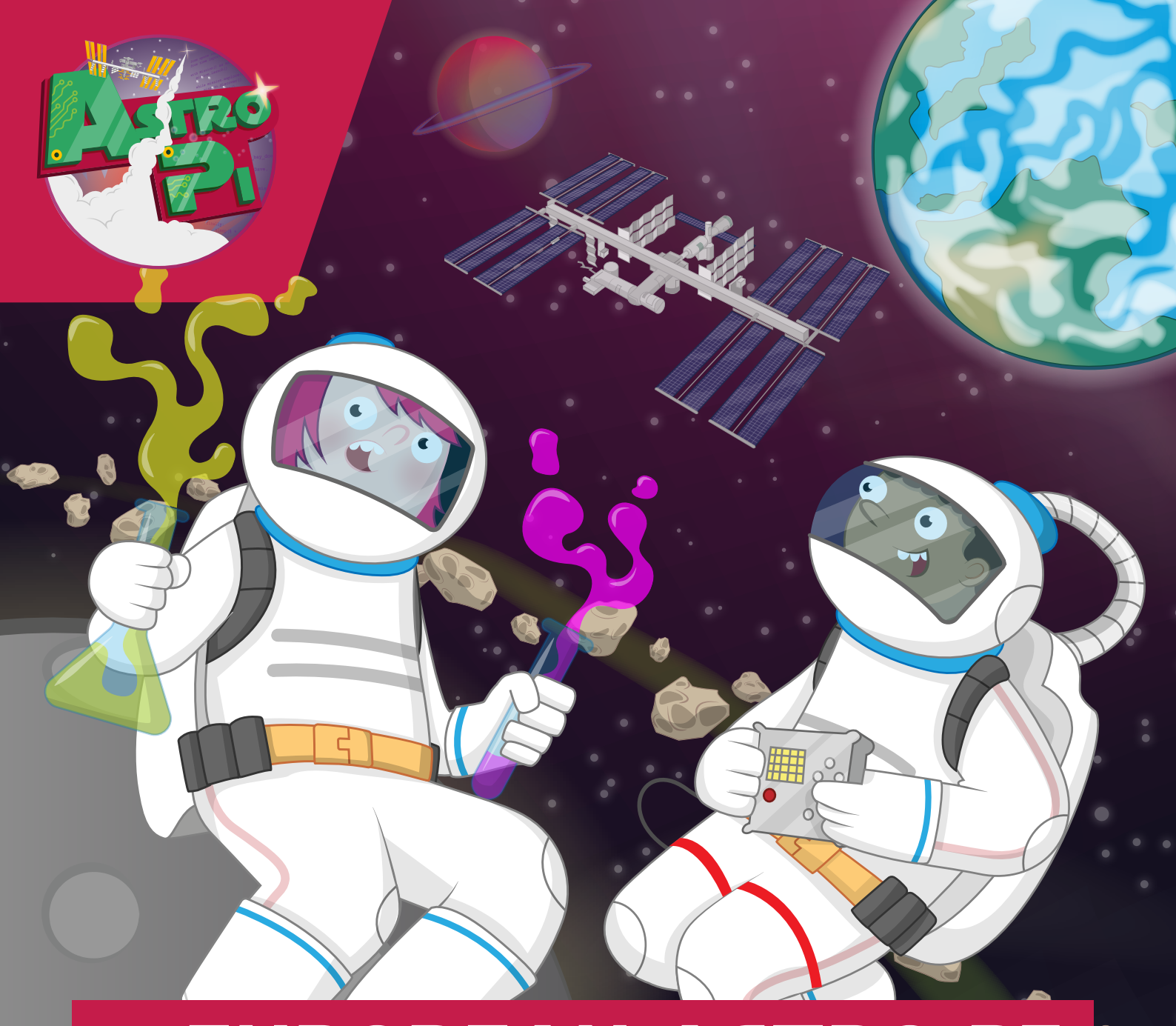
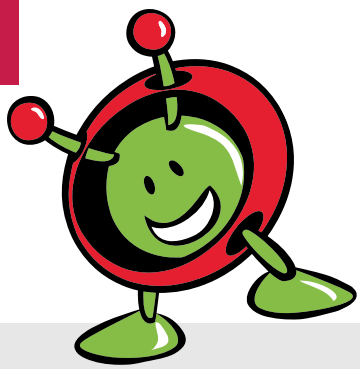


→ EUROPEAN ASTRO PI CHALLENGE 2018/19 MISSION ZERO GUIDELINES



esa Raspberry Pi

→ INTRODUCTION

The European Astro Pi Challenge is an ESA Education project run in collaboration with the Raspberry Pi Foundation. It offers students and young people the amazing opportunity to conduct scientific investigations in space, by writing computer programs that run on Raspberry Pi computers on board the International Space Station (ISS).

