



**SDGine**  
for Healthy People and Cities

**2<sup>ND</sup> CALL**  
**GUIDE FOR APPLICANTS**



UNIVERSIDAD  
POLITÉCNICA  
DE MADRID

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### LIST OF ACRONYMS

<b>CET</b>	Central European Time
<b>ECTS</b>	European Credit Transfer and Accumulation System
<b>EHEA</b>	European Higher Education Area
<b>ESR</b>	Early-Stage Researcher
<b>EU</b>	European Union
<b>H2020</b>	Horizon 2020
<b>HRS4R</b>	Human Resources Strategy for Researchers
<b>MSCA</b>	Marie Skłodowska-Curie actions
<b>PCDP</b>	Personal Career Development Plan
<b>PRP</b>	Personal Research Plan
<b>R&amp;D</b>	Research & Development
<b>SDGs</b>	Sustainable Development Goals
<b>STEAM</b>	Science, Technology, Engineering, Architecture, and Applied Mathematics
<b>UPM</b>	Universidad Politécnica de Madrid
<b>VR RID</b>	Vice-Rectorate for Research, Innovation and Doctoral Studies

### EXECUTIVE SUMMARY

The “Guide for Applicants” contains comprehensive information about Universidad Politécnica de Madrid (UPM), COFUND SDGine, and the international call launched to select and recruit 12 Early-Stage Researchers (ESRs).

## 1. UNIVERSIDAD POLITÉCNICA DE MADRID

Universidad Politécnica de Madrid (UPM) is the main technological university in Spain, specialized in Engineering and Architecture. It consists of 16 Schools and one Faculty, and 21 Research and Innovation Institutes and Centres. It is the main Spanish source of high impact knowledge, as UPM ranks the first position in university patent applications, and in attracting R&D European funds (+110M€ in Horizon 2020). Globally, research revenues have increased by more than 22% in the period 2016-2019, reaching 60 M€ in 2019.

The UPM is the first university in number of R&D contracts with industry, as well as in technological entrepreneurship, and in new technology ventures creation, supported by its annual programs and competitions in Innovation & Entrepreneurship, as well as by its 75 University-Company Chairs. Regarding the protection of intellectual and industrial property, and according to data published by the Spanish Patent and Trademark Office (OEPM), the UPM also ranks first in the list of patents filed in its office, with 614 patents in the cumulative period 2007-2019.

In terms of Human Resources, the UPM employs more than 2,920 lecturers and researchers (more than 365 are Full Professors), in addition to 508 researchers and technicians hired by competitive international, national, and regional programmes in 2020. This last figure is constantly increasing (41% in the period 2016-2020).

It is also necessary to highlight the commitment of the UPM to the main European research and innovation networks, and its participation in the European Institute of Innovation & Technology (EIT), as UPM is the only Spanish university, and one of the few at European level, which participates in five of these Communities.

Since 2016, UPM is undergoing a profound realignment of its missions, building on its experience, expertise, and diverse strengths, to become a university fully committed with the implantation and promotion of the Sustainable Development Goals (SDGs). Starting on 2018, UPM embarked on a deep transformation of its research goals, a process to map all university research groups and strengths with reference to the 17 SDGs. This strategy helped to identify and establish internally and externally UPM main areas of action, and through: i) Transformative Research & Development, aligning researchers and groups with the SDGs, facilitating multi-stakeholder alliances; ii) Teaching, SDGs in educational plans, Masters and Doctoral Programmes; and iii) Systemic innovation and technology transference.

UPM works actively in cooperation for development, in line with the objectives of Agenda 2030. Doctoral studies (where education, research and innovation meet) will be strategic to complete the goals by 2030. UPM provides the students with a wide and attractive Doctorate offer through its Doctorate Division & International Doctorate School. The main features for the existing 44 Doctoral Programmes are excellence, dissemination, internationalization, mobility, innovation, and entrepreneurship.

## 2. SDGine FOR HEALTHY PEOPLE AND CITIES

### 2.1. SDGine description

SDGine is a 60-month Horizon 2020 (H2020) COFUND project funded by the European Union (EU) under a Marie Skłodowska-Curie (MSCA) grant agreement. The action, with an overall budget of 1,952,640.00€, will run from 1st October 2020 to 31st September 2025. Half of

these funds are provided by the EU while the other half comes from the industrial partners who have joined this initiative (Iberdrola, Repsol, Telefónica I+D, Ecoembes, Fundación Tatiana Pérez de Guzmán el Bueno, and Optiva Media). The project is coordinated and managed by the Vice-Rectorate for Research, Innovation, and Doctoral Studies (VR RID) of the UPM.

“SDGine for Healthy People and Cities” aims to devise technologies and tools that contribute to accelerate the compliance of the SDGs by tackling climate change and contributing to the needed social transformations in urban contexts. Through a world-class education and research programme, this European funded action grants 12 Early-Stage Researchers (ESRs) the opportunity to complete Industrial and International Doctorates at UPM, by enrolling in a Doctoral Programme

This project seeks to train a high-skilled and versatile future generation of researchers to become successful, responsible, and sustainable leaders in their fields. This action will provide them with the knowledge and skills to be able to embark on careers both in academia and in the private sector as well as become venture creators, while contributing to align policies and corporate strategies with the SDGs.

This action enhances mobility between countries, disciplines, and sectors, as it involves industries. Trained ESRs will become highly employable for future research positions in academia and non-academia worldwide, while our industrial partners will have a pool of industry-savvy, innovative researchers to shape new research fields. The whole program will also have an institutional impact on gender equality. Moreover, SDGine will have an overall high societal impact through the SDGs, especially those related to “Healthy People and Cities”.

The researchers will have the chance to complete a PhD degree with a 36-month employment contract which will be co-supervised by a UPM professor and a representative from one of the companies that are participating in this project. The ESRs are required, in most cases, to have a STEAM background (Science, Technology, Engineering, Architecture, and Applied Mathematics).

The selection and evaluation process will be open, merit-based, transparent, and based on international and inter-sectoral peer review. The action is also aligned with the "Charter & Code" policies for researchers' recruitment as UPM has received the HR Excellence in Research award (Human Resources Strategy for Researchers, HRS4R) .

## 2.2. Second Call SDGine Research lines

All applicants can choose one or more topics of their interest from a **predefined list of 7 topics** including matching supervisors, on a thematic basis. **Only 4 positions will be funded** (see Table 1). The complete charts for each research line, including requisites for the candidates, are described in Annex I.

