

Did You know that
Estonia is a space-faring nation?

Completed as a result of collaboration between the University of Tartu and Tartu Observatory, the ESTCube-1 student satellite flew into orbit on board Vega, the newest launcher of the European Space Agency (ESA) on 7 May 2013.

Tiesitkö, että Viro on avaruusvaltio?

Tartun yliopiston ja Tartun observatorion yhteistyössä valmistunut opiskelijasatelliitti ESTCube-1 lensi Euroopan avaruusjärjestön (ESA) kantoraketti Vegan kyydissä maan kiertoradalle 7.5.2013.

Знаете ли вы, что Эстония – космическое государство?

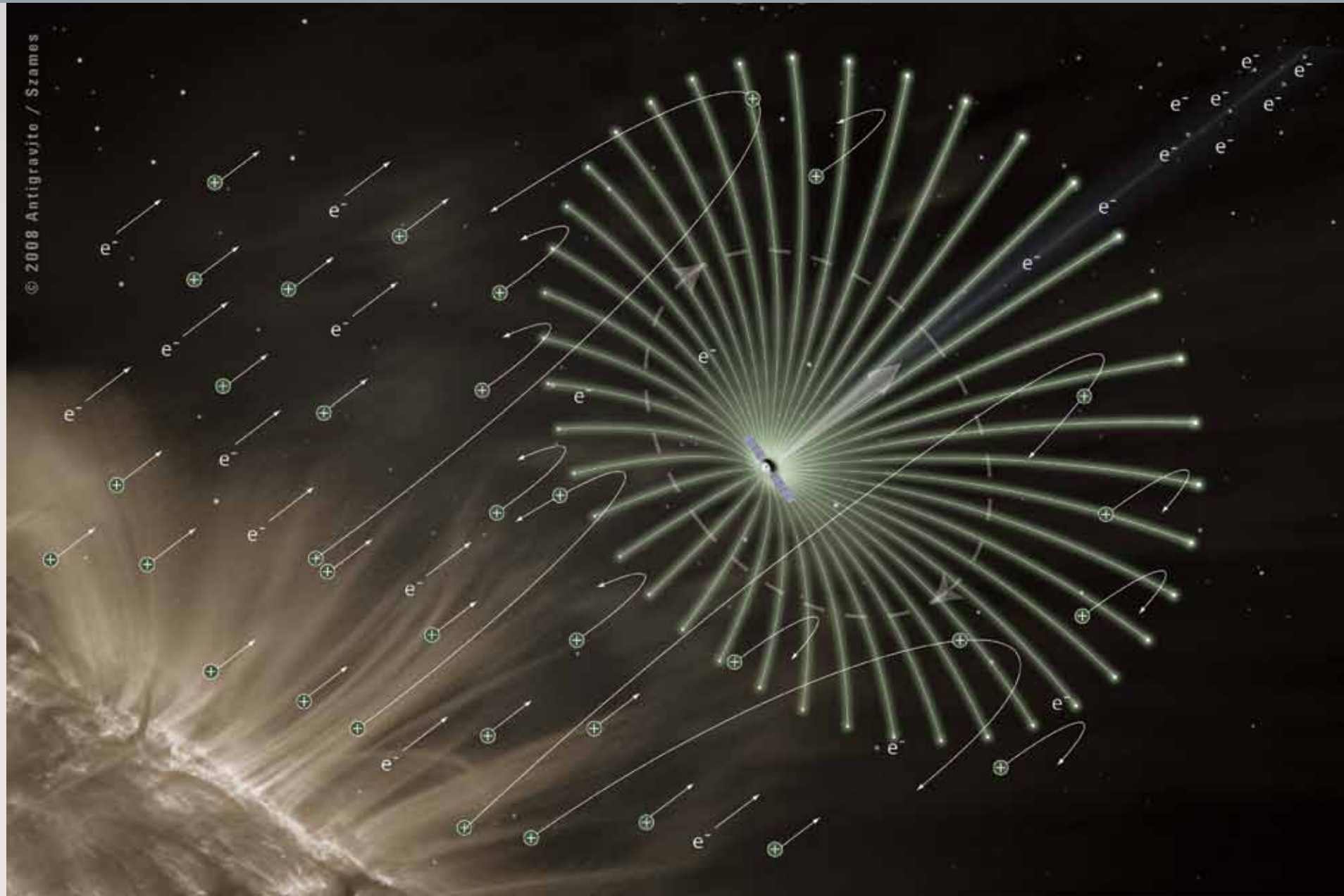
Студенческий спутник ESTCube-1, выполненный при сотрудничестве Тартуского университета и Тартуской обсерватории был доставлен на околоземную орбиту ракетой-носителем Vega Европейского космического агентства (ESA) 7 мая 2013 года.

