

Recruitment Procedure for
10 PhD Positions in Horizon Europe
Marie Skłodowska-Curie Actions
Doctoral Network



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Beneficiaries



**UNIVERSITY
OF TWENTE.**

Applications are invited for 10 PhD positions (“Doctoral Candidates”, DCs)

NEPIT, Network for Evaluation of Propagation and Interference Training, is funded by Horizon Europe (HORIZON) through the Marie Skłodowska-Curie Actions (MSCA) Training & Mobility Actions (TMA) in the form of a Doctoral Networks (DN) which will host 10 doctoral candidates across Europe and beyond. The inter/multi-disciplinary characteristics is guaranteed by the presence of five academic beneficiaries (University of Twente, Otto-von-Guericke-Universitaet Magdeburg, Wrocław University of Science and Technology, Università Politecnica delle Marche Eindhoven University of Technology) and one industrial beneficiary (Lumiloop, spin-off company from the Technical University of Dresden) located in four countries (the Netherlands, Germany, Poland and Italy) which possess top class expertise in electromagnetic interference, electronic control, wireless systems, antennas, and propagation.

Furthermore, the inter-sectoral characteristic is guaranteed by the support of a series of industrial entities: ten Industrial partner organisations from five European countries (The Netherlands, Germany, Czechia, Italy and Poland) and even one Industrial partner from Japan. Having Philips Healthcare, Rohde&Schwarz, EVEKTOR, THALES, Telecom Italia, metraTec, National Aerospace Laboratory, Canon Production Printing, Poznanski Instytut Technologiczny, Fokker, Kawasaki Heavy Industries, etc., forms a fully interrelated, integrated, and international consortium.

Key dates

- Dec 15, 2023: Launch of 10 DC Positions
- Feb 12, 2024: Deadline for on-line application
- Feb 26, 2024: Circulation list “preselected candidates”
- March 2024: NEPIT Recruitment Event (Online);
- March 2024: Circulation list “recruited NEPIT DCs”
- Sept 2024: Targeted starting date for DC contracts

Field of Research and Keywords

Electrical and electronic engineering: semiconductors, components, Electronics, photonics, Transport engineering, intelligent transport systems, Wireless communications, communication, high frequency, mobile telephony interference, transport systems, complex systems, interference transport systems complex systems.



Key Background Information

Eligibility, Benefits and Salary

Mobility

Researchers are required to undertake trans-national mobility (i.e., move from one country to another) when taking up the appointment. At the time of selection by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately prior to their recruitment. Short stays, such as holidays, are not taken into account.

Career Stage

Master of Science (M.Sc.) or equivalent, Doctoral Candidate (DC) or 0-4 yrs. (Post Graduate)

You are also eligible to apply, if you expect to graduate your M.Sc. or equivalent before the targeted starting date. Simply indicate this clearly in your application form and/or CV and please provide an overview of the transcripts that are already available.

The candidate must be at the date of recruitment a doctoral candidate (i.e. not already in possession of a doctoral degree). Researchers who have successfully defended their doctoral thesis but who have not yet formally been awarded the doctoral degree will not be considered eligible.

English language:

Doctoral Candidate (DCs) must demonstrate that their ability to understand and express themselves in both written and spoken English is sufficiently high for them to derive the full benefit from the network training.

Exclusivity

The candidate must be working exclusively for the action.

Each student will benefit from a wide-ranging training between universities, research centers and industry that will take advantage of both local and network-wide activities.

Salary (MSCA allowances)

Excellent salaries will be offered. Doctoral Candidate will benefit from the following MSCA allowances:

Monthly living allowance: 3,400 €/month. This is adjusted through the application of a *country correction coefficient* to the living allowance of the country in which the researcher is recruited and includes all compulsory deductions under national legislation, including any employer contributions. The country correction coefficients are listed in [Table 1 of the MSCA Work Programme](#) .

Monthly mobility allowance: 600 €/month

Monthly family allowance, if applicable and depending on the family situation: 660 €/month.

