in English):

- ✓ Application form. This is an online form with sections on personal information, academic history, English language ability
- ✓ Curriculum vitae
- ✓ Cover letter presenting the motivation of the candidate for carrying out a PhD and joining the host institution, interest in the scientific project, candidate's assets for the post (knowledge, skills and personal qualities)
- ✓ Contact details for two or more referees

On arrival for first day of employment, the selected candidates will have to provide the following documents:

- ✓ Copy of latest relevant diploma and certificate of achievement if the diploma has not yet been issued (a copy of the final diploma will eventually have to be provided)
- ✓ Proof of upper-intermediate level in English (see eligibility criteria)
- ✓ Birth certificate for students not registered with French social security (eventually later to be translated into French)

- ✓ Declaration of honour on the mobility rule
- ✓ Copy of identity card or passport with Schengen Visa page for non EU citizens
- ✓ More documents to be provided (to be specified in PhD post announcements)

2.3 Who can apply?

The InnovaXN project is open to researchers of all nationalities.

2.3.1 Eligibility criteria

- ✓ Mobility rule: candidates may not have resided or carried out their main activity (work, studies, etc.) in France for more than twelve months in the three years immediately before the date of recruitment (doctoral thesis starting date). Compulsory national service and/or short stays such as holidays in France are not taken into account.
- ✓ PhD students (called Early-Stage Researchers in H2020 MSCA): candidates must be in the first four years (full-time equivalent research experience) of their research careers, career breaks excluded, and have not yet been awarded a doctoral degree. Career breaks refer to periods of time where the candidate was not active in research, regardless of employment status.
- ✓ Degree: the candidate must be, at the time of recruitment, in possession of/or finalising a master degree or equivalent degree which would formally entitle the candidate to embark on a doctorate.
- ✓ Availability: the candidate must be available for employment at the defined programme start date.
- ✓ English language: the candidate must have a demonstrable level of English. A proof of upper-intermediate level must be included in the application; this should take the form of one of the recognised international qualifications (minimum CEFR B2, Cambridge English First (FCE), Cambridge Bulats >60, PTE Level 3, IELTS 5-6.5, TOEFL >72, TOEIC >750). Applicants originating from native-English-speaking countries can apply without the need for proof of level. An official degree (including postgraduate) conducted in English as the only language will be also accepted as a proof of level.
- ✓ Specific doctoral school requirements in terms of marks, experience, or any other matter that is a prerequisite to enrolment to the doctorate programme must be met. When applicable, specific doctoral school requirements will be indicated in each job advert/description.

2.4 Selection process

During the selection process, the experts involved will evaluate the potential of candidates, with particular interest in their motivation, career project and potential to thrive in an international and multidisciplinary environment with industry-driven research.
The recruitment procedure combines the best practices in recruitment of the two host organisations ESRF and ILL and will be supported by an external Recruitment Advisory Board to validate the process and to ensure impartiality in the selection of successful candidates. There are different steps in the selection procedure, each with clear evaluation criteria and scoring:

- ✓ Eligibility and ethical issues check of the applications

- ✓ Evaluation based on written application
- ✓ Final evaluation adding scores from interview and referee comments
- ✓ Funding decision and feedback to candidates
- ✓ Redress/appeal procedures are available at all stages of the recruitment process

The recruitment and selection process is based on the principles of the *European Charter for Researchers and Code of Conduct for the Recruitment of Researchers.*