Table 1. PhD Theses topics and matching Selection Committees

COMPANY	RESEACH LINE (#)	DESCRIPTION	SELECTION COMMITTEE/ DOCTORAL AREA
Telefónica I+D	1A	Design of novel network functions, architectures and protocols based on programmable data planes	Information & Communication Technologies (ICTs)

COMPANY	RESEACH LINE (#)	DESCRIPTION	SELECTION COMMITTEE/ DOCTORAL AREA
	1B	Intent based programmable data planes for disaggregated architectures	Information & Communication Technologies (ICTs)
Repsol	2A	Deep Learning research and development for the extraction, analysis and synthesis of latent information applied to the development to soft-sensors, soft-analyzer, signal disaggregation and prediction in general	Information & Communication Technologies (ICTs)
	2B	Reinforcement Learning research and development for the control, optimization and automation of industrial assets, plants, robots and decision making for improving operations	Information & Communication Technologies (ICTs)
	3A	Simulation model for the CO2 conversion process in an e-fuels production scheme	Manufacturing & Industry (IND)
Optiva Media	12A	AI-based conceptual content modelling and advanced user profiling for an emotionally safe TV experience	Information & Communication Technologies (ICTs)
	12B	Contribution to mental wellbeing at home via smart and hyperpersonalised content-based recommendations	Information & Communication Technologies (ICTs)

### 3. DOCTORATE AT UPM

#### 3.1. Doctorate Division & International Doctorate School

The Doctorate Division and the International Doctorate School (EID) are integrated within the Vice-Rectorate for Research, Innovation and Doctoral Studies (VR RID). Both units work closely together and share resources. Their main lines of work deal with the doctorate at UPM, the six Doctoral Areas and the 44 Doctoral Programmes, as described below:

- Regulations
- Administrative procedures (co-supervision, International & Industrial Doctorates, PhD theses defence...)
- Cross-disciplinary training seminars
- Internationalization

#### 3.2. Doctoral Areas & Doctoral Programmes

UPM Doctoral Programmes are grouped into **six Doctoral Areas**: Information & Communication Technologies (ICTs); Agronomics, Forestry & Environment; Manufacturing & Industry; Civil Engineering; Architecture; and Arts & Social Sciences (see Table 2). The main

features for the existing **44 Doctoral Programmes** are excellence, dissemination, internationalization, mobility, innovation, and entrepreneurship.

*Table 2. UPM's Six Doctoral Areas and 44 Doctoral Programmes attached, according to Spanish regulation RD 99/2011 (Eng., Engineering; Tech., Technology)*

<b>DOCTORAL AREA</b>	<b>44 DOCTORAL PROGRAMMES (DP)</b>	
<b>Information &amp; Communication Technologies (ICTs) – 10 DP</b>	<ul style="list-style-type: none"> <li>- Mathematical Eng., Statistics and Operations Research</li> <li>- Software, Systems and Computing</li> <li>- Artificial Intelligence</li> <li>- Systems and Services Eng. for the Information Society</li> </ul>	<ul style="list-style-type: none"> <li>- Computation Science/Tech. for Smart Cities</li> <li>- Telematics Eng. Systems</li> <li>- Communication Systems and Technologies</li> <li>- Electronic Systems Eng.</li> <li>- Photovoltaic Solar Energy</li> <li>- Biomedical Eng.</li> </ul>
<b>Agronomics, Forestry &amp; Environment (AGRO)– 7 DP</b>	<ul style="list-style-type: none"> <li>- Advanced Forest Research</li> <li>- Eng. and Management of Environment</li> <li>- Complex Systems</li> <li>- Environmental Tech. for Sustainable Agriculture</li> </ul>	<ul style="list-style-type: none"> <li>- Biotechnology and Genetic Resources of Plants and Associated Microorganisms</li> <li>- Project Planning for Rural Development and Sustainable Management</li> <li>- Agricultural Eng.</li> </ul>
<b>Manufacturing &amp; Industry (IND)– 12 DP</b>	<ul style="list-style-type: none"> <li>- Aerospace Eng.</li> <li>- Automation and Robotics</li> <li>- Economy and Innovation Management</li> <li>- Engineering in Industrial Organisation</li> <li>- Environmental, Chemical and Material Eng.</li> <li>- Electrical and Electronic Eng.</li> <li>- Fluid Mechanics</li> </ul>	<ul style="list-style-type: none"> <li>- European PhD in Industrial Management</li> <li>- Mechanical Eng.</li> <li>- Production Eng. and Industrial Design</li> <li>- Research, Modelling and Risk Analysis of the Environment</li> <li>- Sustainable, Nuclear and Renewable Energy</li> </ul>
<b>Civil Engineering (CIVIL) – 5 DP</b>	<ul style="list-style-type: none"> <li>- Structural, Geotechnical and Material Eng.</li> <li>- Naval Architecture, Marine and Ocean Eng.</li> <li>- Earth Informatics Eng.</li> </ul>	<ul style="list-style-type: none"> <li>- Civil Eng. Systems</li> <li>- Technical Innovation in Building Construction</li> </ul>
<b>Architecture (ARCH) – 6 DP</b>	<ul style="list-style-type: none"> <li>- Advanced Architectural Design</li> <li>- Architecture and Urban Planning</li> <li>- Architecture Heritage</li> </ul>	<ul style="list-style-type: none"> <li>- Building and Architecture Technologies</li> <li>- Edification Structures</li> <li>- Sustainability and Urban Regeneration</li> </ul>
<b>Arts &amp; Social Sciences (SSCI) – 4 DP</b>	<ul style="list-style-type: none"> <li>- Architecture Communication</li> <li>- Architecture, Design, Fashion and Society</li> </ul>	<ul style="list-style-type: none"> <li>- Physical Activity and Sport Sciences</li> <li>- Music and its Sciences and Technologies</li> </ul>

## 4. SDGine PhD THESES

### 4.1. Supervision – Industrial Doctorate

The participation of industrial financial partners in PhD theses will lead to the completion of an **Industrial Doctorate**. ESRs will spend part of their time in the non-academic sector, as part of a win-win strategy: companies recognize the academic part of the doctorate, and PhD supervisors are committed with the entrepreneurial and labour dimension in industry. In this way, the ESRs will obtain the best of the university (a doctorate degree and research experience) and the industry (knowledge on the most cutting-edge fields and working dynamics).

UPM and the industrial partners will provide an excellent research environment, including the corresponding infrastructure. UPM, in coordination with the partner organisations will offer a rich and close supervision and a mentoring set-up to the 4 ESRs. The supervisory team will be composed by the PhD supervisor (UPM) and co-supervisor (company), the Secondment(s) supervisor(s), the Industrial tutor, and the UPM tutor.

### 4.2. Secondments – International Doctorate

ESRs will complete mandatory secondments of interest for the PhD thesis project (minimum 3 months outside Spain) to obtain the **International Doctorate**. Secondments will take place in prestigious institutions of higher education, universities, or research centers.

### 4.3. Research & Training

The ESRs him/herself will be responsible for drawing up his/her Personal Career Development Plan (PCDP) and Personal Research Plan (PRP). All ESRs will oversee their own career planning and will take responsibility for their career development with support from the supervisory team.

SDGine follows the Seven EU principles on Doctoral Training, contemplating the Triple-“i” dimension through: i) International secondments; ii) Inter-sectoral collaboration agreements with industry; and iii) Interdisciplinary PhD supervision.

Training will be close and personalized. It will be divided and/or focused into:

- **International & Industrial secondments** (minimum 6 months in academic or non-academic institutions)
- **Research skills:** systematic understanding of a field of study and the command of research skills and methodologies associated with their PhD thesis projects and the main disciplines of their PhD programme (RDI, publications, conferences, grants writing, communication and networking)
- **Transferable skills:** independent work, collaborative work, and development of innovative projects in international and multidisciplinary contexts (SDGs, project management, Intellectual Property Rights, Mentoring & Coaching, Entrepreneurship & Innovation)
- **Complementary skills:** teaching collaborations and cross-disciplinary training seminars.

## 5. WORK TERMS AND CONDITIONS

### 5.1. Contract & Working conditions

The selected ESRs will be employed under an **employment contract with UPM**, and will enjoy the same treatment, benefits, opportunities, standards of safety and occupational health as those awarded to researchers at UPM holding a similar position. Their **status as MSCA fellows** will be recognized in their **36-month contracts**.

