

PHD SCHOLARSHIP APPLICATION

Division / Business Area: ICT / IT Competitiveness

Building / Province: Derio 700 / Bizkaia

SCHOLARSHIP DESCRIPTION

Title: **Improving the scalability and performance of the Blockchain for the management of identities in the Internet of Things.**

Brief description: In recent years, the DLT (Distributed Ledger Technology) has emerged as a disruptive and effective paradigm for the construction of distributed architectures. As the most popular and best known exponent, Blockchain is a way of implementing DTL technology which combines a series of characteristics and cryptographic algorithms that make it an interesting option for the construction of distributed security mechanisms based on consensus.

In recent years, a branch of research has emerged that tries to apply these technologies to the management of identification and access control without identity providers or central certification authorities so the objective of this doctoral thesis is the application of the DLTs to the identification of objects in the Internet of Things (IoT).

Detailed description: The purpose of this doctoral thesis is to study the DLTs to develop robust identification mechanisms for IoT devices, which are scalable and offer appropriate performance to the needs of applications in which there is a large number of objects and/or real time is required. There are many different types of DLTs, each offering different challenges in terms of privacy, security, performance and scalability which must be researched and resolved for their application in the identification of objects in IoT.

The successful candidate will join the Cyber-security Group in the Tecnalia ICT Division, where Europe's first Blockchain industrial laboratory is located, and from where he/she will work with the world's two main alliances in blockchain technology (Hyperledger and Enterprise Ethereum Alliance) and the innovation and talent strategy of the state multi-sectorial network (Alastria) will be coordinated.

The successful candidate will carry out his/her doctoral thesis with one of the reference teams in Europe in the technology with the greatest disruptive potential today, blockchain, and will discover first hand how the team is working with large multi-national firms, local companies and start-ups in the ecosystem, creating platforms and solutions for the future in sectors such as advanced manufacturing, energy, automation or health.

The scholarship is divided into the following phases:

1. Developing state of the art in Distributed Ledgers, along with a thorough analysis of the different types.

2. Identification of DLT shortfalls for the application considered. Solution proposal Contribution to journal
3. Implementation of the solution. Contribution to journal
4. Validation of proposed contributions in industrial environment.

REQUIREMENTS

Degree and specialisation: Computer Engineering.

Telecommunications Engineering

Degree in Mathematics

Languages:

English: fluent comprehension, spoken and written.

Spanish

IT skills:

Knowledge of programming. Previous knowledge of blockchain, cyber-security, design and programming of cyber-security architectures and modules will also be positively evaluated.

The following will be a plus:

Ability to learn, proactivity, ability to work in a team and creativity.

The candidate should have scientific and technological concerns, and be willing to come up with new cyber-security technologies/products and services.

Further information and applications: <http://bit.ly/2J1Q2sU>