

## CALL FOR GRANT APPLICATIONS (AE2025-0563)

INESC TEC is now accepting grant applications to award 5 Research Initiation Grant (BII) within the scope of the Produtech\_R3 funded by IAPMEI with reference 60 Co-financed by Component 5 - Capitalization and Business Innovation, integrated in the Resilience Dimension of the Recovery and Resilience Plan within the scope of the Recovery and Resilience Mechanism (MRR) of the European Union (EU), framed in the Next Generation EU, for the period 2021 - 2026.

### 1. GRANT DESCRIPTION

**Type of grant:** Research Initiation Grant (BII)

**General scientific area:** ENGINEERING

**Scientific subarea:** Electrical engineering

**Area of Work:** Telecommunications

**Grant duration:** 5 months 19 days, starting on 2026-01-12.

**Scientific advisor:** Hélder Martins Fontes

**Workplace:** INESC TEC, Porto, Portugal

**Maintenance stipend:** € 651.12, [according to the table of monthly maintenance stipend for FCT grants](#), paid via bank transfer. Grant holders may be awarded potential supplements, according to a quarterly evaluation process (Articles 19, 21 and 22 of the [Regulations for Grants of INESC TEC](#) and Annex II), up to a maximum limit of 50% of the monthly maintenance stipend.

INESC TEC supports costs with registration, enrolment or tuition fees, during the grant duration, under the terms established in the internal document: "[Payment of Tuition fees to grant holders](#)".

The grant holder will benefit from health insurance, supported by INESC TEC.

### 2. OBJECTIVES:

- broaden the knowledge of the state of the art in emerging wireless networks;
- identify and select the methodologies and approaches most suitable for the development of the work;
- strengthen the research and development competencies of the grant holder through the application of the selected methodologies and approaches;
- critically assess the research process and evaluate the results obtained.

### 3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

The five Research Initiation Grants to be awarded are divided into five different Research Topics (#1 through #5), having individual Work Programmes, Preference Factors and Minimum Requirements. The applicants must reference, in the motivation letter, the specific Research Topic they are applying to.

The Work Programmes of each Research Topic are listed below:

Research Topic #1 – Automatic User Requirements Assessment for On-demand Emerging Wireless Networks

- survey and analyze the state of the art in emerging wireless networks, including simulation aspects;
- collaborate in the preparation of technical reports on the algorithms, mechanisms, models, or protocols developed;
- collaborate in the development of new communications solutions for extreme environments;

- contribute to co-authored scientific publications within the scope of the work developed;
- prepare the research grant activity report.

#### Research Topic #2 – Digital Twin of Emerging Wireless Networks

- survey and analyze the state of the art in emerging wireless networks, including simulation aspects;
- collaborate in the preparation of technical reports on the algorithms, mechanisms, models, or protocols developed;
- collaborate in the development and improvement of new digital twin models for emerging wireless networks;
- contribute to co-authored scientific publications within the scope of the work developed;
- prepare the research grant activity report.

#### Research Topic #3 – Research-oriented Website for Scientific Dissemination

- survey and analyze the state of the art in dynamic website development frameworks, including Wordpress;
- collaborate in the migration of an existing website related to dissemination of the INESC TEC scientific contributions to the project;
- collaborate in the preparation of technical reports on the algorithms, mechanisms, models, or protocols developed for the dynamic update of the website content;
- contribute to co-authored scientific publications within the scope of the work developed;
- prepare the research grant activity report.

#### Research Topic #4 – Multi-technology Link Aggregation for 5G Backhaul

- survey and analyze the state of the art in emerging wireless networks, including simulation aspects;
- collaborate in the preparation of technical reports on the algorithms, mechanisms, models, or protocols developed;
- collaborate in the development of new communications solutions for multi-technology link aggregation, such as 5G, Wi-Fi, and OWC, that could be used for establishing a resilient 5G Backhaul;
- contribute to co-authored scientific publications within the scope of the work developed;
- prepare the research grant activity report.

#### Research Topic #5 – Prototype for Semantic-based Next Generation Communications

- survey and analyze the state of the art in emerging wireless networks, including simulation aspects;
- collaborate in the preparation of technical reports on the algorithms, mechanisms, models, or protocols developed;
- collaborate in the development of new communications solutions for extreme environments;
- contribute to co-authored scientific publications within the scope of the work developed;
- prepare the research grant activity report.

#### 4. REQUIRED PROFILE:

##### Admission requirements:

Student in Electrical Engineering, Informatics Engineering, or similar.

The awarding of the fellowship is dependent on the applicants' enrolment in study cycle or non-award courses of Higher Education Institutions.

##### Preference factors:

<preference>

The five Research Initiation Grants to be awarded are divided into five different Research Topics (#1 through #5), having individual Work Programmes, Preference Factors and Minimum Requirements. The applicants must reference, in the motivation letter, the specific Research Topic they are applying to.

The Preference Factors of each Research Topic are listed below:

Research Topic #1 – Automatic User Requirements Assessment for On-demand Emerging Wireless Networks

- knowledge of Vision Foundation Models (VFMs) and Vision Language Models (VLMs);
- knowledge of discrete-event network simulation, especially using the ns-3 simulator.

Research Topic #2 – Digital Twin of Emerging Wireless Networks

- knowledge of wireless networks such as Wi-Fi and 5G;
- knowledge of discrete event simulation, in specific, experience using ns-3.

Research Topic #3 – Research-oriented Website for Scientific Dissemination

- development experience in the field of computer networks;
- inclusion of links to public websites authored by the candidate (portfolio) in the Motivation Letter or Curriculum Vitae;
- experience customizing plugins for dynamic content update in Wordpress-based websites.