**Working conditions**, provided by UPM, hosting institutions (secondments/stays) and industrial partners, will be:

- Incorporation into the corresponding research unit. Office and laboratory space. Collaborative environment.
- Infrastructure, equipment, and material necessary for the implementation of the PhD thesis.
- Academic, industrial, international, national, and regional partnerships. Industrial and International Doctorates.
- Administrative support: financial control, travel arrangements (conferences attending, short stays), and organisational procedures (PhD enrolment and defence).
- Welcoming services: personal and familiar advice (accommodation, schools), assistance in administrative procedures required by authorities (work permits).
- Career development monitoring and training; attendance and participation in conferences, workshops, or courses.
- Support on job and post-doctoral positions searching. Encouragement of venture creation and self-employment.

If special needs allowance is needed, UPM will apply to the Research Executive Agency for a dedicated special needs grant in COFUND (**MSCA special needs allowance**, up to 60,000.00€, lump sum per researcher).

### 5.2. Economic conditions (salary and research budget)

The appropriation for the recruitment of each ESR (per year) will be 40,908.00€ (with family allowance) or 34,908.00€ (without family allowance), corresponding to a gross annual salary of **32.590,82€** or **27.810,71€**, respectively (after employment taxes and social security coverage payment by UPM)

Additionally, a Research budget of 5.092,80€ to 11.092,80 will cover any cost that may arise from his/her research (equipment, conference attendance, open access fees, seminar registrations...)

### 5.3. Employment conditions & Social benefits

**Employment conditions** will be aligned with the “*Charter & Code*” for researchers, Spanish and UPM regulations. The employment contracts will be of the type “*Predoctoral Contract*” (Model 404, full-time) with UPM.

The salaries will comprise **personal income tax arrangements**, **social security coverage** (spouse and children will be also included in the **Spanish Healthcare System**), and **social benefits** (parental leave with full pay, contribution to pension funds, severance payment, unemployment benefits, and health and accident insurance).

Suspension of the contract will be possible according to the conditions established in the Spanish Workers’ Stand (temporal incapacity, maternity, paternity, or adoption).

UPM will place particular emphasis on the **work and family life balance**: flexible working time options, teleworking (including infrastructure, laptops, and software), reduced flexible working hours for legal guardianship reasons, summer camps for children, and extended holidays.

## 6. APPLICATION

### 6.1. SDGine website

The central portal for all information is the website (SDGine.eu). The site also includes the Applicants' Portal. The SDGine web provides all the information and documents necessary to apply for the positions and will serve as first entry point for all information about the programme throughout its duration.

### 6.2. Documentation

Documents are divided into “**Supporting documentation**” and “**Application documentation required**”.

1. **Supporting documentation** comprise the documents listed below:

- Call for applicants.
- Guide for applicants.
- Frequently asked questions.
- Request for Redress.

2. **Application documentation required** will consist of the following documents and/or templates:

- **Application form** (filled-in online), requiring the candidate to provide overview information and evidence: name and surname, personal data, contact details, degree(s) obtained, transnational mobility rule compliance, and English skills.
- **Curriculum Vitae** (3 DIN-A4 pages maximum): personal, academic, and professional information, and scientific production, if any.
- **Expression of interest** (1 DIN-A4 page maximum): candidates must express their interest for one of the proposed PhD theses, giving a consistent explanation for their choice.
- **Declaration of absence of conflict of interest.**
- **Supporting academic documents**: scanned documents supporting the application required by the call and PhD thesis, such as university degrees (BSc, MSc<sup>1</sup>), academic stays, certificates (languages, courses and seminars), and research production (in case the candidate have any).
- **Supporting personal documents**: scanned documents such as national identity card or passport, birth certificates of children, certificate of marriage, disability certificate, documents supporting the compliance of the mobility rule (city registrations, employment contracts, and/or university fees) and others.

**All the documents and forms must be filled in English. All the supporting documents will be uploaded in PDF format files. An application reference<sup>2</sup> will be automatically generated by the Applicants' Portal. The submitted files will be named as follows: “application reference \_ document” (e.g, SDGINE-DIR-RJTF52-36-YLVPYM\_CV).**

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<sup>1</sup> At the time of registration for the doctorate, documents should be provided duly legalized by apostille, or in their default, legalized by diplomatic means, and along with the corresponding official translation to Spanish or English. If you have studied in a European University legalization of the degree is not necessary. If necessary, it will be required to submit an original academic certificate issued by their home institution, or relevant body, indicating that the diploma obtained provides access to PhD studies in the issuing country.

<sup>2</sup> For example, SDGINE-DIR-RJTF52-36-YLVPYM

### 6.3. Applicants' Portal and online submission

The electronic submission of “**Application documentation required**” and any other documents during the action will be done through the Applicants' Portal <https://sdgine.eu/applicants-portal/> . Candidates will be provided with username and password after registration.

Screenshots of the Applicants Portal to help candidates through the application process.

Figure 1: Applicants Portal Screenshot. To get started click in the blue box (APPLY HERE)

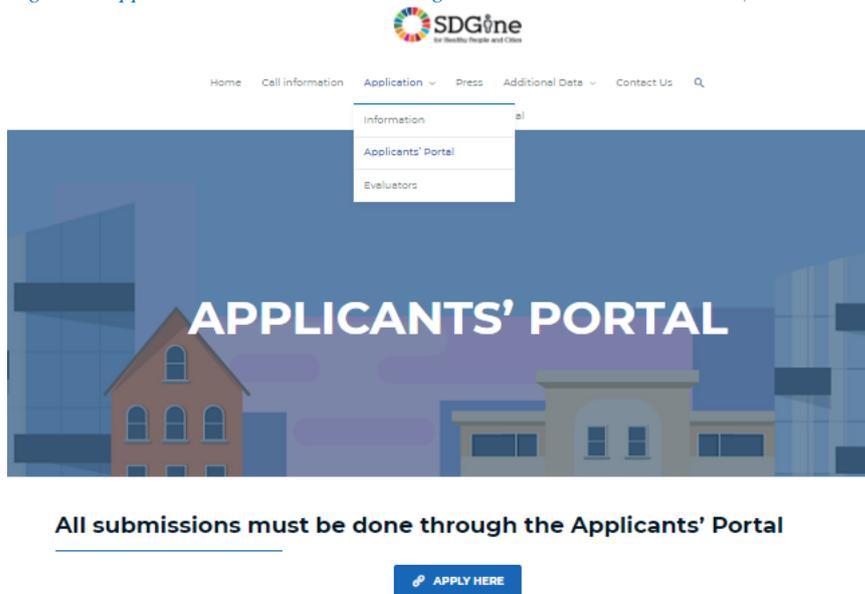


Figure 2: Applicants Portal Screenshot. To get your application started fill in your email address and the security code, press

