

Space droids calling

June 11 2013



Models of the Spheres robots sent to the International Space Station at the Massachusetts Institute of Technology. The robots are programmed by students on Earth to perform operations based on real-life situations. Compressed air is used to move the spheres in all directions. ESA participation in the pilot programme of Zero Robotics involved collaborating with various universities and academic institutes. ESA provided the opportunity to send teachers from universities to the Massachusetts Institute of Technology to receive training in Spheres operation and coding. The skills learnt were then passed on to the local high school teachers whose teams participated in the event.

Secondary-school students can play the ultimate robot game: the annual

Zero Robotics tournament turns the International Space Station into a playing field for European students to control minisatellites with self-developed software.

Controlling volleyball-sized satellites in space is not easy. Spheres – short for Synchronised Position Hold, Engage, Reorient, Experimental Satellites – move around the [International Space Station](#) using 12 jets powered by compressed gas.

These [autonomous robot](#) satellites have their own power, propulsion and navigation. To master the Spheres, [students](#) must write code to fulfil a mission. The details of this year's mission will be revealed in September.

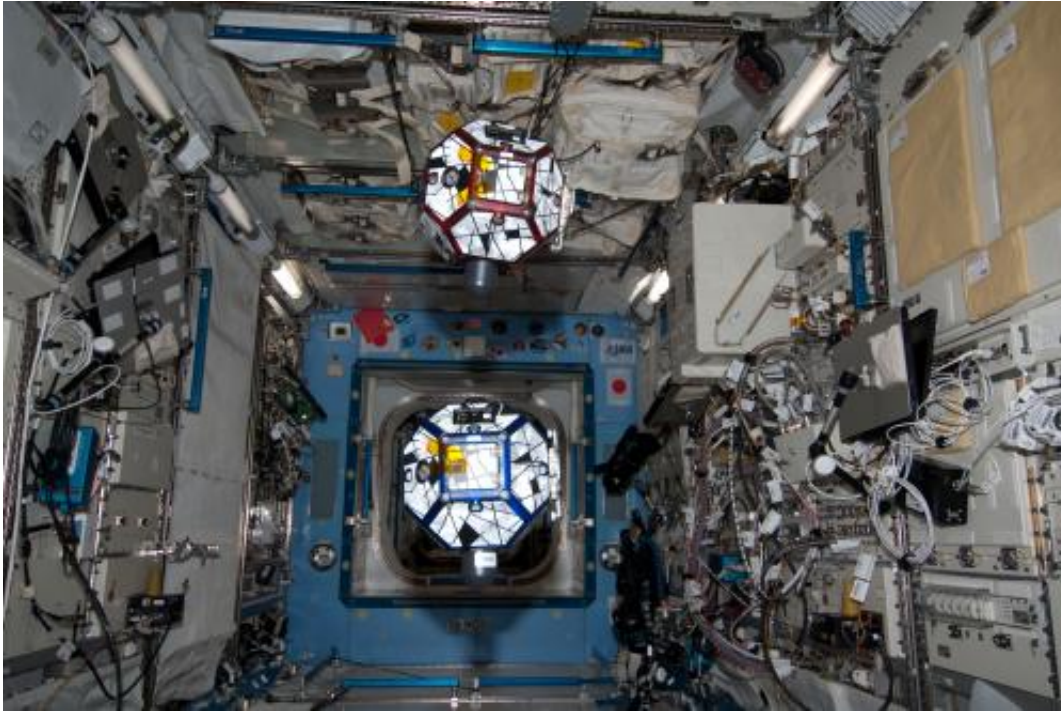
This is the third time European contenders have the chance to run their commands in space. The goal of this tournament is to build engineering skills for students, such as problem solving, software operations and teamwork.

From virtual to orbital

Just as in any [international competition](#), the road to the finals is long and challenging. The contest starts with simulation competitions of increasing difficulty held online.

Competitors can create and visualise their code to get ready for the game from a web browser and free of charge.

Finalists from the online simulation will see their commands run by the [Spheres](#) satellites on the International [Space Station](#) transmitted live from space. Each finalist will be composed of a three-team alliance from different European countries.



Spheres robots on the International Space Station. The volleyball-sized satellites have their own power, propulsion and navigation systems and are used in an international competition for high-school students. Each year a tournament is held where students earn points by writing control algorithms to operate the spheres and by choosing the best tactics to win the game. Credit: NASA

The final event will take place in January 2014 with the US teams at the Massachusetts Institute of Technology (MIT) and the European teams at ESA's ESTEC [Space Research](#) and Technology Centre in Noordwijk, the Netherlands.

Join the game

The 2013 ESA High School Tournament registration is open to secondary-school students from ESA member states until September. Teams must consist of between three and ten students.

Find a mentor, register and start preparing your tactics!

Key dates

June–September Registration, tutorials/free practice

7 September Kickoff webcast live from MIT

9 September Registration deadline

6 October 2D simulation competition deadline

27 October 3D simulation competition

1 December Alliance submission deadline

15 December Final submission deadline

Mid-January 2014 Final Event live from the International Space Station

More information: [Zero Robotics registration](#)

Provided by European Space Agency

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