Kas teadsid, et Eesti on kosmoseriik?

Tartu Ülikooli ja Tartu Observatooriumi koostöös valminud tudengisatelliidi ESTCube-1 lendas Euroopa Kosmoseagentuuri (ESA) uusima kanderaketi Vega pardal Maa orbiidile 7. mail 2013.



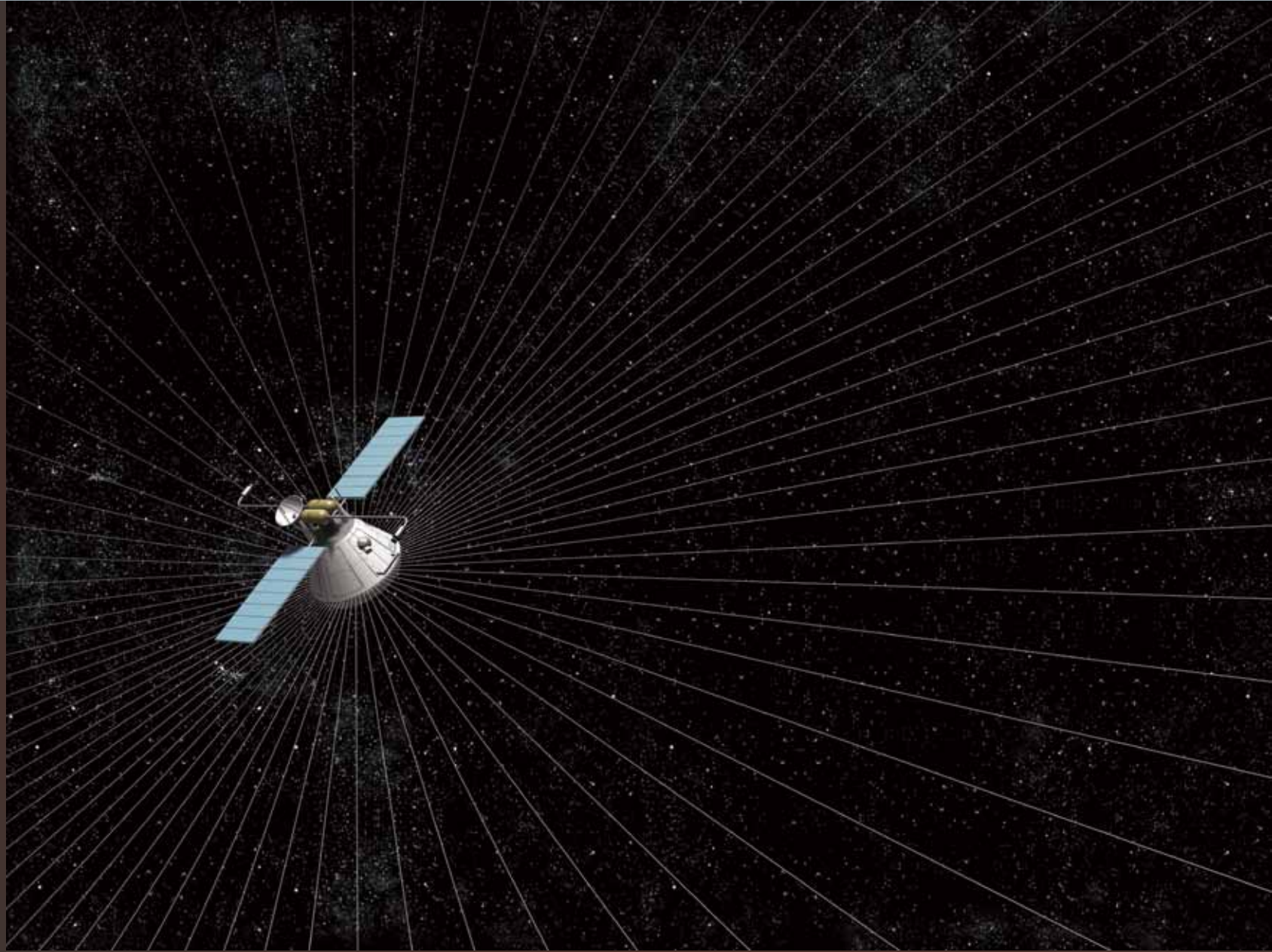
The function of the satellite is to test an electrical solar sail in space, which may lay the groundwork for a novel spaceship engine enabling interplanetary travel at record speeds.



