Space probe to search for habitable worlds

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***Abstract*— This article describes the project carried out by the students of the vocational training cycles of the IES Escolas Proval [1] to participate in the Cansat challenge organized by ESERO[2]. The challenge is to build a satellite the size of a soda can that can fulfill a specific mission. The satellite's mission is divided into two parts. The first, which is mandatory, consists of measuring the pressure and temperature values of the atmosphere. The second part measures other environmental variables related to the existence of life. NASA's SETI project has served as inspiration for us.**

***Index Terms*—Vocational Training, Satellite, Design, Electronics and Programming, Project-Based Learning.**

I. Introduction

The CanSat challenge, which means "satellite in a can," is an educational competition in which participants must conceive, build and launch a small satellite the size of a soda can, known as a CanSat. The primary purpose of this challenge is to simulate a full space mission on a reduced scale, allowing participants to experience various aspects of space engineering and promoting hands-on learning. We have designed a website where we have shared work related information[3].

II. Work description

In the main mission of CanSat, it is required to measure air temperature and atmospheric pressure that will be saved on a memory card located inside the probe. Simultaneously, they will be sent every second to the ground station, where, in our case, they will be stored in a database on a computer that will act as a server. A website has been programmed on the server that will allow clients to consult the data at the same time and from different points through a web browser in real time.

The students are organized into a series of roles in order to specialize each one in tasks such as hardware design, device programming, mechanical design of the envelope, construction of the parachute, search for financing and divulgence of the work through different channels.

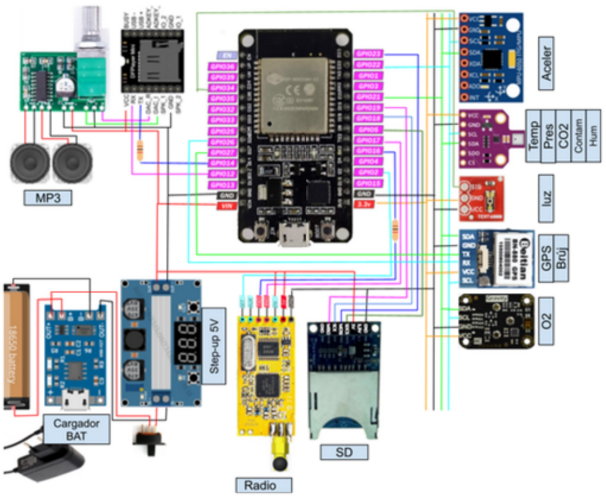

Fig. 1. Complete block diagram of the Cansat system

III. Conclusions

This work has allowed the development of multiple activities related to skills that allow students to devise, build and test a fully functional prototype. On the other hand, communication and dissemination skills are developed in such a way that their ability to resolve doubts is tested both for members of their educational community and before a jury that values the effort made.

In the month of April 2023, the public defense of the project was held at the Xosé Neira Vilas Auditorium (Santiago de Compostela, Spain) before a jury whose members are experts from Galician Universities and the European Space Agency, obtaining first prize in the regional final. It was a great surprise for everyone and an experience that the SETISAT team will never forget.

IV. References

[1] Escolas Proval secondary school http://www.edu.xunta.gal/centros/iesescolasproval/

[2] European Resources Office for Space Education in Spain (ESERO Spain) https://esero.es/

[3] SETISAT project page on wordpress https://setisat.wordpress.com/