



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

NATIONAL SPACE FUND



Space Education Program

Information Session 24th May 2018

The information in this presentation provides an overview of the initiatives. Guidelines with all relevant details and documents will be uploaded at <http://mcst.gov.mt/space-directorate/sep/> before the end of the scholastic year 2017-2018.



Content

- ▶ National Space Fund
- ▶ Space Education Programme
- ▶ AstroPi Challenge
 - ▶ Mission Zero
 - ▶ Mission Spacelab
- ▶ CanSat Competition
- ▶ Questions Session





Supported by:



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

NATIONAL SPACE FUND



Space Research
Fund

Space Education
Programme



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

Space Education Programme

- ▶ Is being supported by the European Space Agency



- ▶ We are closely liaising with MEDE.



MINISTRY FOR EDUCATION AND EMPLOYMENT



Space Education Programme

- ▶ Exciting initiatives for primary, middle, secondary and post-secondary schools
- ▶ Supporting Teachers through Workshops and provision of educational materials.
- ▶ Opening opportunities for students



Space Education Programme

AstroPi

Primary and Middle



CanSat

Secondary and Post-secondary



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

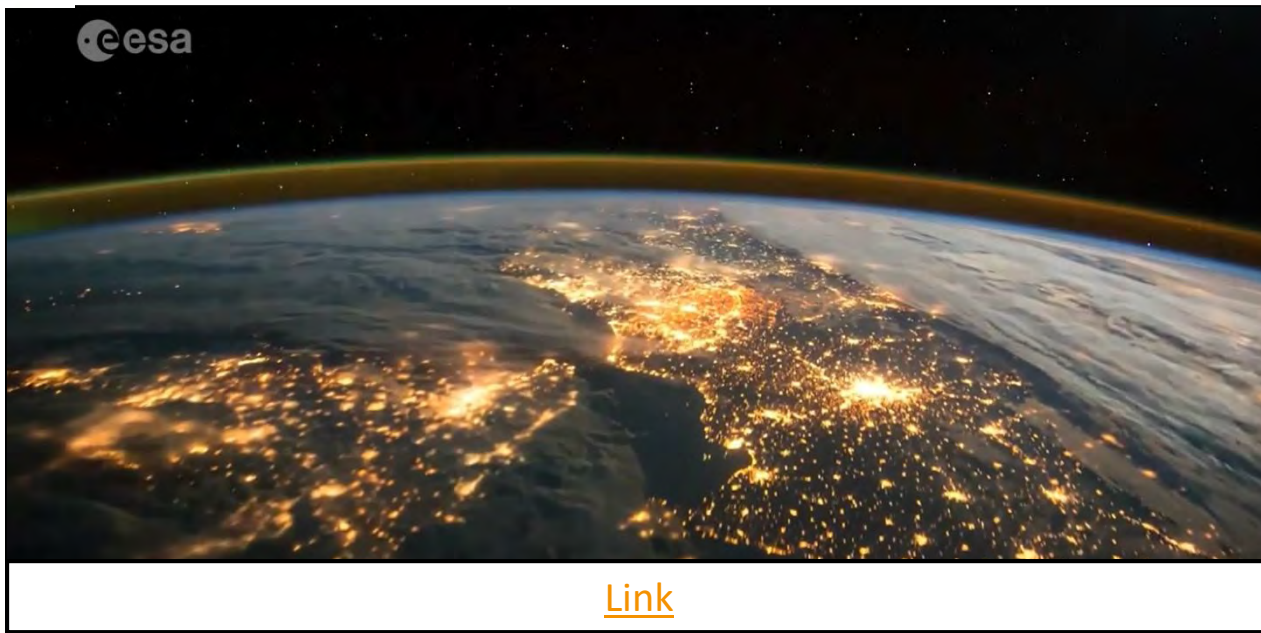
AstroPi – Who can apply?

- ▶ recommended participation guidelines for Maltese schools:





AstroPi – Introductory Video



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION



Primary Schools Year 5 and 6



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION



AstroPi – Mission Zero

Primary Schools – Year 5 and 6



1. Classroom
activity and Code
Submission



2. Code runs in
the ISS for 30
seconds

Sept 2018 - Nov 2018

Dec 2018– Feb 2019



AstroPi – Mission Zero

Primary Schools – Year 5 and 6



- ▶ Non-competitive initiative and open to all primary schools.
- ▶ Students with their Teacher will program the AstroPi by displaying a greeting message to the crew and showing the ambient air temperature using the LED Matrix.