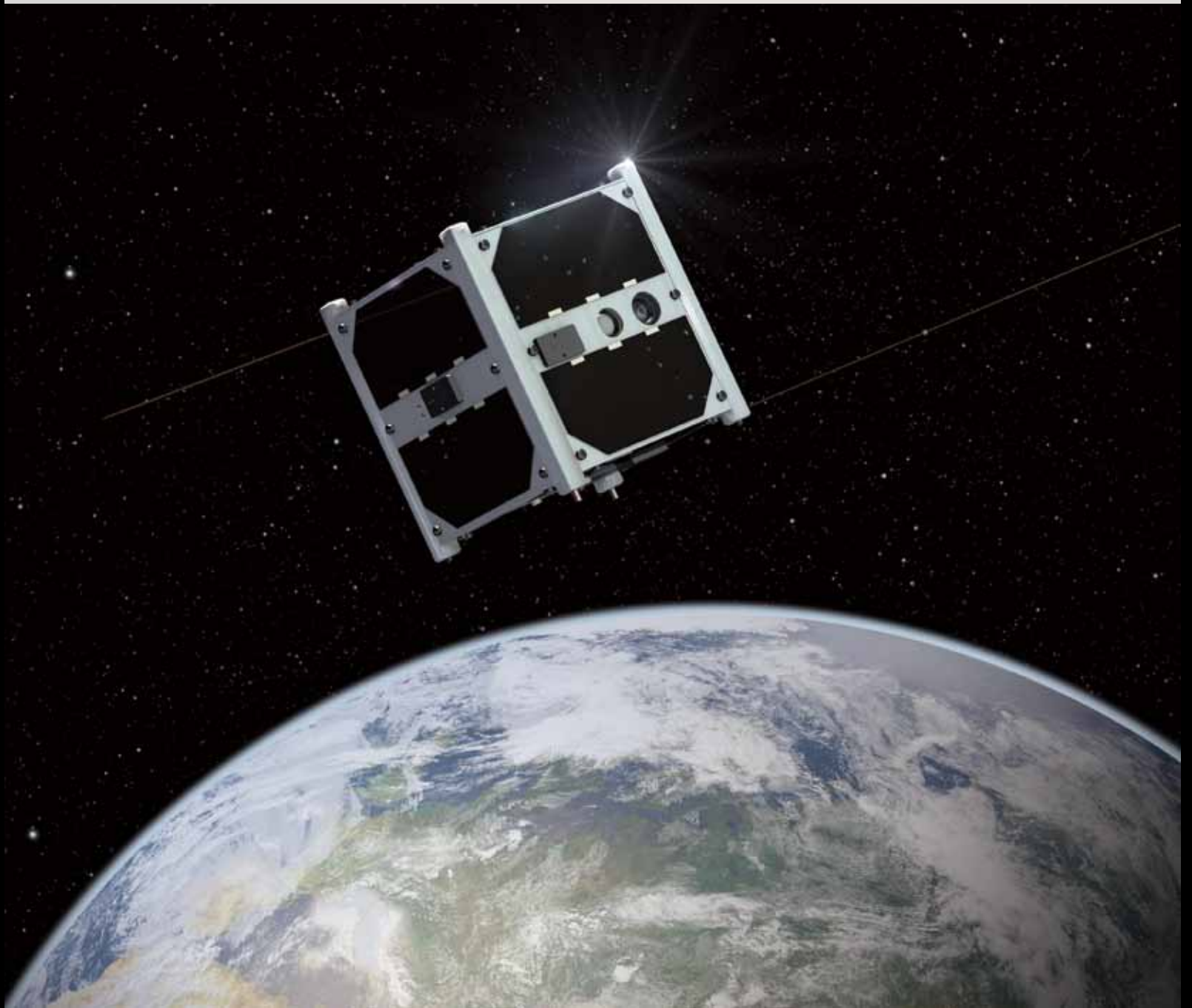
The electrical solar sail is a novel means of travel within the Solar System, primarily using solar wind for propulsion – a stream of electrically charged particles discharged by the Sun.



