

AGENCY

Fly Your Satellite! teams adapt to working in a world changed by COVID-19

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The world as we know it has changed, with the COVID-19 pandemic halting many activities around the globe. Showing the innovative can-do attitude that marks successful space engineers, the teams participating in ESA's Education's Fly Your Satellite! programme have devised methods to adapt to teleworking, with limited or no access to their lab facilities, when under normal circumstances they would be working on hardware manufacturing, software development, testing, and more. Remarkably, some teams have even enabled remote access to their satellites, maintaining a speedy pace of development!

LEDSAT, Sapienza University of Rome, Italy

— LEDSAT meetings in times of teleworking

The LEDSAT team were close to finalising the integration of their satellite when COVID-19 struck Europe, and they plan to resume speedily once they can regain access to their

lab. *"The spacecraft is in our laboratory, eager to be tested," they say, "but we prefer not to arrange remotely controlled tests keeping it active if an operator is not close."*

However, this is not preventing the team from working on the project from different angles. The past few weeks have been spent optimising test procedures for the ambient testing campaign, and preparing the documentation needed for kicking off the functional tests as soon as restrictions are lifted.

The team have looked to digital solutions to reproduce the enjoyment of side-by-side working in the lab. *"Staying far from the lab for weeks or months is tough, especially if you are forced not to see your teammates and friends for so long," they say. "During teleworking, video calls can be a fun moment to share in the day, either for solving some technical doubts on the project or to enjoy a very Italian espresso, all together!"*

3CAT-4, Technical University of Catalonia, Spain

COVID-19 has prevented the 3CAT-4 team from visiting their university since mid-March. They were not able to spend any time in advance to prepare their facilities for remote work, so

— 3CAT-4 cleanroom for remote connection

instead elected to continue with their project documentation, as this was the most realistically achievable task. Eventually, as restrictions were relaxed, two team members were able to visit their lab in order to gain access to their computer system and FlatSat, which is a unit containing all the CubeSat components but mounted on a flat board, making it useful for testing and troubleshooting.

The precious lab time was also spent configuring a power supply that can be activated remotely, giving the team control of both the FlatSat and their suite of Electrical Ground Support Equipment (EGSE). This allowed all teammates to perform software development and testing while remaining physically distant from the actual hardware.

Knowing that this kind of remote work comes with inherent risks, the final task was to install a camera so that the team can still have eyes on the hardware in the lab. With all this work completed, the team have been able to continue development of their CubeSat project safely.

EIRSAT-1, University College Dublin, Ireland

— EIRSAT-1 cleanroom livestream

When social distancing restrictions first began, the satellite cleanroom was configured for a single operator to be present allowing for remote operations and product assurance

support. This was achieved using a private YouTube stream to view the hardware, and a Cleanroom Discord channel allowing all operators to converse and remotely view each other's computer screens. Now, the cleanroom operates 100% remotely.

The EIRSAT-1 team have been using these new remote capabilities to continue developing the flight software and firmware, and to test on real hardware. Over the past few weeks, the team has conducted a series of 'Mini Mission Tests' in order to remotely train operators and to develop procedures for the upcoming Mission Test.