AstroPi – Mission Zero

Primary Schools – Year 5 and 6



International Space Station



The Malta Council for
Science & Technology

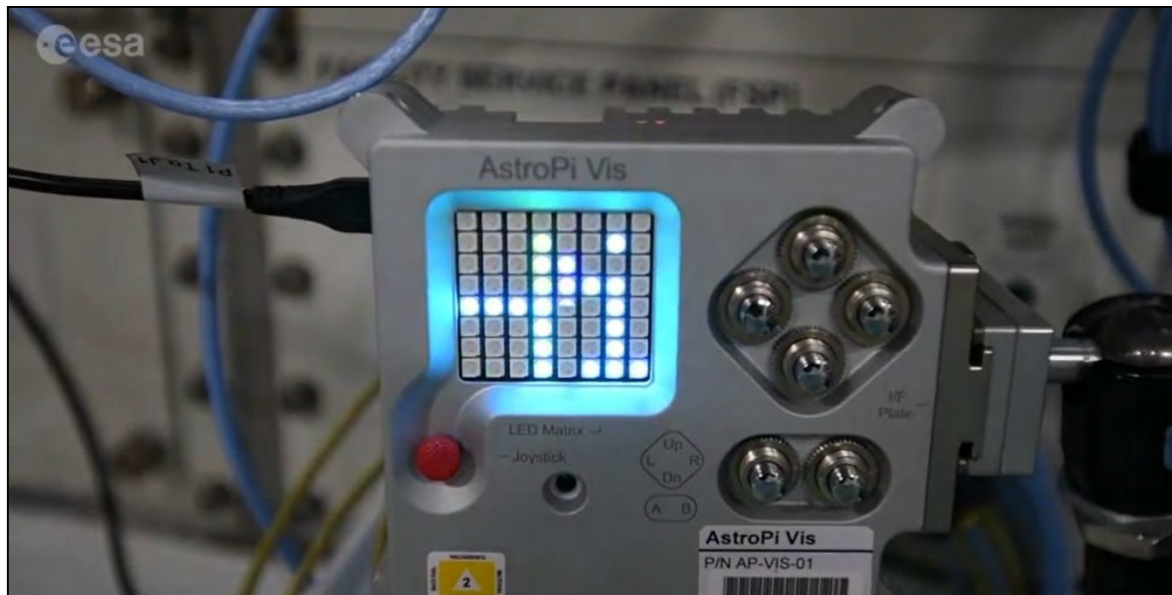


PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION



AstroPi – Mission Zero

Primary Schools – Year 5 and 6



[Click snapshot for video](#)



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION



AstroPi – Mission Zero

Primary Schools – Year 5 and 6



- ▶ Each team should be composed of 2 to 4 students.
- ▶ Teams will not require an actual AstroPi
- ▶ The code can be written on a normal computer via a simulator on the internet.
- ▶ Every team's code is guaranteed to run in *International Space Station* for 30 seconds!





AstroPi – Mission Zero

Primary Schools – Year 5 and 6



- ▶ Each participant will then receive an electronic certificate from ESA recording the exact start and end of their code's run— their piece of space science history to keep!





AstroPi – Mission Zero

Primary Schools – Year 5 and 6



Online Emulator <https://trinket.io/mission-zero>

Use the sample code available at
<http://mcst.gov.mt/wp-content/uploads/2018/05/SAMPLE-CODE.txt>





Secondary Schools
Year 7, 8 and 9



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION



AstroPi – Mission Space Lab

Secondary Schools – Year 7, 8 and 9



- ▶ It is a competitive initiative
- ▶ A team of 3 to 6 students led by a teacher
- ▶ Each team will be evaluated by ESA through 4 phases
- ▶ The shortlisted teams will be given a free Raspberry Pi with sensors – AstroPi by MCST





AstroPi – Mission Space Lab

Secondary Schools – Year 7, 8 and 9



[Click snapshot for video](#)