Research Topic #4 – Multi-technology Link Aggregation for 5G Backhaul

- knowledge of wireless networks, such as Wi-Fi and 5G;
- knowledge of link aggregation techniques;
- knowledge of forward error correction techniques.

Research Topic #5 – Prototype for Semantic-based Next Generation Communications

- experience with state-of-the-art audio and image processing tools, such as Whisper and YOLO;
- experience with Large Language Models (LLMs);
- research experience in the field of wireless networks/telecommunications;
- knowledge of discrete-event network simulation, especially using the ns-3 simulator.

##### Minimum requirements:

The five Research Initiation Grants to be awarded are divided into five different Research Topics (#1 through #5), having individual Work Programmes, Preference Factors and Minimum Requirements. The applicants must reference, in the motivation letter, the specific Research Topic they are applying to.

The Minimum Requirements of each Research Topic are listed below:

Research Topic #1 – Automatic User Requirements Assessment for On-demand Emerging Wireless Networks

- solid knowledge of the TCP/IP stack and Linux;
- proven experience in programming with C++ and/or Python;
- research experience in the field of wireless networks and airborne networks;
- knowledge of Large Language Models (LLMs).

Research Topic #2 – Digital Twin of Emerging Wireless Networks

- solid knowledge of the TCP/IP stack and Linux;
- proven experience in programming with C++ and/or Python;
- research and development experience in the field of computer networks;
- solid knowledge on Wireless Network Digital Twins.

Research Topic #3 – Research-oriented Website for Scientific Dissemination

- solid knowledge of the TCP/IP stack and Linux;
- proven experience in programming with C++ and/or Python;

- proven experience in the development of websites (backend and frontend components);
- proven experience in using frameworks such as Wordpress and related plugins.

#### Research Topic #4 – Multi-technology Link Aggregation for 5G Backhaul

- solid knowledge of the TCP/IP stack and Linux;
- proven experience in programming with C++ and/or Python;
- proven development experience in the field of computer networks, including the implementation of link layer protocols respecting the independence of OSI layers.

#### Research Topic #5 – Prototype for Semantic-based Next Generation Communications

- solid knowledge of the TCP/IP stack and Linux;
- fundamentals of wireless communications technologies, such as IEEE 802.11 (Wi-Fi), 5G, and IoT;
- proven experience in programming with C++ and/or Python.

## 5. EVALUATION OF APPLICATIONS AND SELECTION PROCESS:

**Selection criteria and corresponding valuation:** the first phase comprises the Academic Evaluation (AC), based on the criteria referred to in Article 12 of the [Regulations for Grants of INESC TEC](#), while the second phase comprehends the Individual Interview (EI). All factors are evaluated on a scale of 0 to 100, taking into account the applicants' merit, suitability and conformity with the preference factors.

The weight of the AC factors are as follows: Academic Qualifications (FA, 50%), Scientific Publications (PC, 10%), Experience (EX, 30%) and Motivation Letter (CM, 10%).

Candidates who score less than 50 points in the AC average will be considered excluded on absolute merit. The top five candidates approved on absolute merit will be qualified for the individual interview. The Final Grade (CF) is obtained by the weighted average of AC (90%) and EI (10%).

## DISABILITY INCENTIVE

Candidates who present a degree of disability equal to or greater than 90% will benefit from an incentive (20) in the score of the CV Assessment.

Candidates who present a degree of disability equal to or greater than 60% and less than 90% will also benefit from an incentive (10) in the score of the CV Assessment.

Said score may, in these cases, exceed 100 points.

Candidates must demonstrate the degree of disability during the application, namely through the submission of the Multi-Purpose Medical Certificate of Disability, issued in accordance with Decree-Law no. 202/96, of October 23 - currently in effect.

Candidates must declare, in the application form, the type of disability used throughout the selection process, in order to proceed with the required adaptations.

### The Selection Jury is composed of the following members:

- President of the Jury: Hélder Martins Fontes
- Full member: Rui Lopes Campos
- Full member: André Filipe Coelho
- Substitute member: Filipe Borges Teixeira

**Release of results and prior hearing:** the results of the selection process, as well as the terms and procedures for prior hearing, will be released to the applicants by email, under the terms referred to in Article 13 of the Regulations for Studentships and Fellowships of INESC TEC.

## 6. FORMALISATION OF APPLICATIONS:

### Application Documents:

1. Motivation letter;
2. Curriculum Vitae (must include the list of previous fellowships, their type, beginning and end dates, funding entities and host institutions);
3. Certificate or diploma degree;
4. Proof of enrollment in a degree awarding study cycle or in a non degree awarding Higher Education program.
  - The proof of enrollment may be presented just during the grant hiring stage.
5. Signed declaration stating not having benefited from any other research fellowship (Article 5, no. 5)

6. Documental evidence to support the country of residence, residence permit or other legally equivalent document, in cases where the applicant is a foreigner or non-resident in Portugal - valid until the beginning of the grant.
7. Other supporting documents relevant to the final assessment.

Failure to deliver the required documents within the 90-day period after the date of the notice of the conditional awarding of the grant implies its cancellation.

**Application period:** From 2025-12-04 to 2025-12-18

**Submission of applications:** the application will be formalised by submitting the form available in the *Work With Us* section of INESC TEC website.

## 7. BINDING LEGISLATION AND REGULATION

The hiring process shall comply with the current legislation regarding the Research Grant Holder Statute, approved by Law no. 40/2004 of August 18, in its current wording, as well as by the [Regulations for Grants of INESC TEC](#) and for [FCT Grants Regulation in force](#).

For more information, please check the [Regulations for Grants of INESC TEC](#) and relevant annexes at [www.inesctec.pt/bolsas](http://www.inesctec.pt/bolsas)



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