The guaranteed PhD funding covered by the training network is for 36 months (i.e., EC funding, additional funding is possible, depending on the local Supervisor, and in accordance with the regular PhD time in the country of the hiring host). Check the vacancy description of each beneficiary for further clarification per country.

On-line Recruitment Procedure and Principles

Recruitment will be carefully executed and monitored in accordance with the principles of the **European Charter for Researchers** and **Code of Conduct** for the Recruitment of Researchers and in the DN mobility rules, establishing open and efficient recruitment procedures, which are tailored to the type of positions advertised. The recruitment procedures will be **open, efficient, transparent, supportive and internationally comparable**.

NEPIT participants will also aim for a representative **gender balance** amongst the researchers to be recruited, based on an equal opportunity policy during the recruitment phase. The vacancies description will explicitly encourage the application of female young researchers. Moreover, female candidates will be selected in preference should a female and a male candidate achieve the same evaluation results. In training lectures and seminars, particular attention will be paid to choosing, whenever possible, women scientists as speakers in order to provide positive role models to young female scientists.

Advertisement process: The advertisement process will start as soon as the Grant Agreement is signed and will be active until all positions are filled. In the vacancy notice the non-confidential project description, a broad description of knowledge and competencies required, which will not be so specialised as to discourage suitable applicants, and a description of the working conditions and entitlements, including career development prospects, will be included.

All applications proceed through the on-line recruitment portal via the University of Twente. Candidates apply electronically for one to maximum three positions and indicate their preference. Candidates provide all requested information including a detailed CV – (for example [Europass format](#)) - and motivation letter. During the registration, applicants will need to prove that they are eligible (cf. DC definition, mobility criteria, and English language proficiency). The deadline for the on-line registration mentioned above in the key dates.

Applicants will submit their applications electronically via the assigned process and all details are described on the website www.nepit.eu. Following screening of applications by the **hiring institute's Human Resources department**, applicants will undergo a rigorous selection on grounds of quality and potential, as well as a matching of their scientific profile with the individual projects. Assessment will be made according to background, academic qualifications, achievements, and other elements including language knowledge, mobility and volunteer work. This assessment will be done by a recruitment board comprising the local HR coordinator, technical experts including the direct supervisors for the open positions. The recruitment board will bring together diverse expertise and competences, have an adequate gender balance, including members from different disciplines and including representatives from industry. All members are adequately trained.

The short list with CVs will be distributed and a ranking will be made together by the Beneficiaries. After this initial screening of the application letters, the selected candidates will be given an opportunity to discuss the doctoral programme with the direct supervisors and the supervisor of the host in a face-to-face meeting, or a videoconference or Skype, or a telephone conference, depending on the logistics circumstances

The recruitment board will try to reach unanimous agreement regarding the final decision, together with the supervisors of the other host institutions. These supervisors are also member of the MT, and the full-professors are (co-)promotors of the DCs. All non-selected candidates will receive a letter including motivation for non-selection, in line with the **Code of Conduct**.

The selected DC are to start their research as quickly as possible in line with the specific requirements of the hiring institute's Human Resources department and in line with all provisions for VISA etc.

In case not all 10 DCs can be recruited during the collective Recruitment Event, the recruitment procedure is “decentralised”, meaning that the involved supervisors continue the search for good candidates. The Consortium is kept informed at all times when new eligible candidates appear. The Recruitment Committee makes an official complaint in case the Code of Conduct for the Recruitment of Researchers is breached. The involved supervisor is then expected to find another candidate.



The 10 available PhD positions

In addition to their individual scientific projects, described below and on www.nepit.eu, all doctoral candidates will benefit from further continuing education, which includes internships and secondments, a variety of training modules as well as transferable skills for the Jobs of Tomorrow acquired through a unique immersive learning. The obligations are described in the Grant Agreement of the NEPIT project.