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

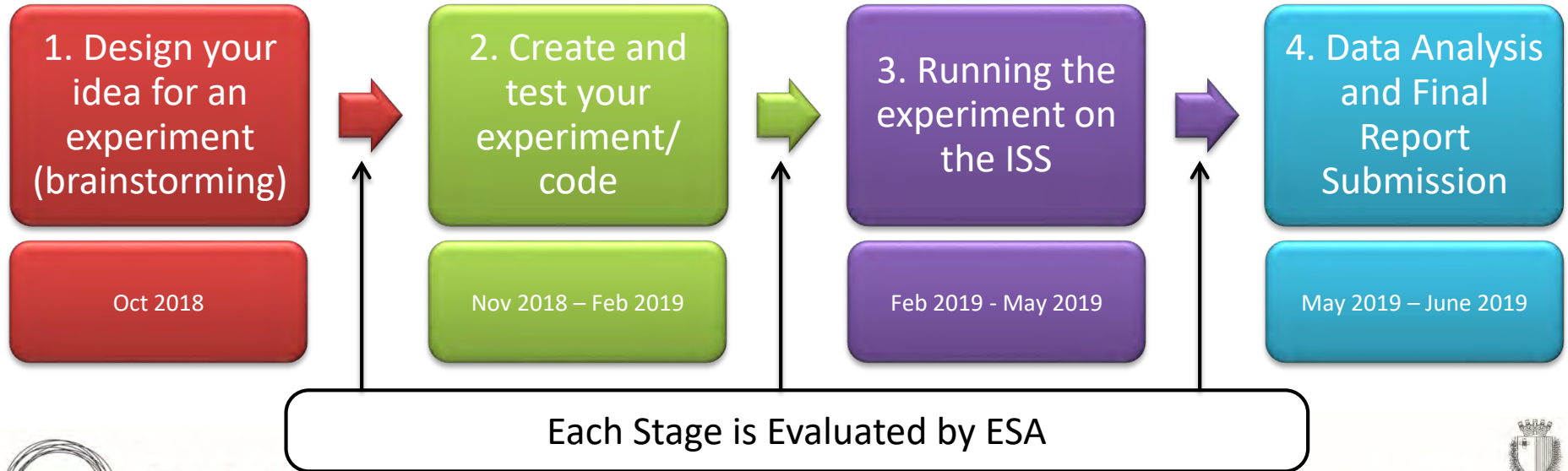


AstroPi – Mission Space Lab

Secondary Schools – Year 7, 8 and 9



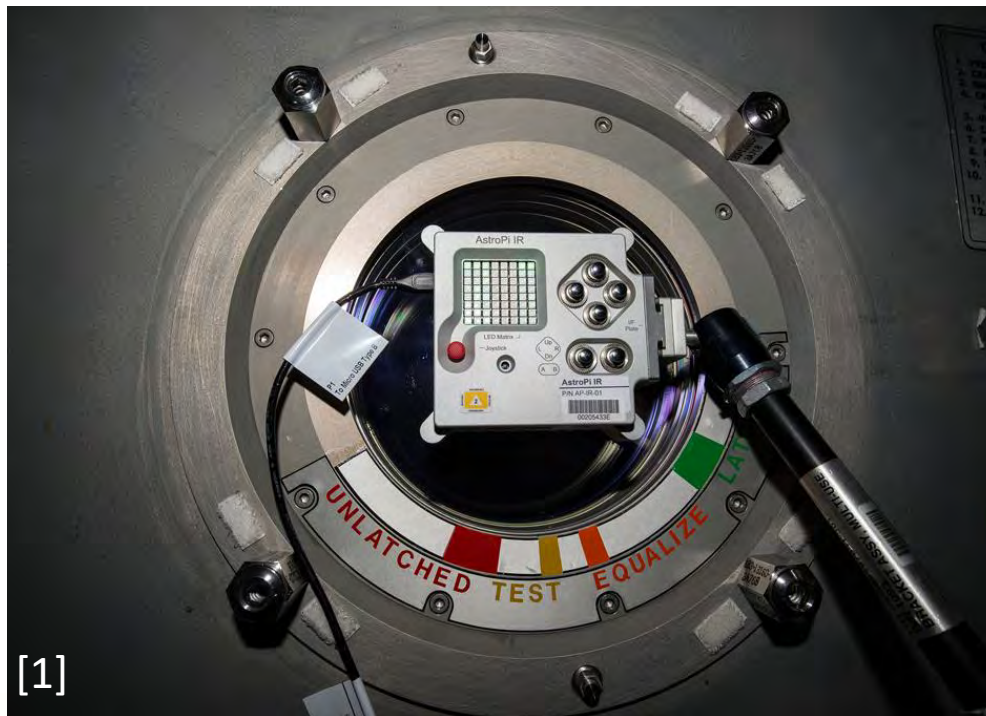
- ▶ The experiment is divided into 4 phases:





AstroPi – Mission Space Lab

Secondary Schools – Year 7, 8 and 9





AstroPi – Mission Space Lab

Secondary Schools – Year 7, 8 and 9



[2]



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

CanSat Competition (14-18 years old)

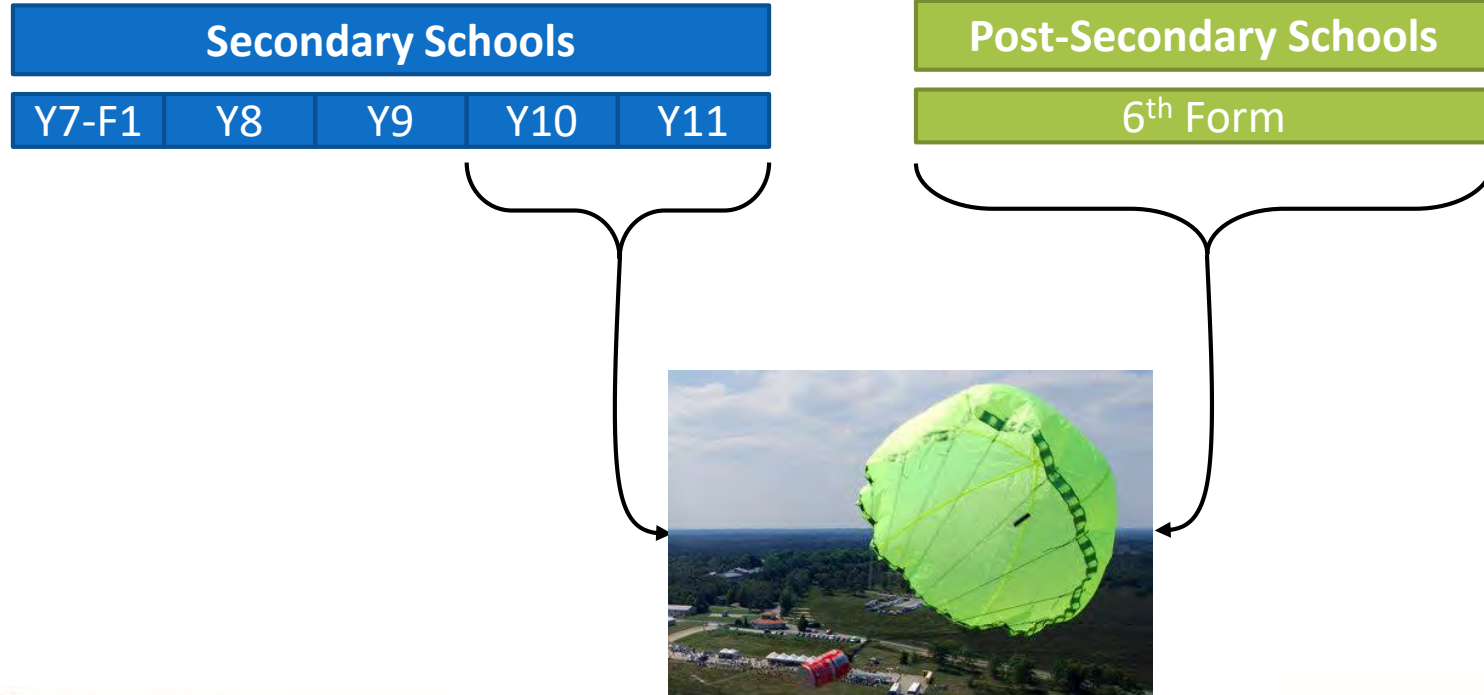


The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

CanSat Competition (14-18 years old)



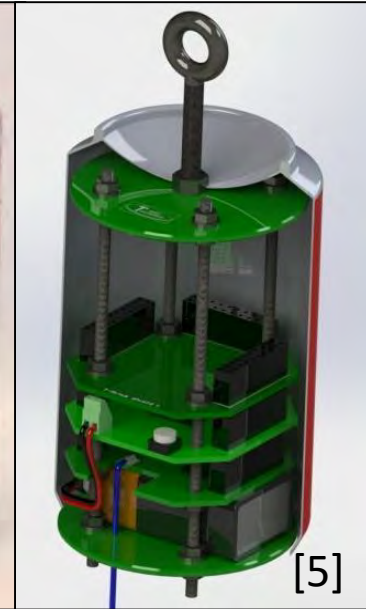
CanSat Competition (14-18 years old)



- ▶ Teams of 4 to 6 students within all secondary and post-secondary schools are eligible to apply.
 - ▶ Led by a teacher as their Team Leader
- ▶ Each team will need to submit a proposal listing all objectives.
- ▶ The 10 best proposals will be selected.