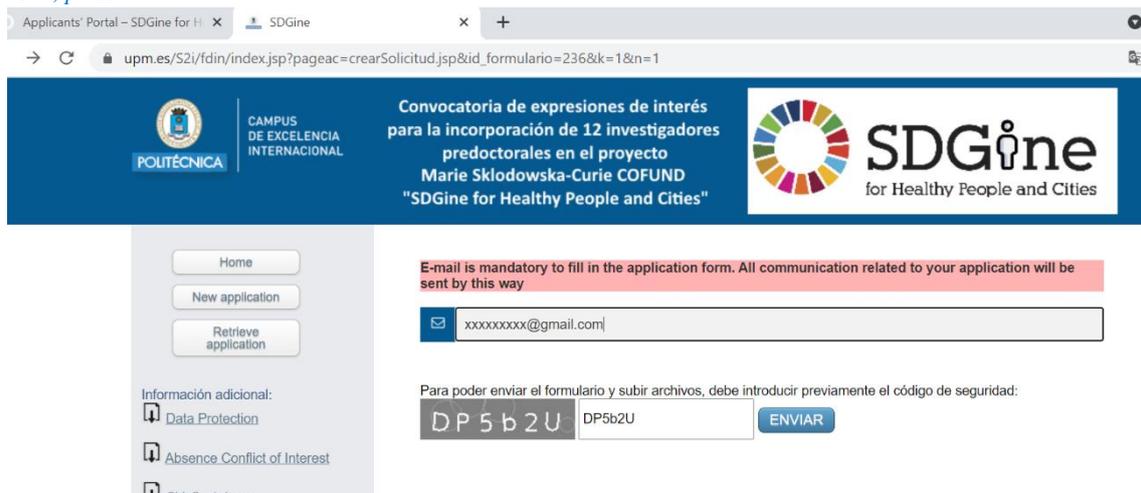


Figure 3: Applicants Portal Screenshot. Save your application reference. Application reference appears next to the Spanish sentence “El Código de solicitud es:”. In this figure the application reference is: SDGINE-APPLICANTS-STJU9D-1-S4CF5N

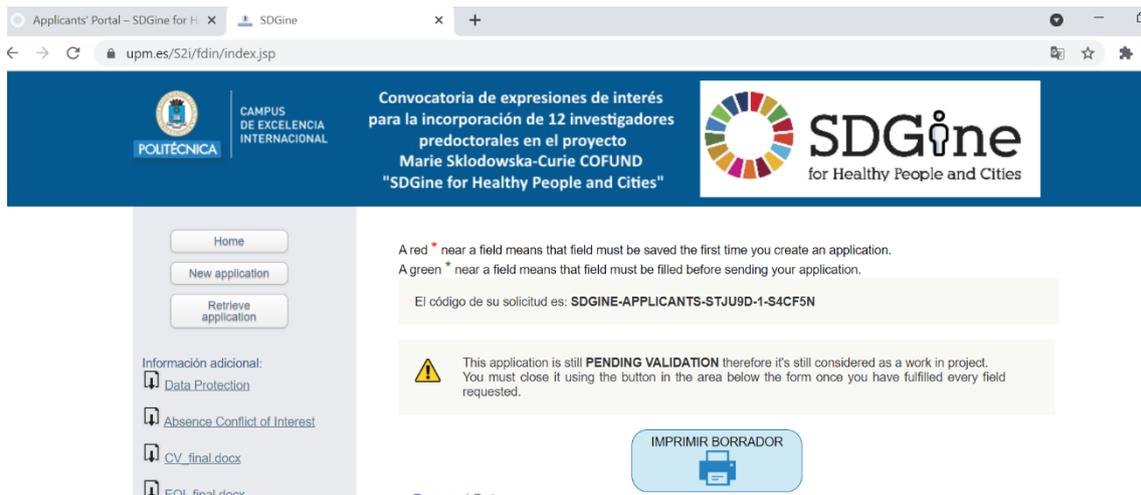
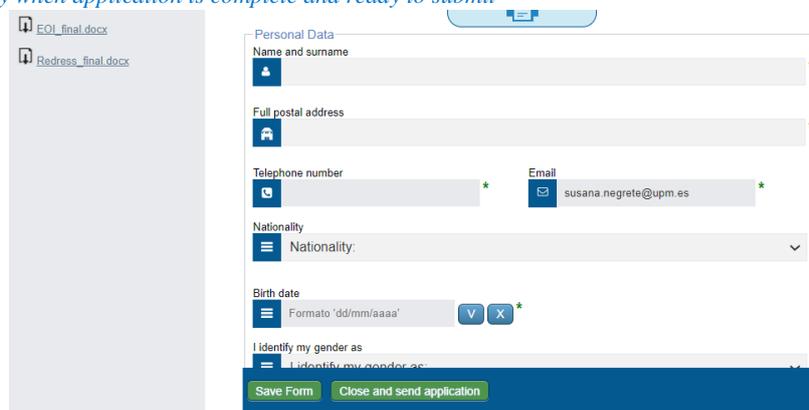


Figure 4: Applicants Portal Screenshot. Scroll down, fill in the application and Save Form. Press Close and send application only when application is complete and ready to submit



Candidates can apply for as many positions as they are interested in.

#### 6.4. Deadline

The deadline for applications is the 31 January 2022 at 14.00 CET Time (Brussels time)

Please, note that UPM offers 4 funded positions, chosen from 7 topics with matching supervisors.

#### 6.5. Eligibility criteria

Applicants must, at the call deadline, comply with the following eligibility criteria (evidence must be provided):

- **Research experience - Early-Stage Researcher (ESR):** at the date of recruitment, candidates must be in the first four years (Full-Time Equivalent Research Experience<sup>3</sup>) of their research careers and not yet have been awarded a doctoral degree.

<sup>3</sup> Full-Time Equivalent Research Experience is measured from the date when a researcher obtained the degree entitling him/her to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the researcher is recruited, even if a doctorate was never started or envisaged.

- **Mobility criterion (MSCA Mobility rule):** i) Researchers may be of any nationality; ii) Applicants may not have resided or carried out their main activity in Spain for more than 12 months in the 3 years prior to the call deadline (time spent as part of a procedure for obtaining refugee status under the Geneva Convention<sup>4</sup>, compulsory national service and/or short stays such as holidays are not considered).
- **Degree:** candidates must have completed the studies that lead to an official university degree from any country of the European Higher Education Area (EHEA) awarding 300 ECTS<sup>5</sup>, of which at least 60 ECTS must correspond to master level. **Or** they must have completed a degree in a University not adapted to the EHEA that gives access to doctoral studies. The verification of an equivalent level of studies to the former ones will be made by UPM when the application procedure starts.
- **Language:** candidates must have a demonstrable level of English (B2 or higher). Evidence must be provided upon application, with one of the following certificates: University of Cambridge, IELTS, or TOEFL. Exemptions: English-native speakers, or applicants who have pursued their bachelor or postgraduate studies at countries where English is the official language.

**Applications received after deadlines or with conflict of interest will be rendered “not eligible”.**

**Revision of the eligibility criteria** that apply to the call will be done after deadline. The results will be notified individually by e-mail, and the provisional list of eligible and excluded applicants will be published at SDGine website. Following the Spanish Regulations of Public Calls, time for allegations will be established: 10 working days from the date of notification to the applicants to query the results and rectify their application (redress procedure). After the abovementioned period, the applicants will receive definitive notification by e-mail indicating whether or not they have entered into the selection process, along with the definitive list of eligible applicants. The details of further procedures and deadlines will be notified to the eligible applicants individually by e-mail and published online.

## 6.6. Selection process: remote evaluation and personal interview

### REMOTE (ONLINE) EVALUATION OF ELIGIBLE CANDIDATES BY THE SELECTION COMMITTEES – EVALUATION 1

The PhD theses (and hence its applications) will be classified into the Six Doctoral Areas. Selection Committees will be composed by 3 international experts in the given area, coming from Academia or Industry (UPM experts are excluded). Experts have the right background to assess the fitting candidatures. To avoid any conflict of interest, and to ensure the highest levels of transparency, the remote evaluation will be done by Madri+d Foundation. UPM will at no time have access to the evaluators' database, thus guaranteeing the anonymity of the process. Upon completion of the evaluation of candidatures, all the documents generated in the process (ranked lists, Evaluation Summary Reports...) will be transferred to UPM.