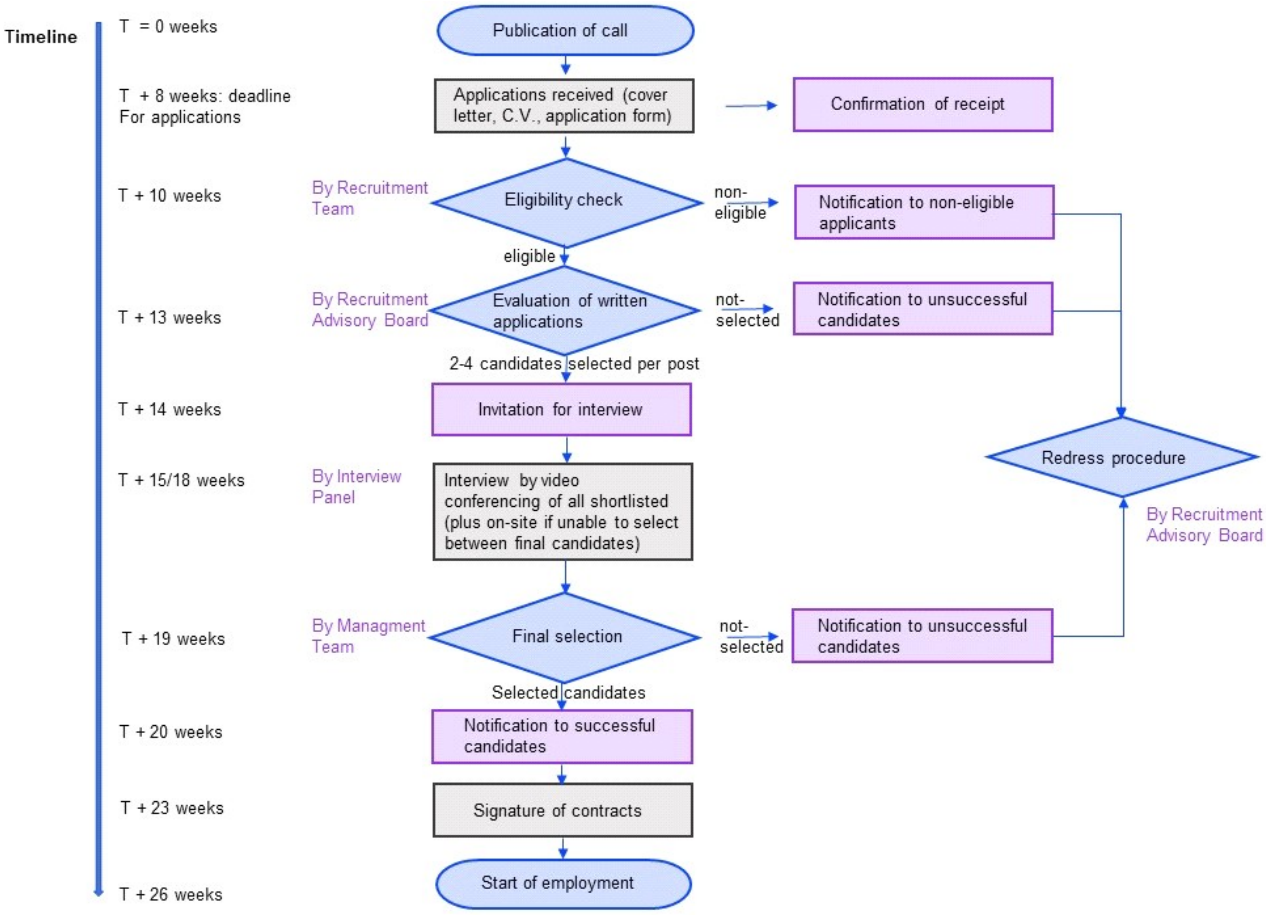


Figure 1. Overview of the recruitment process for one InnovaXN call.

<u>Composition of committees involved in the different stages of the process</u>

At each of the selection stages, several evaluators will be involved, with a minimum of three persons for each decision-making step. The teams will contain a balance of gender, country of origin and expertise, in line with the
European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

- ✓ Recruitment Team: will consist of recruitment experts from both the ESRF and ILL including one person dedicated to organising the InnovaXN recruitment calls. The Recruitment Team will carry out the eligibility check on applications and organise the interview process.
- ✓ Recruitment Advisory Board: will consist of around 15 external scientists, from a variety of backgrounds and countries. The Recruitment Advisory Board will review and validate the recruitment procedure and participate in the selection of candidates. The Recruitment Advisory Board will evaluate applications from eligible candidates and score them based on predefined criteria.

- ✓ Interview Panels: each interview panel will consist of three or more persons selected from the Recruitment Team, Scientific Review Board, a senior scientist from the ESRF/ILL group hosting the PhD student and the industrial supervisor/collaborator or an external scientist from the Recruitment Advisory Board.
- ✓ Management Team: combining the Recruitment Team, Training Team, Student Welfare Team and Industry Team. Each team will contain representatives from both the ESRF and the ILL. The Management Team will oversee the recruitment process and make final selection of candidates based on the scores provided by the application evaluation, the interview report and feedback from referees.
- ✓ Scientific Review Board: Comprising the ESRF and ILL PhD Selection Committees and chaired by the Programme Coordinator. The SRB will ensure the scientific rigour of the PhD projects and that they are at a level appropriate for a PhD degree.

2.5 Evaluation criteria

Table 1. Eligibility check, evaluation and selection workflow of candidates.