DC01 - Effective aperture of openings of systems in reverberant environments (WP6)

Host institution	UT
Country	The Netherlands
Supervisor	Prof. Leferink (UT)
Co-supervisors	Dr. Serra (TU/e) (WP6 leader), mentor: Kees Nuyten (Fokker)
Objectives	Develop validated models to predict EM coupling into and out of (random) apertures (and random wires) using Monte-Carlo deterministic and statistical techniques for EM waves. Validation via comparison to known antennas and canonical structures and measurements. Key application to airplane structures and automotive windows and openings, but model shall be general for any complex, electrically large (w.r.t. wavelength) apertures.
Expected Results	Increased knowledge (disseminated), and widely accepted models to be used by industry to estimate the risk of EMI, which can be embedded in current EM tools as applied within industry. DC01 trained in random EM coupling into/out of complex systems
PhD enrolment	Twente Graduate School
Planned secondments	2M@Fokker (Supervisor: Nuyten): Comparison on new models with existing data for aeroplane structures (M22) 2M@OVGU (Magdowski): Benchmark with OVGU methods, mostly dedicated to wiring (Babinet's principle) and write joint paper (M28)

DC02 - Closed-loop testing for faster and better EM evaluation of complex high-tech systems (WP7)

Host institution	UT
Country	The Netherlands
Supervisor	Prof. Leferink (UT)
Co-supervisors	Prof. Primiani (UNIVPM) (WP7 leader), mentor: Jacco Verpoorte (NLR)
Objectives	Develop a world-wide accepted new standard for testing large systems in RC, by comparing the newest fast EM sensor systems, comparing performance with antennas, evaluate different algorithms for EM field strength data, investigating the minimal needed sensors (up to nine), and controlling the equipment using in-line measured data (closed-loop).
Expected Results	New standard for automotive testing using RC, including VIRIC. Update of IEC 61000-4-21 for large system testing. DC02 trained in large complex system EMI evaluation
PhD enrolment	Twente Graduate School
Planned secondments	2M@NLR (Verpoorte): Learn from actual test cases (M22) 2M@UNIVPM (Primiani): Compare results with simulations at UNIVPM and write a joint paper (M28)

DC03 - Pulsed excitation of RCs, transient field distributions, experimental and simulative approach (WP5)

Host institution	OVGU
Country	Germany
Supervisor	Prof. Vick (OVGU)
Co-supervisors	Prof. Joskiewicz (PWR) (WP5 leader), mentor: Jens Medler (MBT)
Objectives	Development of the model to predict the average and maximum field strength amplitude and its time derivative that will act onto a certain device under test, via simulation of transient fields inside the working volume and close to the (planar) boundaries of a RC, and validation via measurements and experiment in three reverberation chambers of different size (tiny, small, large (w.r.t. wavelength))
Expected Results	Efficient field simulation methods based on plane-wave approaches or raytracing methods and the statistic distributions of field quantities of general validity for the time and frequency domain and different loading conditions. DC03 trained in statistical field distribution in reverberant environments.
PhD enrolment	OVGU
Planned secondments	2M@R&S (Medler): Application to large vehicles (M22) 2M@PWR (Joskiewicz): Application to communication systems, compare different datasets, write joint paper (M30)

DC04 - Coupling of stochastic fields into cables with non-linear loads, tests of medical equipment (WP6)

