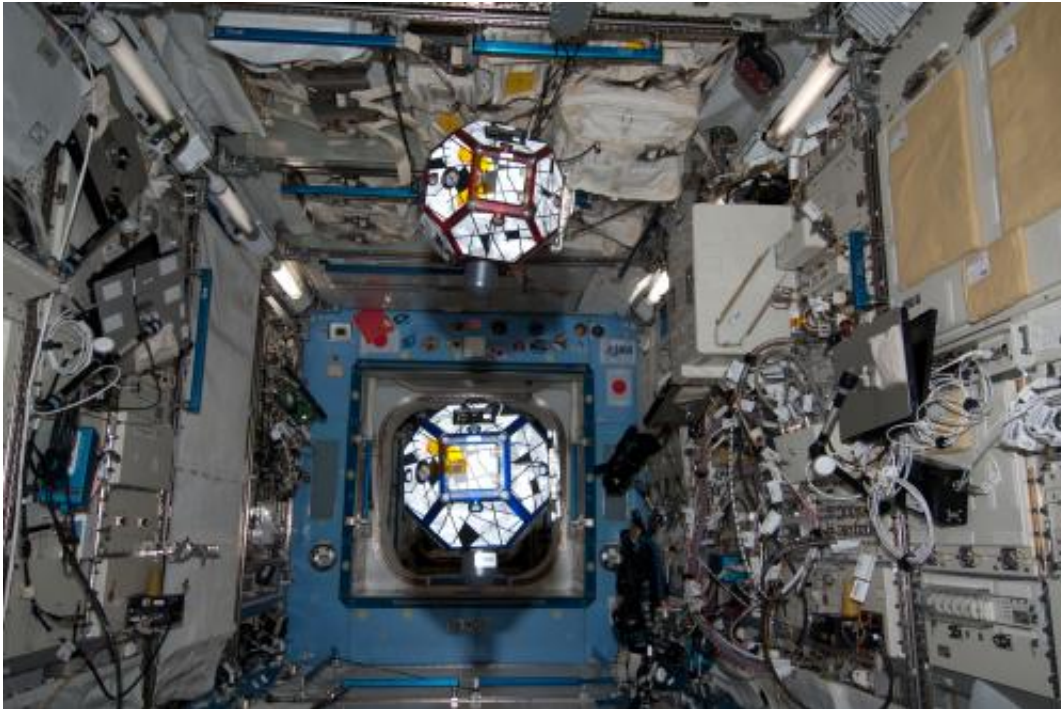


Wake up, robot

July 22 2014



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 secondary-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.

Code, play and command your space droid – students across Europe can bring a squadron of minisatellites to life on the International Space Station as the ultimate space robot game.

For the fourth year, the Zero Robotics tournament will turn the Station into a gaming arena for European secondary-school pupils. The competition challenges youngsters to write instructions that control volleyball-sized satellites through a virtual field mined with obstacles.

The Spheres – short for Synchronised Position Hold, Engage, Reorient, Experimental Satellites – obey remote commands and can hover around the weightless Station using their own power, propulsion and navigation.

The tournament is not only about writing code. Participants must solve problems, apply their maths and physics knowledge and work in teams to achieve success.

European contenders should start working now on self-developed software and plan their strategy for the competition, ready for when the final details of the mission are unveiled in September.

May the code be with you

The contest starts with online simulations of increasing difficulty. Competitors can create and visualise their code to get ready for the game from a web browser and free of charge.



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. Credit: MIT

After playing against other teams in simulation rounds to build the highest scores, finalists will see their commands ruling the Spheres on the Space Station. ESA astronaut Samantha Cristoforetti will support the European teams, running the live competition from the front line on the orbital outpost.



NASA astronauts Kevin Ford (background) and Tom Marshburn, setting up two Spheres robots in the Kibo laboratory 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. The European finalists of 2013 consisted of six alliances from Italy, Germany, Spain and Portugal. Credit: NASA

The finals will take place in January, with the US teams at the Massachusetts Institute of Technology and the European teams at ESA's Technical Centre, ESTEC, in Noordwijk, the Netherlands.

Provided by European Space Agency

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