FOSSA Systems

Satellite Mission Statement

# About Us

## The Team

We are a young and international (Spanish and British) development team consisting of Julian Fernandez, Richard Bamford and James Bateman.

Julian develops the hardware, engineers the builds, manages the legislation of aerospace licenses and rules.

Richard is the software developer who is responsible for the Arduino (Atmega) chips on board and the public relations of the project.

James handles the branding and management of the project’s public appearance.

## Our Dream

Our dream is to create a picosatellite, have it orbit the Earth, and to inspire students by hosting a cross-school/university competition where the winners have their programs onboard. All participants will have their names on the system as it circles the globe.

# Development

## Background

The picosatellite is a 5x5x5cm pocketqube called **“*FOSSASAT-1”***. It will be the first of its kind to feature deployable solar panels. Only 1 other picosatellite of this size has operated before.

We are confident that we can build a prototype that functions on a weather balloon. Once we have reached the limit of what we can do, we will contact Universities in Spain and Jodrell Bank Radio Telescope to hopefully get expert advice.

## Technical Details

The entire system consists of the picosatellite and ground stations.

### Picosatellite

The picosatellite has 2 main modules; beacon and education payload.

The beacon is the module that transmits the system information such as; battery charging current, solar panel input voltages, reset count and deployment status to the ground stations via a LoRa package.

The education payload is an Arduino atmega DIP which is connected to various sensors (TODO) that will have the competition winners code on it, which can also transmit and receive within the safety specifications. The programs will be analysed by our team and we will consult other experts to ensure safety and security.

### Ground station

The ground station will be a system consisting of a LoRa transceiver and IO hardware (TODO) which can downlink information from the picosatellite. No control is given to the ground stations other than pre-defined and security verified commands such as; ping.

## Progress

Since the beginning of July 2018, we have already produced a prototype that will be tested onboard a weather balloon within the next month.

We blog all development progress on our website at <https://fossa.systems/news/>.

### Milestones

|  |  |  |
| --- | --- | --- |
| Milestone | Description | Date (Completed) |
| Beacon Arduino C system | The beacon is functional, it relays all the information specified in the requirements specification. | 20/07/2018 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# Finances

## Sponsors

So far, we have 2 sponsors able to supply us with PCBs:

1. PCBWay
2. JLCPCB

But we are looking to other companies to help with our budget.

## Budget

|  |  |
| --- | --- |
| Items | Amount |
| Research and development | $500 |
| Prototype construction | $900 |
| Licenses and general administration fees | $500 |
| Marketing and public relations | $500 |
| Launch | $25,000 |
| Total | **$27,400** |

# Development Ethics

Our focus as a development team is to engineer solutions that push our skills and the satellite to the limit, while retaining a KISS (keep it simple stupid) philosophy.

# Competition Plan