

Design, Manufacture and Test of a demo satellite payload.

Code: 19/29

Company: Open Cosmos

Location: Harwell Campus, Oxfordshire, UK

Company Description:

Open Cosmos provides simple and affordable space missions to help solve the world's biggest challenges, enabling organizations from across a wide range of industries to use space technologies as a tool. Open Cosmos removes space access barriers by simplifying space technology, offering a one-stop-shop to orbit, reducing time and cost. We offer constellation services, in-orbit demonstration services, payload development and qualification services.

We provide a one-stop-shop solution to orbit that removes the three main space access barriers, mainly: complex technology, time-consuming paperwork and high costs. This is achieved using beeKit, a flexible payload development platform and beeApp, an innovative cloud-based mission and system simulator. beeKit replicates the mechanical and electrical constraints of the satellite platform while still being modular to enable payload developers to change configuration and physical dimensions. beeApp enables full online mission and systems development and space simulation capabilities when the payload is assembled in beeKit.

With those tools, customers can focus on developing their technology, run mission designs and simulations included in our beeInnovative service, proceed to hardware development with our beeReady service, and then send it over to us to integrate it in our satellites (beeSat) with our beeOrbital service. We do all the quality testing, then deliver the satellite to our launching partners so they can put it into orbit. Once in orbit, we will continue to provide assistance, operating satellites for our customers so they can concentrate on what they need: the data and services or applications.

Project Description:

The applicant will develop a demo payload or small satellite subsystem. A list of payload and subsystems suggested by Open Cosmos can be found hereunder:

1. ADCS subsystem: Development of a proof of concept equipment capable of:
 - a. Horizontal axis pointing of a CubeSat hanging from a single string. The use of photodetectors located in different satellite external surfaces could be potentially used as an input for the attitude performance.
 - b. Edge stabilisation of the CubeSat (Inverted pendulum).
2. Laser Communication Payload: Development of a proof of concept equipment capable of sending basic information that could be suitable for inter-satellite communications. The

payload should be able to send and receive information to and from other payload units, so the designed equipment can operate as a transmitter and receiver.

3. SDR, AIS or IoT demo Payload: Development of a proof of concept equipment capable of sending basic information making use of an SDR or supporting AIS or IoT applications.
4. Earth Observation Payload: Development of an Earth observation payload making use of a multispectral or thermal camera as the main data generation sensors.
5. Biological Payload: Development of equipment to monitor biological payloads in microgravity, like bacteria colony or algae growth.
6. Radiation shielding evaluation Payload: Development of equipment to monitor the radiation level inside a CubeSat using different shielding materials and configurations.

Applicant Specification:

- Broad knowledge of space technologies, micro and nano-satellite subsystems in particular.
- Knowledge of mechanical engineering with 3D design, materials, structural and thermal analysis.
- Knowledge in basic electronics, programming and simulation software.
- Broad knowledge on Systems Engineering for micro and nano-satellites including instrument interfaces with satellite platforms and AIT.
- Some kind of understanding of end-to-end space missions, phases involved, procedures and associated documentation (ICD, PDR, CDR, FDR, etc.).

Minimum Requirements:

- Some experience with CAD software (CATIA, SolidEdge, Fusion360, etc.) and 3D printing.
- Hands-on experience with basic electronics such as Arduinos, Raspberry Pis, BeagleBoards, etc.
- Programming experience with Python, C/C++, Matlab or similar.
- Quick learner with curiosity, creativity, teamwork skills and open to new challenges.

Preferred Additional Requirements:

- BSc/MSc in Engineering, Computer Science, Physics/Maths or similar.

Further details:

12 Week fixed term contract to be agreed with the successful candidate but nominally with a start date around 17th June, 2019 to attend the SPIN Induction day at the Satellite Applications Catapult, and completion before 20th September for the Showcase the following week. Salary is £1,449 per calendar month gross.



Closing Date for Applications: 5pm on Monday 29 April 2019

Applications should be made through the online form attaching a CV, before the closing date. Please note that elements of the form left incomplete will be deemed to render the application ineligible. They will be checked for eligibility and forwarded to the employer.