What is a CanSat?



CanSat Competition (14-18 years old)



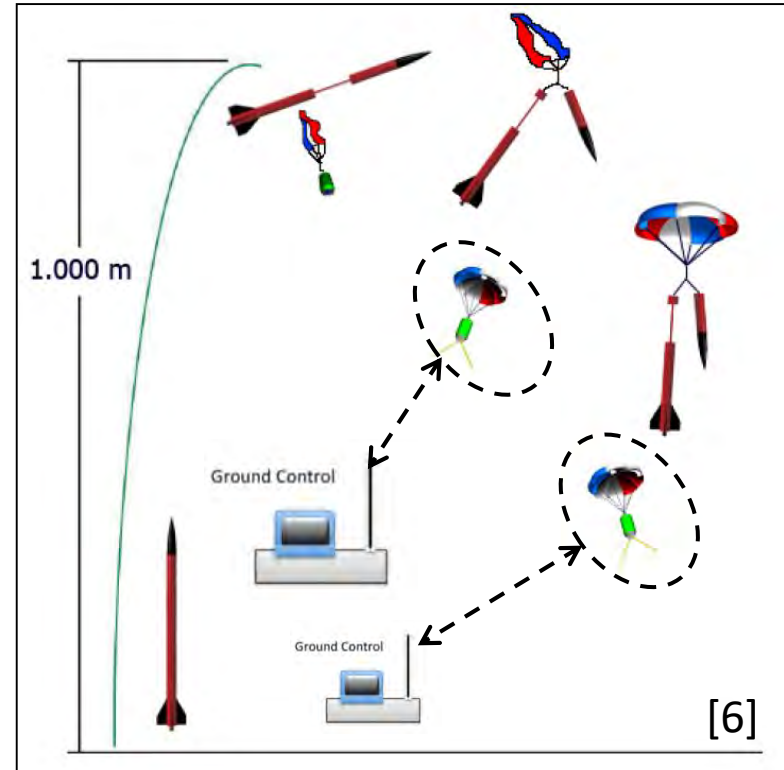
- ▶ The selected teams will then be given a **FREE KIT** by MCST.
- ▶ The challenge is to fit all major sub-systems normally found in a satellite:
 - ▶ Power (Battery/ Solar panel)
 - ▶ Sensors (temperature, acceleration, pressure, GPS)
 - ▶ Communication Systems
- ▶ Teams compete, build and present the best satellite in a can.



CanSat Competition (14-18 years old)



- Each CanSat is then put into a rocket and launched to a few hundred metres into the air.
- The CanSats are released and a parachute deploys.
- While the Cans are descending, they record air pressure and temperature.
- The team also chooses a secondary objective.



CanSat Competition (14-18 years old)



Compulsory Objectives

- ▶ Students will assemble the provided kit by MCST.
- ▶ Coding of temperature and pressure sensor.
- ▶ Comprehensive guidelines will be provided.

Additional Objective

- ▶ Add something else to the kit such as:
 - ▶ Camera
 - ▶ GPS
 - ▶ Landing Systems
 - ▶ Planetary probing



CanSat Competition (14-18 years old)



[7]

