



**CADSAT**

**2020/21**

**GUIDELINES**

## → Overview

Plan a groundbreaking scientific mission and 3D design your very own mini satellite from home! CADSat is an ESA education project for students 11-15 years old. The project challenges students to design in 3D a satellite the size of a soda can, made with the design tool of their choice, and describe their experiment.

## → Timeline

Registrations are open from 18 September 2020 until 14 May 2021.

## → Who can participate?

Participation is open to individuals or teams of up to 4 members of young people aged 11 to 15 years old. A teacher, mentor or parent must register on the CADSat online platform and submit the project for minors. Participants must be from an ESA Member State, Canada, Latvia, Slovenia or Malta. Students enrolled at a postsecondary/tertiary institution are not eligible to apply.

## → Creating your project

- Think of your mission objectives and choose the modules or sensors that will allow you to fulfil these objectives. In every space mission, the scientists and engineers have to work together so that the satellite design best suits the science wanting to be conducted. All the great space missions throughout the beginning of the space age have used new and innovative instruments to peer into the universe and solve some of science's most exciting mysteries. Feel free to look to [ESA missions](#) for inspiration!
- Choose the 3D modelling platform of your choice. You can read an overview of some free 3D modelling platforms [here](#).
- Create a 3D model cylinder with dimensions 115 mm height and 66 mm diameter. Create the 3D version of your sensors and either present those sensors placed inside the CADSat, external to the CADSat case or provide a cross-section of your CADSat with the sensors showing.

## → Submitting your project.

- Once you're happy with your project, take at least 3 screen pictures of your project from different perspectives, saving the images in .jpg or .png format. We recommend the use of Tinkercad or 360 Fusion as these tools enable you to share a link to your project. You'll need to make sure the link is public so that the ESA Education team can see it. For more information on obtaining a shareable link, see [here](#). If you are not using either of these tools, and if the design tool you are using does not allow you to share a public link to your project, save your project as a .stl or .obj file and attach this file to your submission.
- The teacher/mentor will need to go to [cadsat.esa.int](https://cadsat.esa.int) and create an account. Then you can submit your project - including a description of your mission and sensors. If your project is approved, you'll see it soon in the CADSat gallery!

## → CADSat specifications

The participating individual/team must design a CADSat to accomplish the compulsory primary mission, to measure the air temperature and air pressure, and be able to transmit or store this data. Furthermore, the individual/team must select a secondary mission for the CADSat which can be inspired by real satellite missions, seek to collect scientific data for a specific project, perform a technology demonstration, or any other mission that would fit inside the CADSat and showcase its capabilities. The CADSat design must comply with the following criteria:

1. All the components of the CADSat must fit inside a standard soft drinks can (115 mm height and 66 mm diameter), with the exception of the parachute. Radio antennas and GPS antennas can be mounted externally on the top or bottom of the can, depending on the design, but not on the sides.
2. The CADSat must be powered by a battery and/or solar panels.
3. Inclusion of a positioning system for retrieval (beeper, radio beacon, GPS, etc.) is recommended.
4. The CADSat should have a recovery system, such as a parachute, capable of being reused after launch. It is recommended to use bright coloured fabric, which will facilitate recovery of the CADSat after landing.

## → Disclaimer

All participants that submit an entry that complies with the guidelines will receive a participation certificate. The 10 best projects will receive a special mention and certificate.

By submitting the project, the participants agree that their project will be shared on the CADSat platform.

Participants accept that ESA Education and partners have the right to use the entirety or parts of the project for outreach and education purposes.

## → Questions

For any questions, consult the [CADSat website](#) or send an email to [cansat@esa.int](mailto:cansat@esa.int).

## → Useful links

CADSat  
<https://CADSat.esa.int>