Selection Step (duration)	Evaluators	Process
Application receipt	Automatic	Confirmation of receipt by the ESRF recruitment portal at time of application
Eligibility and ethical issues check (2 weeks)	Recruitment Team	Written applications to be screened for eligibility based on the predefined eligibility criteria (included above and described clearly within each call). For student projects with ethical issues, verification that the candidate has completed the relevant ethics evaluation and provide assistance when necessary. Candidates with non-eligible applications will be informed rapidly by email.
Redress/appeal (2 weeks)	Recruitment Advisory Board	Ineligible candidates will be permitted seven days to submit a formal redress request. The Recruitment Advisory Board will consider the request and decide whether the candidate should be re-evaluated. Rapid notification will be provided to the candidate.
Evaluation of written applications (3 weeks)	Recruitment Advisory Board	Eligible applications will be reviewed by teams of three members of the Recruitment Advisory Board. These reviewers will give the candidates scores based on predefined selection criteria.
Redress/appeal (2 weeks)	Recruitment Advisory Board	Unsuccessful candidates will be permitted seven days to submit a formal redress request. The Recruitment Advisory Board will consider the request and decide whether the candidate should be re-evaluated. Rapid notification will be provided to the candidate.
Invitation to interview (1 week)	Recruitment Team	Invitations will be sent by e-mail. Between two and four candidates per post will be selected for interview. Candidates not invited to interviews will be informed by email and will receive the grading of their application file once the selected candidates have confirmed their participation in the interviews.
		Referees will be contacted for candidates invited to interview. Referees will be asked to evaluate candidates by completing a form with few points and a simple scoring system.
Final selection (4 weeks)	Interview Panels	Interviews will be carried out by video conferencing lasting about 1 hour. Should the two top candidates be judged equal, further interviews may be carried out on-site at the ESRF and ILL. The Interview Panel will complete an interview report, scoring the candidates on pre-defined criteria.

	Management Team	The Management Team will rank the interviewed candidates based on a predefined scoring system and combining data from the evaluation of written applications, the interview reports and the candidates' referee evaluations.
Notification of results (3 weeks)	Recruitment Team	Interviewed candidates will be informed of the outcome and of their overall grading via email rapidly after the final selection is made, approximately twelve weeks after application deadline.
Redress/appeal (2 weeks)	Recruitment Advisory Board	Unsuccessful candidates will be permitted seven days to submit a formal redress request. The Recruitment Advisory Board will consider the request and decide whether the candidate should be re-evaluated. Rapid notification will be provided to the candidate.
Keeping records/ reporting	Recruitment Team	The Recruitment Team will be instrumental in the overall organisation of the recruitment process. They will send information to candidates on the status at various stages and on the eventual outcome.

Table 2. Criteria for evaluation of candidates written applications and their weighting.

Criteria	Weight	Sub-criteria
Education	50%	Quality of the CV Academic background
Professional experience	30%	- Previous experience (research projects, work experience and internships; volunteering or community services) - Interdisciplinarity - International experience - Exposure to the extra-academic sector
Motivation and career project	20%	Impact of the project on the development of the professional career

Table 3. Criteria for evaluation of interviews and references and their weighting.

Criteria	Weight	Sub-criteria
Profile of the candidate	30%	Academic and professional background Analytical skills Global vision Structure
Communication	30%	Adaptability Communication, ability to present clearly and concisely interaction and team work
Potential of the candidate	30%	Motivation (preparation, relevance, specific interest, career project, curiosity) Openness and creativity Career path vision
References	10%	Appreciation by referees

Table 4. Criteria priority in case of two candidates with equal score.

Evaluation criteria	Motivation and career project	Communication and analytical skills	Education and experience
Priority in case of ex aequo	1	2	3

2.6 Assistance, helpdesk

Throughout the recruitment process, a recruitment expert will be available to answer questions from the candidates, by email, via a web site feedback form, or telephone. When scheduled interviews are unable to take place for a good reason, then the recruitment panels, in good faith, will try to rapidly schedule a second time slot.

2.7 Redress procedure

For interviewed but not selected candidates, a redress procedure will be available. Those candidates must inform the recruitment contact within seven days of receipt of notification of the outcome, and provide justification of their request. The Recruitment Advisory Board will examine the request, and decide whether a new evaluation of the candidate should be carried out in light of mitigating circumstances.

