

## CALL FOR GRANT APPLICATIONS (AE2023-0433)

INESC TEC is now accepting grant applications to award 1 Research Initiation Grant (BII) within the scope of the ATE funded by IAPMEI with reference 56 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:** COMPUTER SCIENCE

**Scientific subarea:** Computer Systems

**Area of Work:** Operating systems

**Grant duration:** 6 months, starting on 2023-12-13, with the possibility of being renewed for a maximum term of one year.

**Scientific advisor:** João Tiago Paulo

**Workplace:** INESC TEC, Braga, Portugal

**Maintenance stipend:** € 541,12, [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:

This grant is part of the "Alliance for Energy Transition" project, which will design a multi-tenant platform based on cloud technologies that will serve as an integrator for services with data from various domains in an interoperable way and be simple to instantiate for stakeholders in the energy value chain.

The work, to be carried out during the fellowship, has as its main objective the design of a solution that allows understanding the interactions of applications with the respective storage systems when using user-space storage libraries, i.e., that bypass the OS kernel layer.

This solution is key to understanding the benefits of using these new libraries to speed up data access and storage operations for data-centric applications, such as databases and ML tools.

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

Study of user-space storage technologies usefulness for different types of data-centric applications (e.g., databases, ML solutions). Design of an automatic framework for the analysis of storage operations performed by applications when these use high-performance user-space storage libraries (e.g., SPDK). The analysis must focus on different aspects such as performance, correctness, and efficiency in translating high-level operations to the system call layer.

The tasks described in this working plan demand the application and development of concepts and techniques

in the areas of Computer Science and Informatics Engineering which are usually introduced in curricular units included in the curricula of BSc courses in Computer Science and Informatics Engineering.

#### 4. REQUIRED PROFILE:

##### Admission requirements:

BSc in Computer Science or Informatics Engineering Student.

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

##### Preference factors:

- Knowledge about the SPDK framework;
- Experience with tracing tools (e.g., Strace).

##### Minimum requirements:

- Knowledge on operating systems;
- Knowledge on the C programming language;
- Experience on using the POSIX interface and with system calls.

#### 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, 60%), Scientific Publications (PC, 10%), Experience (EX, 20%) 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 (80%) and EI (20%).

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

- President of the Jury: João Tiago Paulo
- Full member: Ricardo Gonçalves Macedo
- Full member: Fábio André Coelho
- Substitute member: Ricardo Pereira Vilaça

**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 fully recognised in Portugal;
  - Documents proving the awarding of academic degrees and diplomas, or the according recognition - in cases of academic degrees or diplomas granted by a foreign higher education institution - can be dismissed in the application process, and replaced by the applicant's declaration of honour, with the verification of said condition taking place during the grant's hiring stage. The submission of the certificate is mandatory when signing the contract.
  - Academic degrees or diplomas awarded by a foreign higher education institution require an authentication by a Portuguese higher education institution, and the corresponding registration on the DGES platform, in conformity with Decree-Law no. 66/2018, of August 16, and Ordinance no. 33/2019, of January 25. More information available on the website <https://www.dges.gov.pt/pt/pagina/reconhecimento?plid=374>

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 2023-11-09 to 2023-11-22

**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)

