

## **The Fundación Cepsa Chair at ULL Launches Project to Encourage Students to Pursue Technology as a Vocation**

- **Internet of Things with LoRaWAN is aimed at university and high school students, who are seeking resource optimization and energy saving solutions**

The Fundación Cepsa Chair for Innovation and Energy Efficiency at the University of La Laguna (ULL) has launched a project called Internet of Things with LoRaWAN, aimed at giving university and high school students an overview of how everyday objects are digitally interconnected via the Internet, enabling them to collect data, exchange information, communicate with each other and interact with users.

The ultimate objective of this project is to encourage young people to pursue technology as a vocation, and will see them collect data that will enable resource optimization and energy saving, among other uses.

Alberto Hamilton, a doctor and professor of Systems Engineering and Automation at ULL, explains that they will use LoRa technology, which allows devices to communicate at long range using relatively little power, and which has developed rapidly in recent years.

"The protocol we will use in the project, LoRaWAN, will create a network capable of reading data from multiple devices and sending said data to an end application using a network interconnection module (gateway), including the one installed in Torre Profesor Agustín Arévalo (formerly Torre de Química) at our university, the objective being to collect data for the purposes of optimizing resources or saving energy, for example," explains Mr. Hamilton.

For this process to work, we need small, easy-to-install, low-maintenance devices that can be inserted into the objects we want to connect. Each of these devices then collects and transmits a small amount of information.

The LoRa signal can be picked up over 10 kilometers away, allowing us to undertake collaborative initiatives with both institutions and companies. "The idea is to train young people to understand the potential of the Internet of Things and be able to bring fresh ideas and foster projects that provide innovative solutions," says Mr. Hamilton.

### **The Four Phases of the Project**

This Fundación Cepsa Chair project is split into four phases, each aimed at furthering students' knowledge of this technology. The first phase has already started and is based on studying the technology and the devices — how they work, how they are programmed, how they are assembled and how they interconnect.

In the second phase, students will carry out testing, put together introductory documentation, programs, code and application examples. In the third phase, the project will be rolled out to high schools, with seminars and courses being offered to teachers and students.

The fourth and final stage will see groups of students create Internet of Things applications, with the most innovative being chosen to be developed alongside expert mentors from a range of disciplines.

José Manuel Fernández-Sabugo, Cepsa's Canary Islands director and Fundación Cepsa's representative in the Canary Islands, highlights the interest in this field, which, he says, "is only starting to be developed, but already looks set to be a revolution that will produce major innovations in the coming years. It is essential that our young people become familiar with the ideas and technologies of the Internet of Things, so that they can lead its deployment in the future and then develop applications themselves once they have the knowledge and easy access to the devices."

Director of the Chair, Andrea Brito, stresses the importance of these types of highly practical projects combining training, research and innovation, which drive the knowledge economy and open students' eyes to the infinite possibilities offered by new technologies.

The Fundación Cepsa Chair at the University of La Laguna was created in 2018 and aims to become a benchmark in terms of the relationship between private enterprise and academic institutions.

Managed through Fundación Cepsa, the Cepsa Chairs in the Universities of La Laguna, Huelva, Cadiz, Seville and Madrid, continue going from strength to strength thanks to the continued involvement and efforts of Cepsa professionals and the academic institutions who are committed to improving research, innovation and training.

Cepsa is a great ally of these universities. The Cepsa Chairs have allowed thousands of students to gain first-hand experience of a real working environment, while bringing university professors closer to the reality of the energy and chemicals industry. The exchange of knowledge and experience between Cepsa professionals and teachers and college students benefits everybody involved.

Canary Islands, June 26, 2020

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