2.8 Equal opportunities

The equal opportunity policies of the ESRF and ILL have been in place for many years. These policies focus on gender balance, cultural diversity and inclusion of disabled staff. Non-discrimination will be ensured at all stages during the InnovaXN recruitment process both in the recruitment panels and in the selection of the candidates. The Management Team and recruitment panels will strive to ensure equal opportunities irrespective of age, nationality or handicap.

Gender balance

Gender balance recommendation of the EC will be complied with at all levels: (1) by promoting gender-balanced management bodies, committees, and international independent expert pool; (2) by aiming at welcoming an identical number of female and male fellows with equal merits; (3) conveying awareness on sex-and-gender in research projects through transferable skills training. The ESRF and ILL have signed an action plan on the promotion of gender equality in 2018, with actions targeting recruitment, career progress and work-life balance. The calls will be written using inclusive language to encourage gender balance in applications.

Nationality and cultural diversity

No discrimination regarding ethnic origin, disability, sexual orientation, religion, career break, etc., will take place in the evaluation and selection process. With their multinational character, both the ESRF and ILL have a demonstrated ability to attract and include candidates, students and staff members from all over the world, taking into account the differences in communication and collaboration practices and exploiting the diversity of ideas and approaches to foster innovation and excellence in scientific projects and in everyday work interactions.

Disabled staff

Additional financial support to enable MSCA participation and mobility of disabled researchers will be provided (MSCA Special Needs Allowance). Both institutes have signed agreements with their representative staff Unions for proactive actions towards the inclusion of disabled staff (recruitment, onboarding, adaptation of the workplace, training and coaching), with regular statistics to measure the impact of the implemented actions.

2.9 Ethical issues

The student projects in InnovaXN will be compatible with the international and national ethics laws and the ethical principles of Horizon 2020. During the student project ideation process, projects will be screened for ethical issues and ethical experts at the ESRF and ILL will be called upon to provide recommendations in the unlikely event that a risk is identified. Should a student project proposed with an industry collaborator contain an ethics risk, candidates will be alerted and aided in the completion of an ethics self-assessment form.

3 Enrolment

3.1 Employment conditions

3.1.1 Remuneration and employment contract

The PhD students will be employed by either the ESRF or the ILL. Each facility has its own remuneration policy and conditions of employment, which are globally very similar.

- ✓ The PhD students will be paid a gross monthly salary of 2,458 € per month, averaged over three years. This value will be revised for the start of employment in line with the institutes' general salary increases. This includes a living allowance and the employee contributions to social security. Following deduction of employee contributions, the average net monthly salary equals 1,860 € before taxes.
- ✓ PhD students will be employed with research training contracts whose purpose shall be the completion of a thesis at the ESRF or ILL. Contracts are fixed-term contracts, initially for one or two years, depending on institute, and will be extended to the full duration of the student project, three years for students registered at UGA, on condition that the PhD student receives a positive evaluation by their ESRF/ILL supervisor at the end of the first term.
- ✓ PhD students employed from outside of France are allowed one day of extra holiday per year called "travelling time" to compensate for travel time to return to their native country once a year.

3.1.2 Working conditions, institutional administrative support, and available services/facilities

- ✓ PhD students will be full-time employees of the institutes for the duration of their contracts. Employees have a minimum 26 days paid leave per year, which are complemented by additional time off in the context of the French "35-hour week" agreement, and is in addition to the eleven days of French national holidays. There are other advantages such as maternity, paternity and parental leave, as foreseen by French law.
- ✓ The ESRF and ILL Human Resources Services will support the PhD students in administrative processes so that their integration is as smooth as possible. Administrative support will be provided for social security and complementary health insurance registration, for visa requests (if required), and advice will be given on installation in Grenoble. A comprehensive introductory guide is provided to newcomers and there are administrative contacts for questions related to housing.
- ✓ A Welcome Day is organised shortly after the PhD students' arrival. Its aim is to offer information about the various activities and teams constituting our institutes, and to introduce the scientific infrastructure.
- ✓ An independent Welfare Officer is available at the ESRF and ILL for counselling, and to help with specific personal or administrative issues. Employees may benefit from career advice from specialised consultants through the APEC agency to which the ESRF and ILL pay a subscription.

- ✓ A subsidised restaurant offering local and organic food is present on site.
- ✓ The site is accessible by public transport (transportation card subsidised by the employer at the level of 70% in 2018) and a large part of the company premises are accessible for people with reduced mobility.

3.1.3 Employment conditions, including statutory working practices, social security coverage and social benefits

- ✓ The PhD students are covered by the French national social security system, and by a complementary health insurance (private) subscribed by the ESRF/ILL and paid mostly by the employer. Employees are also covered by an insurance system with specific insurance for cases of accidents and disability causing an interruption in remuneration, or in case of death of the employee.