Each application will be evaluated independently and individually by the members of the Selection Committee in line with the “Evaluation criteria”, avoiding “Gender-nationality-age-biased” recruitment, to which end the candidates' personal data will be anonymized, (Table 3).

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<sup>4</sup> 1951 Refugee Convention and the 1967 Protocol.

<sup>5</sup> European Credit Transfer and Accumulation System.

The provisional ranked lists of candidates for each PhD thesis topic will be published in the SDGine website. Applicants will be notified by e-mail and candidates will have 10 working days for allegations (redress procedure) before publishing the definitive ranked lists of candidates for each PhD thesis topic (Evaluation 1 scores). Each candidate will receive a personal Evaluation Summary Report.

*Table 3. Remote evaluation criteria (Selection Committees, Evaluation 1).*

<b>GENERAL CRITERIA AND ISSUES TO CONSIDER (Evaluation 1)</b>	
<b>CURRICULUM VITAE (CV)</b>	<b>EXPRESSION OF INTEREST (EI)</b>
Threshold 3/5, Weight factor 60% (0.6), Priority 1	Threshold 3/5, Weight factor 40% (0.4), Priority 2
<ul style="list-style-type: none"> <li>- Academic records and excellence</li> <li>- Professional experience, if any</li> <li>- Research experience and scientific production, if any</li> <li>- Complementary training &amp; use of English</li> </ul>	<ul style="list-style-type: none"> <li>- Motivation</li> <li>- Statement of purpose &amp; commitment</li> <li>- Choice of PhD thesis with respect to the candidate's background</li> </ul>

**INTERVIEW OF ELIGIBLE CANDIDATES BY PhD SUPERVISOR, PhD CO-SUPERVISOR, AND INDUSTRY STAFF – EVALUATION 2**

Candidates who received a score above 75% in Evaluation 1 will be invited to an interview organised and conducted by the PhD supervisor, PhD co-supervisor, and industry staff, according to the evaluation criteria described in Table 4 All interviews will be internet-based using video calls and will be held in English.

The provisional ranked lists of candidates for each PhD thesis topic, will be available online and candidates will be notified by e-mail. Then feedback will be issued to the applicants (10 working days for allegations, redress procedure) before the definitive ranked lists of candidates (Evaluation 2 scores) for each PhD thesis topic are published. Notifications will be sent by e-mail to each applicant. Each interviewed candidate will receive a personal Evaluation Summary Report.

*Table 4. Interview evaluation criteria (PhD supervisor, PhD co-supervisor and industry staff; Evaluation 2).*

<b>GENERAL CRITERIA AND ISSUES TO CONSIDER (Evaluation 2)</b>		
<b>CANDIDATES' BACKGROUND (CB)</b>	<b>CANDIDATES' POTENTIAL (CP)</b>	<b>DEFENCE OF THE EI (DEI)</b>
Threshold 3/5, Weight factor 50% (0.5), Priority 1	Threshold 3/5, Weight factor 30% (0.3), Priority 2	Threshold 3/5, Weight factor 20% (0.2), Priority 3
<ul style="list-style-type: none"> <li>- Presentation of the Curriculum Vitae</li> <li>- General scientific knowledge</li> <li>- Professional skills and specific knowledge</li> </ul>	<ul style="list-style-type: none"> <li>- Motivation, ability to complete a PhD</li> <li>- Work capacity, working in teams</li> <li>- Personal skills: leadership, entrepreneurship, proactivity, and adaptive capacity</li> </ul>	<ul style="list-style-type: none"> <li>- Presentation skills: data consistency and reasoning capacity; ability to take part in a scientific discussion</li> <li>- Communication skills in English</li> </ul>

## **RANKED LIST WITH CANDIDATES BY THE UPM RESEARCH COMMISSION - EVALUATION 3**

The UPM Research Commission will calculate and revise the average scores (Evaluation 3) of the candidates, considering both remote evaluation and interview (50/50, %) equally weighted:

$$\text{Evaluation 3} = (\text{Evaluation 1} + \text{Evaluation 2}) / 2$$

The provisional ranked lists of candidates for each PhD thesis topic will be produced. The **4 selected ESRs** will be the ones with the best scores for each pair of research lines (for example, 1A and 1B). The lists will be available online and candidates will be notified by e-mail. Then feedback will be issued to the applicants (10 working days for allegations, redress procedure) before the definitive ranked lists of candidates for each PhD thesis research lines and for the **4 funded positions** are published (Evaluation 3 scores). Notifications by e-mail will be sent to each applicant.

UPM will set up reserve ranking list for each PhD thesis position with the remaining candidates. Should a position not be fulfilled by an applicant, another candidate will be invited, based on the score obtained.

### **7. TIMELINE**

Estimated dates are shown below<sup>6</sup>:

- Call deadline: 31 January 2022
- Evaluation 1 scores: April 2021
- Evaluation provisional scores: May 2022
- Evaluation final scores: May 2022
- Contracts signing: May to September 2022

### **8. INCOMPATIBILITY**

The employment contracts of the ESRs will be incompatible with any other grant or contract, with payments that imply a contractual link of a similar nature, or with activities that may prevent the individual from dedicating him/herself exclusively to the work that is the object of the contract. Acceptance of the contract implies carrying out the doctorate and the research work in person.

### **9. CONTACT DETAILS**

Support service will be available during the application period via email: [sdgine@upm.es](mailto:sdgine@upm.es)

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<sup>6</sup> These dates are tentative and could be subject to changes.

## 10. ANNEX I: RESEACH LINES DESCRIPTION

RESEARCH LINE 1A	
<b>COMPANY</b>	<b>Telefónica I+D</b>
<b>PhD THESIS SUPERVISOR (UPM)</b>	Prof. Dr. José Ignacio Moreno Novella <i>Telecommunications Engineering School</i> <i>Telematic Systems Engineering Department</i>
<b>PhD THESIS CO-SUPERVISOR (UPM)</b>	Prof. Dr. Manuel Alvarez-Campana Fernández-Corredor <i>Telecommunications Engineering School</i> <i>Telematic Systems Engineering Department</i>
<b>PhD THESIS TUTOR (COMPANY)</b>	Mr. Rafael Cantó Palancar <i>Transport &amp; IP Network Manager</i> Mr. Luis Miguel Contreras Murillo <i>Technology Expert at Global CTIO unit / Telefónica</i>
<b>DESCRIPTION OF THE PhD THESIS PROJECT</b>	<p>Title: Design of novel network functions, architectures and protocols based on programmable data planes.</p> <p>Currently 5G deployment is providing momentum to emerging technologies like software defined networks (SDNs), Network Function Virtualization (NFV) and Network Slicing (NS). In the next years programable data planes could provide the adoption by telecommunication sector of Protocol Independent Switch Architectures (PISA) as the common hardware platform to develop network specific elements as routers, switches, etc, based on programmable data planes which reduces the time to market of innovative functionalities.</p> <p>This PhD will focus on the evaluation of programable data planes and its capacity to support innovative network functionalities in a dynamic and efficient way. To support this goal, PhD will target three main topics:</p> <ul style="list-style-type: none"> <li>- Evaluation of the State of the Art on programable data planes. Identification of architectures, protocols and processes involved.</li> <li>- Design of a methodology to develop new functionalities at data layer over a PISA platform based on programable data planes.</li> <li>- Identification, analysis and evaluation of relevant use cases for telecommunication operators in the deployment of advanced network elements.</li> <li>- Integration of developed solutions with existing ones to ensure smooth transition of operational networks</li> </ul> <p>Keywords: <a href="#">Programable Data Planes</a>, <a href="#">PISA</a>, <a href="#">P4</a>, <a href="#">DPDK</a>, <a href="#">PROX</a>, <a href="#">SmartNICs</a></p> <p><i>This work intends to contribute to SDG objectives on goal 9: Industry, Innovation and Infrastructures in addition to goal 4 quality education and goal 5 gender equality.</i></p>
<b>TRAINING ACTIVITIES</b>	<p>PhD student will be integrated in the <a href="#">RSTI</a>-UPM research group activities, covering aspects related to advanced mobile network technologies (5G/6G), IoT and Cybersecurity.</p> <p>In this process, PhD will participate in meetings, seminars and research projects as well as dissemination activities. We expect that the candidate will actively publish his/her research work on conferences and journals of high impact. In addition, horizontal meetings to evaluate the progress of the work and identify relevant use cases and scenarios will be performed in coordination with Telefonica team.</p> <p>In particular we expect that PhD student will address journals on the level of IEEE (IEEE Communications, IEEE Wireless Communications) and attend conferences related with PISA, P4 or DPDK.</p>