Host institution	OVGU
Country	Germany
Supervisor	Dr.-Ing. Magdowski (OVGU)
Co-supervisors	Dr. Serra (TU/e) (WP6 leader), mentor: Tobias Meyer (metraTec)
Objectives	Experimental results for stochastic EM field coupling to a non-linearly loaded single-wire transmission line above a ground plane, to a non-linearly loaded double-wire transmission line inside the working volume, to a non-linearly loaded transmission line network of single-wire lines above a ground plane, to a non-linearly loaded transmission line network of double-wire lines inside the working volume and to non-linearly loaded multi-conductor transmission lines above a ground plane as well as inside the working volume. Evaluation of EM of RF-shielded MRI enclosures w.r.t. RC. Conversion factors and validation methods for the use of RCs in order to analyse the influence of interventional medical equipment onto the imaging quality and signal-to-noise ratio of MRI scanners
Expected Results	Deeper insight and available prognosis of the induced currents and voltages into non-linear loads of transmission lines excited by stochastic fields. Cost-efficient measurement methods for medical equipment to be used inside MRI scanners. DC04 trained in: measurement automation, EMC and MRI standard, use of medical equipment in clinical applications
PhD enrolment	OVGU
Planned secondments	2M@metraTec(Meyer): Evaluation of EM of RF-shielded MRI enclosures w.r.t. RC (M18) 2M@TU/e (Serra): Using moving wall RC for experiments (M22)

DC05 - Modelling and simulating a semi-reverberant environment from anechoic chamber by adding reflectors (WP5)

Host institution	PWR
Country	Poland
Supervisor	Prof. Joskiewicz (PWR)
Co-supervisors	Dr. Vogt (UT), mentor: Krzysztof Sieczkarek(PIT)
Objectives	Define parameters and location reflectors and absorbers in order to create propagation environment with characteristics as found in real semi-enclosed environments via simulation and measurements (decay time, insertion loss). It will be realized by adding absorbers and reflectors for anechoic chamber as well as locating mobile RC (also partially lined by absorbers) in SAC. Some parameters of propagation environments (e.g. PDP, decay time, insertion loss) will be simulated and measured. From this research a validated model for semi-reverberant environments based on anechoic chambers as well relevant measurement techniques shall be developed.
Expected Results	Validated models and techniques to evaluate large system emission in-situ.
PhD enrolment	DC05 trained in large system EMC
Planned secondments	PWR 2M@PIT (Sieczkarek): Apply the theoretical and experimental techniques for semi-enclosed environments on an actual aircraft fuselage (M26) 2M@TU/e (Serra): Experiment with moving wall concepts, write a joint paper (M28)

DC06 - Effects of losses on the field distribution and propagation in complex semi-enclosed environments (WP7)

Host institution	UNIVPM
Country	Italy
Supervisor	Prof. Moglie (UNIVPM)
Co-supervisors	Prof. Leferink (UT), mentor: Řezníček Zdeněk (EVK)
Objectives	Analysis of the induced disturbances on cabling exposed to random and quasi-random (lossy environment) electromagnetic field. Statistical analysis of the induced voltage and comparison with equivalent exposure in traditional anechoic chambers. Assessment of the margin factor.
Expected Results	Integration with WP5 results. Numerical tools for the analysis and comparison of radiated immunity tests.
PhD enrolment	DC06 trained in radiated immunity tests including simulations.
Planned secondments	UNIVPM 2M@EVL (Zdeněk): learn about actual systems and current techniques (M14) 2M@UT (Leferink): measurements in various RC and anechoic chambers on the radiated coupling with cables, write a joint paper (M22)

DC07 - Comparison of conventional and novel test methods for reverberation chambers (WP5)

Host institution	UNIVPM
Country	Italy
Supervisor	Prof. Mariani Primiani (UNIVPM)
Co-supervisors	dr. Magdowski (OVGU), mentor: Davide Micheli (TIM)
Objectives	Models for EM field distribution in semi-enclosed environments with the presence of lossy materials and objects via analysis of propagation parameters as the Power Delay Profile (PDP), Time Delay Spread, Insertion Loss (IL). Development of statistical analysis of the field distributions as function of loss, and coupling through apertures connecting RC and semi-enclosed environments
Expected Results	Integration of WP7 results. Numerical tools for the analysis of electrically large complex structures also including statistical analysis modules. DC07 trained in electromagnetic numerical simulations on High Performance Computers.
PhD enrolment	UNIVPM
Planned secondments	2M@TIM (Micheli) perform measurements of insertion loss in real semi-open enclosures representing airframe structures (M18) 2M@OVGU (Magdowski): perform experiments for PDP, TDS, K-factor in loaded RC, write a joint paper (M20)