- ✓ The working conditions at the ESRF and ILL are governed by French law. The working conditions are also in agreement with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. Concerning research conditions, the facilities on site are up-to-date and are comparable to or exceed other world-class facilities of the same sector. The support laboratories for sample preparation and characterisation are of the highest quality and there are essential services for research such as a library providing access to on-line journals, auditoriums for scientific presentations and meeting rooms with video conferencing systems to aid international collaboration.

4 Supervision, training and career development support

4.1 Supervision arrangements

PhD student supervision will be carried out by ESRF and ILL scientists, who as local supervisors may also be the formal academic supervisor, with co-supervision by scientists from the industrial and academic partners.

Role of the supervisors:
The supervisors will follow the progress of the PhD student by means of their Personal Career Development Plan (PCDP).
The PCDP will be stored in a private extranet space for each PhD student and includes:

- ✓ A personalised analysis of the requirements and goals of the planned training for the student
- ✓ A list of training modules to be taken by the student during the PhD
- ✓ A list of communication and dissemination activities to be undertaken by the student (presentations at conferences, public outreach, publication schedule)
- ✓ A schedule for each student's PhD programme, including secondments: location, time and duration
- ✓ Career guidance

The PCDP will be reviewed by the local supervisor every six months as part of the schedule of meetings for review and guidance.

4.2 Training programme

All PhD students shall participate in a minimum of six training modules in transferable skills and six training events in domain-specific research over three years. This is the common base for all of the PhD students. The individual PCDPs also include the optional modules and will be continuously updated according to the PhDs objectives and personal needs.
In addition, each PhD student will benefit from a minimum of a three-month secondment with the industrial partner or several shorter visits adding up to at least three months in total.

Table 5. Modules included in the research training programme.

Modules	Compulsory	Organiser	Site	Timing	Duration
Radiation Safety training	Yes	ESRF/ILL	EPN site	Ad hoc	2 hours
Specific technical training (e.g. chemistry, biology, cryofluids, electrical devices, vacuum)	Yes	ESRF/ILL	EPN site	Ad hoc	1 hour to 1 day
Ethics	Yes	ESRF/ILL	EPN Site	M14, M26	4 hours
First aid training with specific context to research environment	No	ESRF/ILL	EPN Site	Available annually	1 day
Training in specific scientific topics via seminars, conferences, workshops	A minimum of six per year to be attended, relevant to the student	ESRF/ILL	EPN site, and abroad	As opportunities arise	min 6 hours - max 8 days
Hercules European School	No	UGA	ILL/ESRF and one other facility in EU	M7, M19, M31, M43	1 month, incl. 1 week abroad
Student Days	Yes	ESRF/ILL	EPN site	Once a year	1 day
InnovaXN plenary meeting	Yes	ESRF	EPN site	M13, M31, M49	1 day
Industry secondments	Yes	ESRF/ILL	Collaborating company's premises	According to industry availability	3 months
Supervising undergraduate students/Interns	Highly recommended	ESRF/ILL	EPN site	Depending on the research project	From 3 weeks up to 3 months
Outreach towards the scientific community	students are expected to be involved in at least two activities	ESRF/ILL	EPN site, and abroad	As opportunities arise	Typically 2 to 5 day

Table 6. Modules for transferable skills included in the training programme.

Modules	Compulsory	Organiser	Site	Timing	Duration
French intensive language course	Recommended	UGA	UGA	M12,M24	80 hours
French language booster	No	ESRF/ILL	EPN Site	M12,M24	50 hours
Presentation tips & tricks	Yes	ILL	EPN site	M16, M28	2 days
Scientific writing	Yes	ESRF	EPN site	M19, M31	2 days
Data analysis / software programming languages	No	ESRF/ILL	Grenoble	Available annually	1-3 days
Introductory course	Yes	External	EPN site	M14, M26	2 days
Summer school on communication skills and public engagement	Yes	External	Grenoble	M21, M33	3 days
Entrepreneurship and business innovation workshop	Yes	ESRF/ILL	Grenoble	M38	5 days
Workshop on career planning	Yes	External	Grenoble	M42, M54	2 days
Outreach towards general public and policy makers	Participation in two outreach activities	ESRF/ILL	Grenoble and abroad	Available annually	1-2 days
Gender equality and handicap in the workplace	Recommended	ESRF/ILL	EPN site	Available annually	1 day