Recovered CanSats from the launch



The Malta Council for
Science & Technology

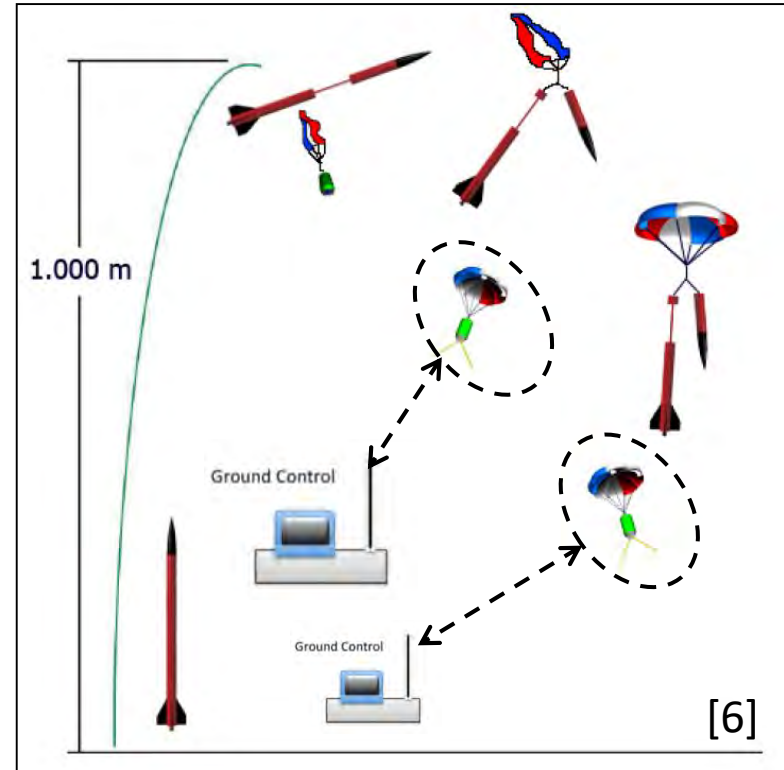


PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

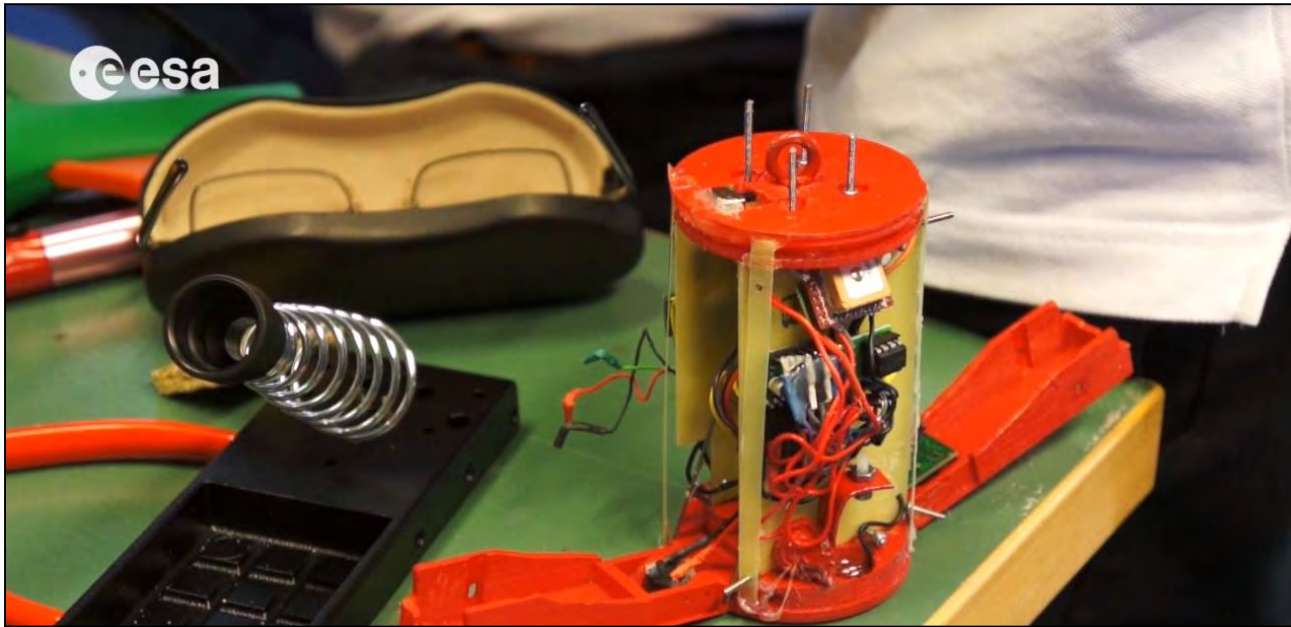
CanSat Competition (14-18 years old)



- The data is sent to the ground station via antenna.
- Then the teams present the gathered data on graphs to the Jury.
- Team are judged on various criteria.