DC08 - Fast extremely wideband multi-sensors systems for closed-loop testing (WP7)

Host institution	LL
Country	Germany
Supervisor	Eike Suthau (LL)
Co-supervisors	Prof. Vick (OVGU: Doctoral School), mentor: Prof. Primiani (UNIVPM (WP7)), Schipper (THALES)
Objectives	Development of 3D EM field strength sensors upto 18 GHz and high linearity. Establish experimental verification of theoretical results for closed-loop multi-sensor systems. Development of closed-loop control methodology for multi-sensor applications
Expected Results	Timing optimization for VIRC measurements, validated a widely accepted control methodology in hardware and software. DC08 trained in multi-sensor analysis of EMC environments
PhD enrolment	OVGU
Planned secondments	2M@OVGU (Vick): training and acquire experience on EM field coupling (M12) 2M@THALES (Schipper): experiments with pulse-modulated frequency hopping and sweeping solid-state phase array radars (M20); 2M@UT (Leferink): applying multi-sensor systems for testing vehicles (M28)

DC09 - Emulation of multi-propagation paths using reverberation chambers (WP5)

Host institution	TU/e
Country	The Netherlands
Supervisor	dr. Serra (TU/e)
Co-supervisors	Prof. Joskiewicz (PWR) (WP5 leader), mentor: Wim Ophelders (Canon)
Objectives	Development and validation of a richer set of probability density functions able to describe and model the statistical behaviour of field propagation in semi-enclosed environments. Solve the inverse problem of emulation of realistic environments in the lab, using pertinent techniques related to reverberation chambers.
Expected Results	Enrich the family of models for semi-reverberant environments with a bivariate statistical approach and with model-based variations of the principle of maximum entropy. Models applied to real-life environments and emulate them in the laboratory. DC09 trained in multi-propagation paths
PhD enrolment	TU/e
Planned secondments	2M@Canon (Ophelders): experiments with various absorber materials (M18) 2M@UNIVPM (Primiani): training in numerical methods for EMC (M20)

DC10 - Effectiveness of shielding covers in reverberant environments (WP6)

Host institution	TU/e
Country	The Netherlands
Supervisor	dr. Serra (TU/e)
Co-supervisors	Prof. Leferink (UT), mentor: Rob Kleihorst (PHC)
Objectives	To model, simulate and evaluate the effect of shielding covers and the discontinuities with a focus on actual situations where other parameters like corrosion, stiffness, and reliability are dominant factor. Development of the Dual RC technique for validation measurements and have this embedded in world-wide standards for evaluation of shielding covers and compartments.
Expected Results	Novel model and test methods for complex shielding covers, which can be used by design engineers in various industries (medical, automotive, aerospace etc.). DC10 trained performing complex shielding analysis
PhD enrolment	TU/e
Planned secondments	2M@OVGU (Magdowski): Learn about coupling mechanisms (M20) 2M@PHC (Kleihorst): apply the techniques around actual systems, and large complex system evaluation (M26)

For More information

More information can be found on the following websites

- [1] Project Website - <https://www.NEPIT.eu>
- [2] Project LinkedIn Page - <https://www.linkedin.com/in/msca-ejd-itn-NEPIT/>
- [3] European Commission Website: <https://cordis.europa.eu/project/id/101119806>

Abbreviations

MSCA	Marie-Skłodowska-Curie Action
TMA	Training & Mobility Action(s)
DN	Doctoral Network
GA	Grant Agreement - 101119806
CA	Consortium Agreement
WP	Work Package
WPL	Work Packager Leader
UT	University of Twente - Coordinator
OVGU	Otto-von- Guericke-Universitaet Magdeburg
PWR	Wrocław University of Science and Technology
UNIVPM	Università Politecnica delle Marche
LL	Lumiloop
TU/e	Eindhoven University of Technology

Disclaimer



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