<b>SECONDMENT(S)</b>	Student will have the opportunity to complete his/her training by short stays on selected sites according to the network of contacts maintained by RSTI-UPM and Telefonica.
<b>REQUIREMENTS FOR CANDIDATES</b>	Computer science: Master's degree or equivalent Electrical Engineering: Master's degree or equivalent <b>Skills:</b> Networking, Protocols, Mobile Wireless technologies, Virtualization, Programming <b>English:</b> Advanced / Proficiency (C1 / C2)

<b>RESEARCH LINE 1B</b>	
<b>COMPANY</b>	<b>Telefónica I+D</b>
<b>PhD THESIS SUPERVISOR (UPM)</b>	Prof. Dr. Manuel Alvarez-Campana Fernández-Corredor <i>Telecommunications Engineering School Telematic Systems Engineering Department</i>
<b>PhD THESIS CO-SUPERVISOR (UPM)</b>	Prof. Dr. José Ignacio Moreno Novella <i>Telecommunications Engineering School Telematic Systems Engineering Department</i>
<b>PhD THESIS TUTOR (COMPANY)</b>	Mr. Rafael Cantó Palancar <i>Transport &amp; IP Network Manager</i> Mr. Luis Miguel Contreras Murillo <i>Technology Expert at Global CTIO unit / Telefónica</i>
<b>DESCRIPTION OF THE PhD THESIS PROJECT</b>	<p>Title: Intent based programable data planes for disaggregated architectures.</p> <p>Currently, 5G deployment is providing momentum to emerging technologies like software defined networks (SDNs), Network Function Virtualization (NFV) and Network Slicing (NS). In the next years programable data planes could provide the adoption by telecommunication sector of Protocol Independent Switch Architectures (PISA) as the common hardware platform to develop network specific elements as routers, switches, etc, based on programable data planes which reduces the time to market of innovative functionalities.</p> <p>This PhD will focus on the evaluation of programable data planes and its capacity to support innovative network functionalities in a dynamic and efficient way. To support this goal, PhD will target three main topics:</p> <ul style="list-style-type: none"> <li>- Evaluation of the State of the Art on programable data planes. Identification of architectures, protocols and processes involved.</li> <li>- Design of a methodology to develop new functionalities at data layer over a PISA platform based on programable data planes.</li> <li>- Identification, analysis and evaluation of relevant use cases for telecommunication operators in the deployment of advanced network elements.</li> <li>- Integration of developed solutions with existing ones to ensure smooth transition of operational networks</li> </ul> <p>Keywords: <a href="#">Programable Data Planes</a>, <a href="#">PISA</a>, <a href="#">P4</a>, <a href="#">DPDK</a>, <a href="#">PROX</a>, <a href="#">SmartNICs</a></p> <p><i>This work intends to contribute to SDG objectives on goal 9: Industry, Innovation and Infrastructures in addition to goal 4 quality education and goal 5 gender equality.</i></p>
<b>TRAINING ACTIVITIES</b>	PhD student will be integrated in the <a href="#">RSTI</a> -UPM research group activities, covering aspects related to advanced mobile network technologies (5G/6G), IoT and Cybersecurity. In this process PhD will participate in meetings, seminars and research projects as well as dissemination activities. We expect that the candidate will actively publish his/her research work on conferences and journals of high impact. In addition, horizontal

	<p>meetings to evaluate the progress of the work and identify relevant use cases and scenarios will be performed in coordination with Telefonica team.</p> <p>In particular we expect that PhD student will address journals on the level of IEEE (IEEE Communications, IEEE Wireless Communications) and attend conferences related with PISA, P4 or DPKD.</p>
<b>SECONDMENT(S)</b>	<p>Student will have the opportunity to complete his/her training by short stays on selected sites according to the network of contacts maintained by RSTI-UPM and Telefonica.</p>
<b>REQUIREMENTS FOR CANDIDATES</b>	<p>Computer science: Master's degree or equivalent          Electrical Engineering: Master's degree or equivalent  <b>Skills:</b> Networking, Protocols, Mobile Wireless technologies, Virtualization, Programming  <b>English:</b> Advanced / Proficiency (C1 / C2)</p>

RESEARCH LINE 2A	
<b>COMPANY</b>	<b>Repsol</b>
<b>PhD THESIS SUPERVISOR (UPM)</b>	Prof. Dr. Alberto Mozo <i>Computer Systems Engineering School</i> <i>Computer Systems Department</i>
<b>PhD THESIS CO-SUPERVISOR (COMPANY)</b>	Dr. José Antonio Martín <i>Advisor, Advanced Mathematics</i> <i>Repsol Technology Lab</i>
<b>DESCRIPTION OF THE PhD THESIS PROJECT</b>	<p>The main objective of this PhD thesis is the integration and adaptation of the latest trends in deep learning to the analysis of time series sensor data. Using a more specific approach, this objective can be divided into several specific goals:</p> <ol style="list-style-type: none"> <li>1. Pre-training models on unlabeled sensor datasets through self-supervised learning, as it is done with text and images.</li> <li>2. Apply transfer learning to bring the knowledge of pre-trained models into downstream sensor-related tasks such as anomaly detection, classification or clustering, and compare their performance with standalone trained models.</li> <li>3. Create methods to visualize and interpret the predictions of the trained models, from the big picture of analysing the top errors to the analysis of the interactions between neurons in the model.</li> <li>4. Improve the robustness of model predictions with sensor data using techniques for uncertainty quantification in deep neural networks, such as MonteCarlo Dropout or deep ensembles.</li> <li>5. Improve the quality of sensor data through deep learning based missing value imputation techniques.</li> <li>6. Development of a software platform to showcase the results of the aforementioned objectives.</li> </ol>
<b>TRAINING ACTIVITIES</b>	<p>The successful applicant will work in a multi-disciplinary team of computer scientists and other engineers at Universidad Politécnica de Madrid and Repsol. The candidate is also expected to attend all schools and training events organized within the company and the research group he/she works on during the PhD. Participation in outreach activities will be a part of duties too. More specifically, some of the training activities that the project will undertake include:</p>

