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The German team, in close co-operation, finishing their CanSat for the test drop

European CanSat Competition 2016

This June, students from around Europe met in Portugal to compete in the European CanSat competition. One of their teachers tells us more.

By Markus Norrby

When I first told my students about the European Space Agency (ESA) CanSat competition^{w1} and asked if anyone might be interested, they were eager and hesitant at the same time. A CanSat is a working model of a real satellite that is fitted in a standard 330 millilitre soda can. CanSats do not go into space, but instead are released from a rocket or a balloon at an altitude of about 1 kilometre. According to the rules of the competition, it should contain an on-board computer, sensors for different measurements, and a radio transmitter to communicate with a ground station.

So while my students at Vasa Övningsskola in Finland thought it sounded exciting, some were concerned that the competition would be too complicated for them, as they hadn't really studied any electronics or programming. But one group decided to go ahead anyway, learning all the necessary skills along the way – and they found themselves in Portugal for the 2016 European finals on 22–25 June. As my students discovered, it is surprisingly simple to get started and build a functioning CanSat – but enormously complicated to build something one hopes will be the best in Europe.

The 2016 final hosted 14 teams from across Europe. Most of the teams had made it to Portugal by winning a national competition, although a few teams from countries without an active CanSat community were also selected to take part. Each team consisted of four to six students and at least one accompanying teacher, so in total almost 100 'space geeks' filled the hangars at Torres Vedras airfield near Lisbon during the competition.

My team's table in the hangar was buzzing with activity for the first two days of the competition. Persistent problems with our GPS unit meant the students soldered and re-soldered connector after connector in a last-minute frenzy, hoping to identify the



About CanSat

- CanSat started in the 1990s in the United States and Japan as a way of increasing interest in space research among university students.
- The European CanSat Competition targets secondary school students and has been organised by the Education Office at the European Space Agency since 2010, although several European countries have worked with CanSats at a national level for even longer.
- The best way to get involved in CanSat is to enter a national competition, usually organised by local European Space Education Resource Office (ESERO) partners (see www.cansat.eu for a list of national competitions).
- The same organisations also hold workshops for teachers interested in starting a CanSat project.

Background



problem and find a reliable GPS fix. On the first day, the students ran out of spare parts, but with the help of several other teams they found a working combination of chips and antennas. By the end of the second day, the friendly little green LED on the GPS chip finally started blinking to indicate an acquired satellite fix.

As a teacher, this exemplifies what I think makes the European CanSat

Competition a fantastic experience. The students worked through the night, if needed, to solve seemingly impossible problems, before finally succeeding. And students from different countries, but with the same passion for science and technology, got to know each other, learn from each other and help each other throughout the competition.

During the second day of the competition, the judges inspected

Many hands are needed to pack all the electronics correctly.

The Finnish team setting up their test drop ground station under the supervision of the author



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The Intruder rocket launched with two CanSats on board.

the technical aspects of the cans and parachutes. Then drop tests were carried out from an aeroplane to ensure the cans could be safely loaded into the rockets and fired up to a height of about one kilometre.

The third day was launch day, but as with real rocket launches, the weather caused several delays. In the end, only five of the planned seven rockets could be safely fired, and some CanSats had

to be dropped from a plane at lower altitude instead. A short night followed, with all the teams working hard on data analysis to prepare their final presentations for the following morning.

Listening to these presentations, I was amazed at the high standard of every project. Ultimately, the Portuguese team were crowned the CanSat 2016

winners, followed by Germany and Ireland. There is no doubt, however, that every participating team had worked hard for months to prepare their missions and had learned so much in the process, and they all presented fantastic results. This, I think, makes every team a winner!

Web reference

w1 For more information on the CanSat competition, visit the website or Facebook page: www.cansat.eu and www.facebook.com/cansatsineurope

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Frantic activity at the launch site as data starts streaming back from the descending CanSats

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The European CanSat Competition participants and crew achieve lift-off!

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