CanSat - Video



[Click snapshot for video](#)

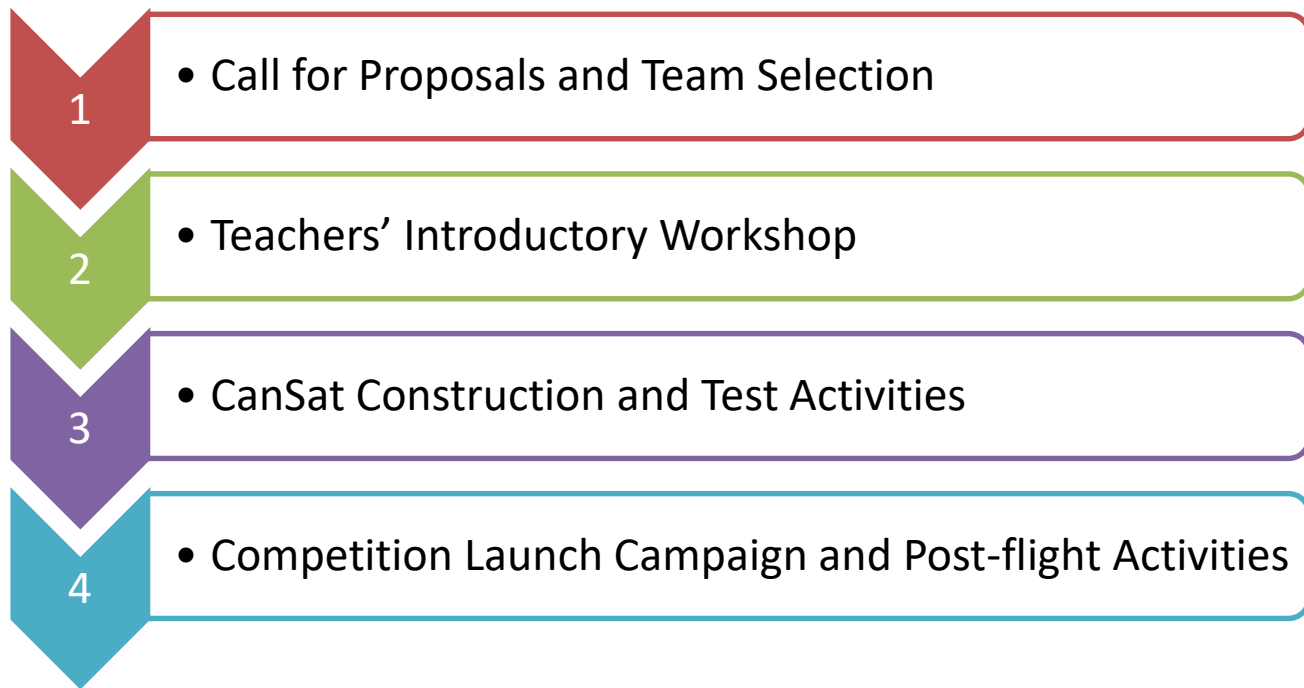


The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

CanSat Competition – Timing Plan



September 2018



May 2019



The Malta Council for
Science & Technology



PARLIAMENTARY SECRETARIAT
FOR FINANCIAL SERVICES,
DIGITAL ECONOMY AND INNOVATION

CanSat Winning Team

- ▶ The winning team from Malta will be automatically selected for the EU competition.
- ▶ The National Space Fund will support the funding of the Malta student team when abroad.
- ▶ The European competition follows the same format of the national competition.



Thank You

- ▶ For further information contact us on:
 - ▶ space.edu.mcst@gov.mt
- ▶ Or visit our website:
 - ▶ <http://mcst.gov.mt/space-directorate/sep/>



References

1. [https://www.esa.int/Education/AstroPI/European Astro PI Challenge 2017 - 2018](https://www.esa.int/Education/AstroPI/European_Astro_PI_Challenge_2017_-_2018)
2. <https://assets.tvm.com.mt/en/wp-content/uploads/sites/2/2017/11/nasa.png>
3. <http://canduino.eu/>
4. <http://canduino.eu/>
5. <http://www.t-minus.nl/products/cansat-kit/>
6. <https://www.cnes-multimedia.fr/video/flash/edu/documents/cansat/CanSat%20Dutch%20WS.pdf>
7. [http://www.esa.int/Education/CanSat/Getting ready for the European CanSat competition 2016](http://www.esa.int/Education/CanSat/Getting_ready_for_the_European_CanSat_competition_2016)
8. [http://www.esa.int/spaceinimages/Images/2015/06/Team AlpNet winners of the Beginners Category](http://www.esa.int/spaceinimages/Images/2015/06/Team_AlpNet_winners_of_the_Beginners_Category)