	<ul style="list-style-type: none"> <li>- Schools and workshops aimed to create a multidisciplinary background and train the ESR to work in multidisciplinary teams.</li> <li>- Training at UPM aimed to improve soft skills and extend knowledge in complementary disciplines.</li> <li>- Conferences and workshops outside UPM, even when the ESR does not present any research work, as long as the topic of the conference is related to the project.</li> <li>- Participation in the organization of training and dissemination events organised by the supervisors.</li> </ul>
<p><b>SECONDMENT(S)</b></p>	<p>The successful candidate will undertake two secondments of 3-6 months during the project. The first one will take place during the second year of the project, with the Application Platforms and Software Systems Research Lab led by Itai Segall in Nokia Bell Labs, Murray Hill, NJ, USA. This research group has experience in the application of machine learning and deep learning techniques in real world industries. The second secondment, to be held during the third year of the project, would be carried out at Leiden Institute of Advanced Computer Science (LIACS), Leiden, The Netherlands, under the supervision of Prof. Thomas Bäck. The research LIACS is one of the top institutes in Computer Science in Europe, and has a leading experience in Artificial Intelligence (e.g. Evolutionary Computation, Natural Computing, etc.) and its application to Industry.</p> <p>Please note that the description of these secondments is tentative and can change during the course of the project.</p>
<p><b>REQUIREMENTS FOR CANDIDATES</b></p>	<p>All qualified candidates irrespective of gender or nationality are welcome to apply as long as they meet the following conditions:</p> <ul style="list-style-type: none"> <li>- Academic degree in Computer Science or a related field (earned at the date of recruitment).</li> <li>- Background in machine learning, computational intelligence and/or data mining. A master’s degree or any other official qualification on these topics will be a plus.</li> <li>- Very strong programming skills, in languages such as R, Python, Java or C++.</li> <li>- Excellent spoken and written command of English is required.</li> </ul> <p>We are looking for a talented and highly motivated candidate. He/she must have an independent and well-structured working style, as well as the ability to work in a team.</p> <p>Applicants will be required to meet the Marie Skłodowska-Curie Early-Stage Researcher eligibility criteria. In particular, at the time of appointment they should be within the first four years of their research career, have not been awarded a doctoral degree, and should not have resided in the host country (Spain) for more than 12 months in the last three years immediately before the appointment. Researchers are normally required to undertake transnational mobility (i.e., move from one country to another) when taking up the appointment.</p>

RESEARCH LINE 2B	
COMPANY	Repsol
<b>PhD THESIS SUPERVISOR (UPM)</b>	Prof. Dr. Juan C. Dueñas <i>Telecommunications Engineering School</i> <i>Telematic Systems Engineering Department</i>
<b>PhD THESIS CO-SUPERVISOR (COMPANY)</b>	Dr. José Antonio Martín Hernández <i>Advisor, Advanced Mathematics</i> <i>Repsol Technology Lab</i>
<b>DESCRIPTION OF THE PhD THESIS PROJECT</b>	Reinforcement Learning for proactive management of industrial networks and services. OBJECTIVES <ul style="list-style-type: none"> <li>- Internet of Things – Industry 4.0: efficient and reliable networks and services.</li> <li>- Proactive management of network and services by predicting models.</li> <li>- Predictive models able to extract both isolated management events and events chains.</li> <li>- Converting predictive models into agent-based simulation models.</li> <li>- Optimization of management operations by means of Reinforcement Learning on simulated networks and services.</li> </ul>
<b>TRAINING ACTIVITIES</b>	Methodology of Science -course Instituto de Ciencias de la Educación UPM. Seminars in transversal training Escuela Internacional de Doctorado-UPM ( <a href="https://blogs.upm.es/eidoctorado/">https://blogs.upm.es/eidoctorado/</a> )
<b>SECONDMENT(S)</b>	Queen Mary University of London & Data Centric Engineering Programme. The Alan Turing Institute LIME (Learning-based reactive Internet Engineering) project. Richard G. Clegg, Steve Uhlig, Alan Turing Institute, Queen Mary University, London.
<b>REQUIREMENTS FOR CANDIDATES</b>	MSc in Computer Networks, Data Science, Computer Science or alike Skills: analytical capabilities, problem solving, self-management, initiative, communication Background: maths and statistics, data analytics, Python programming

RESEARCH LINE 3A	
COMPANY	Repsol
<b>PhD THESIS SUPERVISOR (UPM)</b>	Prof. Dr. Manuel Rodríguez Hernández <i>Industrial Engineering School</i> <i>Chemical and Environmental Engineering Department</i>
<b>PhD THESIS CO-SUPERVISOR (COMPANY)</b>	Dr. Rafael Roldán Mesa <i>Repsol S.A.</i>
<b>DESCRIPTION OF THE PhD THESIS PROJECT</b>	Simulation model for the Syngas Generation process in an e-fuels production scheme. Hybridization with SMR models, SMR H2 with the complete scheme. The thesis project will be focused on the development of a rigorous model of the whole Syngas Generation Unit (SGU) including the CO2 conversion in RWGS, recycles of Tail Gas from FT and purifications of streams. This model can be used for the design of a pilot/demo/industrial unit or facility in a future as well as for monitoring the unit operation. In fact, it will be a digital twin of the actual physical process that will allow to optimize the operation parameters in order to minimize carbon emissions and production costs. Basically, the thesis project will have two main phases, the first one devoted to the development of the process model and the second one devoted to the lifecycle assessment.

<b>TRAINING ACTIVITIES</b>	Webinars and conferences related to: <ul style="list-style-type: none"> <li>- Synthesis of fuels and chemicals using syngas as raw material,</li> <li>- Purification and gas separation technologies.</li> <li>- Chemical engineering software simulation tools</li> </ul>
<b>SECONDMENT(S)</b>	Tentative. External institutions with experience in: <ul style="list-style-type: none"> <li>- simulation and optimization (like Imperial College of London)</li> <li>- syngas production, and F-T (like Norwegian University of Science and Technology – Norway)</li> </ul> A (at least) three months stay in (at least) one external institution is expected
<b>REQUIREMENTS FOR CANDIDATES</b>	<b>Degree</b> (MSc, ...): MSc in Chemical Engineering, Industrial Engineering or Chemical <b>Skills:</b> <ul style="list-style-type: none"> <li>- Languages: English: B2+ minimum. C1 will be valued.</li> <li>- Teamwork</li> <li>- Alliances generation</li> <li>- Proactivity and initiative</li> <li>- Flexibility</li> <li>- Leadership</li> <li>- Simulation, Catalysis and Chemical Engineering fundamental.</li> <li>- Interest to develop an R&amp;D career.</li> <li>- Public communication &amp; presentation skills</li> </ul> <b>Background</b> <ul style="list-style-type: none"> <li>- 1 or 2 years of experience will be valued</li> </ul>
<b>TRAINING ACTIVITIES</b>	The candidate will be trained on knowledge of the natural environment, ecology and biodiversity, ecosystem services and environmental indicators, as well as technological tools, remote sensing and GIS, statistics and geostatistics. In addition, it will make relevant contributions to areas of public health and urban planning. The candidate will benefit from national and international contacts established by the research group. One of the academic objectives of this Thesis is the realization of the International Doctorate, for which it is necessary that the doctoral candidate carries out stays of at least three months of duration in foreign research centers. These stays will be hosted by research teams at the forefront of studies on the ecological characterization and biodiversity of wild areas. Therefore, the PhD student will benefit from learning remote sensing-based analysis technologies and their use in urban and peri-urban planning.
<b>SECONDMENT(S)</b>	Tentative secondments Among the most important contacts of the proposer and his SILVANET Research Group are: the Universities of Cambridge and Bangor in the United Kingdom, where the PhD student will stay in the fourth quarter of the first year, and the Universities of California Berkeley (stay in the third quarter of the second year) and Oregon (United States, where he will stay in the second quarter of the third year).
<b>REQUIREMENTS FOR CANDIDATES</b>	<b>Degree</b> (MSc, ...): To be in possession of an official diploma of Bachelor's degree, first cycle Degree, or equivalent, plus one of university Master's degree, or equivalent, provided that at least 300 ECTS credits have been obtained in all of these two teachings. <b>Skills:</b> knowledge of Remote Sensing, GIS, R, (Geo)statistics and programming will be welcome. <b>Background:</b> Forestry, Environmental Sciences, etc.