The electrical solar sail was invented by the scientist Pekka Janhunen (left) at the Finnish Metrological Institute. The ESTCube-1 student satellite is the first test of the technology in space.



With the help of the novel engine being developed based on the electrical solar sail, it would be possible in the future to cut down on space debris, deflect asteroids threatening the Earth and ship scientific instruments to other planets faster.



ESTCube-1 measures $10 \times 10 \times 11.35$ cm, weighs 1.048 kilograms and is flying in orbit at an average height of 650 kilometres from the surface of the Earth at a speed of 27,000 kilometres an hour.



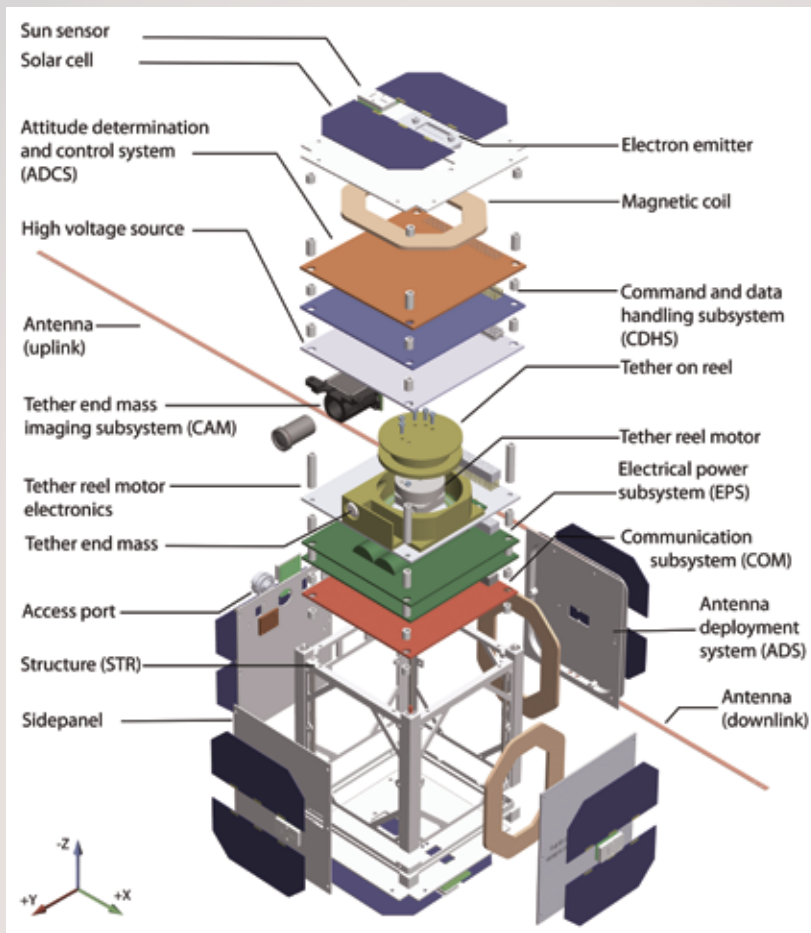
On board the ESTCube-1 student satellite, there is an on-board camera with a resolution of 640 x 480 pixels to be able to take photographs of the Earth from space.



The creation of subsystems and side panels for ESTCube-1 began in autumn 2008, with the designs flown up into space completed five years later.



The ESTCube-1 software in orbit is being updated continuously. On board ESTCube-1, there are about 100,000 lines of code that, when printed out, would make a book of at least several thousand pages long.



On board ESTCube-1, the most important systems include, for instance, a CDHS (Command and Data Handling System) on-board computer. A subsystem for managing electrical power (Electrical Power System), on the other hand, harvests energy from solar panels, stores it in batteries and distributes it across the satellite, as needed.



The team of the student satellite project includes about one hundred students from Estonia, Latvia, Lithuania, Germany, Ukraine and the United States. The international collaboration partners of the University of Tartu and Tartu Observatory are the Finnish Metrological Institute, University of Helsinki, University of Jyväskylä, University of Eastern Finland and the German Aerospace Centre.



The University of Tartu is also developing artificial muscles that could be used in space satellites in the future. Furthermore, development is in progress for a Martian House (pictured), which will be able to unpack itself under extreme conditions and will be suitable for short-term habitation on Mars in the future.