RESEARCH LINE 12A	
<b>COMPANY</b>	<b>Optiva Media</b>
<b>PhD THESIS SUPERVISOR (UPM)</b>	Prof. Dr. José Manuel Menéndez García <i>Telecommunications Engineering School Signals, systems and radio communications department</i>
<b>PhD THESIS CO-SUPERVISOR (COMPANY)</b>	Dr. Iñaki Martínez Sarriegui <i>Head of Research &amp; Innovation at Optiva Media</i>
<b>DESCRIPTION OF THE PhD THESIS PROJECT</b>	<p>Content consumption habits are changing, with increasingly demanding consumers that require total control of <b>what</b>, <b>when</b> and <b>where</b> they consume, and with old (linear TV) and new (VoD, streaming) paradigms coexisting.</p> <p>This favours the emergence of new technological and business actors, creating an overwhelming collection of available contents, growing every day with the addition of new series and films in an increasing offer of platforms and streaming services.</p> <p>In this context, actual techniques for content search and indexation fail at providing high-level semantic capabilities, especially in textual documents when capturing the intention and/or the underlying narrative structure. The result is a huge amount of information and metadata inaccessible to automatic processing and ‘unembraceable’ by humans.</p> <p>The most direct consequence of this is that <i>end-users spend more than 30 minutes a day</i> deciding what to watch on TV, and frequently ending in selecting a content that doesn’t fit their interests or their actual mood, and that will usually be later discarded.</p> <p>While for most people this generates only some discomfort and the obvious feeling of wasting their time, in people with mental conditions like depression it could lead to anxiety episodes and other more severe complications derived from idling and, especially, for ending with the selection by discard of a content that could be harmful in psychological terms.</p> <p>In this doctoral thesis, we propose addressing this problem by means of the work in two areas: <u>Conceptual Content Modelling</u> and <u>User Profiling</u>, the outcomes of which will be combined to create an advanced recommendation framework for a ‘safe’ TV experience for people suffering from mental conditions, ultimately contributing to their wellbeing.</p>
<b>LIST OF TRAINING ACTIVITIES</b>	<ul style="list-style-type: none"> <li>- Doctoral courses at UPM</li> <li>- Dedicated training on Digital and Pay TV at Optiva Media with technical support from the GATV-UPM.</li> <li>- AWS AI-ML tools webinars and specific company courses at Optiva Media</li> <li>- Attendance at International Artificial Intelligence conferences related to the thesis project like AIME, AIAI; with active participation on practical workshops.</li> <li>- Short stays of the student in institutions of recognised prestige in the field of the doctoral thesis.</li> </ul>
<b>SECONDMENT(S)</b>	Tentative <ul style="list-style-type: none"> <li>- Computational Intelligence Group, Vrije Universiteit (Netherlands)               <ul style="list-style-type: none"> <li>o <a href="https://cs.vu.nl/ci/">https://cs.vu.nl/ci/</a></li> </ul> </li> <li>- Digital Health &amp; Wellbeing Group, Fondazione Bruno Kessler (Italy)               <ul style="list-style-type: none"> <li>o <a href="https://www.fbk.eu/en/digital-healthwellbeing/">https://www.fbk.eu/en/digital-healthwellbeing/</a></li> </ul> </li> <li>- Fraunhofer FOKUS (Germany)               <ul style="list-style-type: none"> <li>o <a href="https://www.fokus.fraunhofer.de/en/fokus/research-topics/ai">https://www.fokus.fraunhofer.de/en/fokus/research-topics/ai</a></li> </ul> </li> <li>- LIAAD, Artificial Intelligence and Decision Support Centre of the INESC TEC (Portugal)</li> </ul>

	<ul style="list-style-type: none"> <li>○ <a href="https://www.inesctec.pt/en/centres/liaad#intro">https://www.inesctec.pt/en/centres/liaad#intro</a></li> <li>- Centre for Research &amp; Technology Hellas (Atenas, Grecia)</li> <li>○ <a href="https://www.certh.gr/root.en.aspx">https://www.certh.gr/root.en.aspx</a></li> </ul>
<b>REQUIREMENTS FOR CANDIDATES</b>	<ul style="list-style-type: none"> <li>- <b>Degree</b> (MSc, ...) <ul style="list-style-type: none"> <li>○ MSc in Statistics, applied mathematics, Computer Science or related discipline.</li> </ul> </li> <li>- <b>Skills</b> <ul style="list-style-type: none"> <li>○ Strong problem-solving skills</li> <li>○ Ability to communicate complex data in a simple, actionable way.</li> <li>○ Ability to work independently and with team member from different backgrounds.</li> <li>○ A drive to learn and master new technologies and techniques.</li> </ul> </li> <li>- <b>Background</b> <ul style="list-style-type: none"> <li>○ Proficient with one or more programming languages, preferably Python and/or C++</li> <li>○ Knowledge of a variety of ML techniques: NLP, clustering, decision tree, ANN, DL, RNN, ...</li> <li>○ Pattern recognition and predictive modelling experience</li> <li>○ Knowledge of cloud infrastructures like AWS and their AI tools and services</li> </ul> </li> </ul>

RESEARCH LINE 12B	
<b>COMPANY</b>	<b>Optiva Media</b>
<b>PhD THESIS SUPERVISOR (UPM)</b>	Prof. Dr. Carlos Á. Iglesias <i>Intelligent Systems Group</i> <i>Telematic Systems Engineering Department</i> <i>Telecommunications Engineering School</i>
<b>PhD THESIS CO-SUPERVISOR (COMPANY)</b>	Dr. Iñaki Martínez Sarriegui <i>Head of Research &amp; Innovation at Optiva Media</i>
<b>DESCRIPTION OF THE PhD THESIS PROJECT</b>	Title: Exploiting Knowledge Graphs for Improving Mental Wellbeing at Home through Content-based Recommendations The PhD thesis aims at researching on personalized content recommendation algorithms for selecting videos. One of the goals of the projects is reducing users' frustration when selecting videos and contribute to user personal well-being. To this end, the project will explore the usage of Knowledge-Graph based Recommendation Systems. The PhD thesis will be developed in a combined academic and industrial settings, from an industry-driven perspective. Candidates are expected to publish in highly refereed journals and conferences. The grant will support a research stay of 3 months.
<b>SECONDMENT(S)</b>	The hosting research centre of the research stay will be decided during the PhD studies. Some potential hosting research centres are University of Torino (Italy), University of Minho (Portugal), Fondazione Bruno Kessler (Italy), and Open University (UK).
<b>REQUIREMENTS FOR CANDIDATES</b>	<b>Degree:</b> Master's degree in computer science or other relevant disciplines. <b>Skills:</b> Python, Pandas, Scikit-Learn, Linked Data Technologies. <b>Background:</b> Artificial Intelligence, Machine learning, Natural Language processing. Strong motivation to do research on data management and doing interdisciplinary research. Communication skills and teamwork.