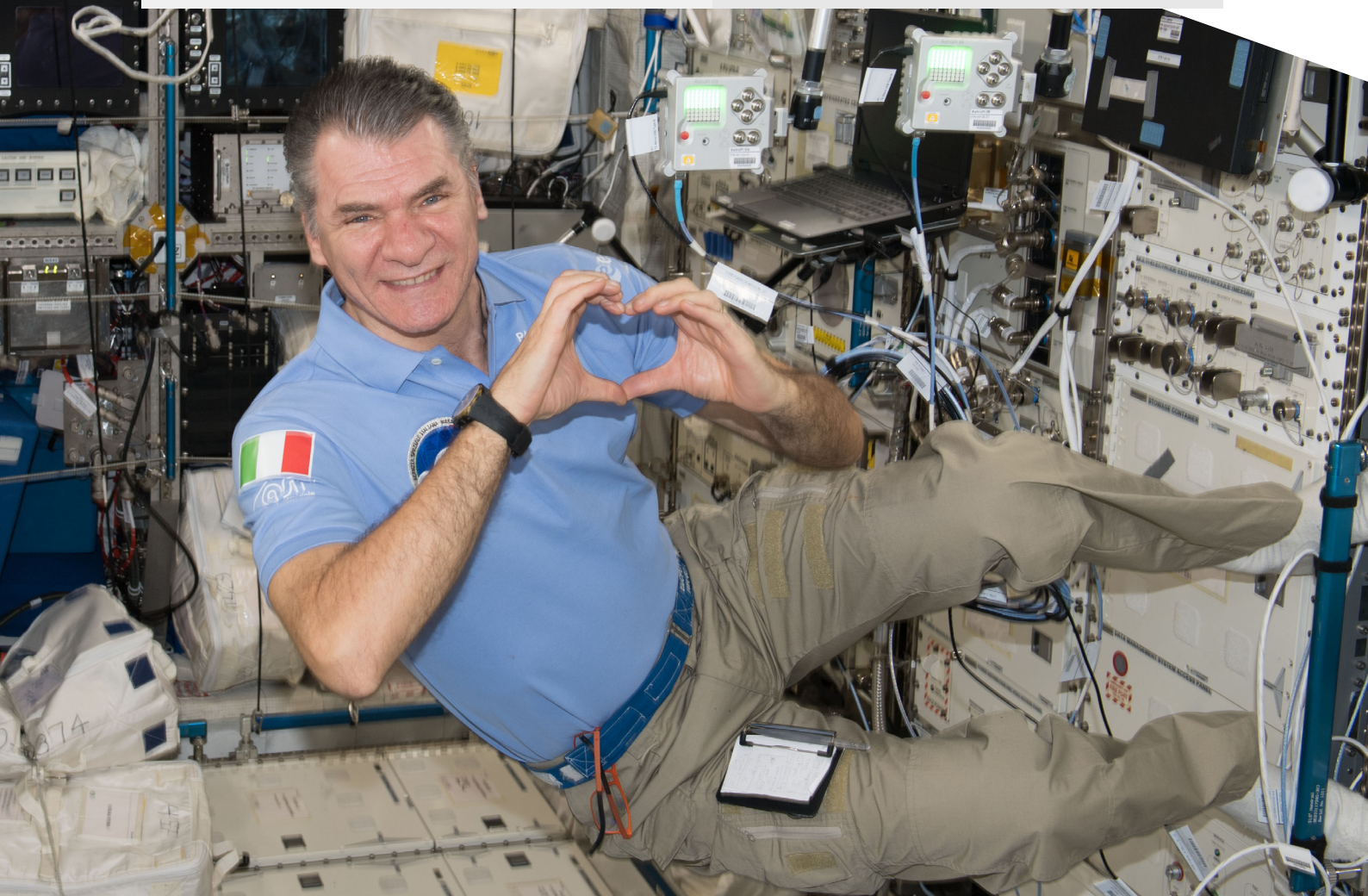
The Astro Pi challenge is divided in two separate missions featuring different levels of complexity: Mission Zero and Mission Space Lab. This document is a guide to participate in Mission Zero.

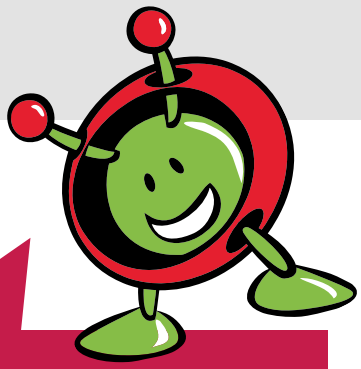
Mission Zero offers participants up to 14 years old the chance to have their code run on the ISS! Teams write a simple program to display a message and the temperature readings on the Astro Pi computer, available for the astronauts to see as they go about their daily tasks. No special hardware or prior coding skills are needed and all entries that follow program rules are guaranteed to have their program run in space!

→ MISSION ZERO GUIDELINES 2018/19

Mission Zero can be completed in an afternoon and on any computer with internet access. Students and young people work in teams of two to four people and follow along with our handy guide to write a short Python program that shows their chosen message for the ISS astronauts and an air temperature reading on the Astro Pi computer screen. No extra hardware is needed, and everything can be done in a web browser.

Activity	Date
Challenge launched	29 October 2018
Challenge ends	20 March 2019
Confirmation of flight status	May 2019
Certificates delivered to teams	May/June 2019





→ REQUIREMENTS

To take part, teams must:

- Be made up of students/young people who each are 14 years or younger
- Have at least two and at most four students/young people as members
- Be supervised by a teacher, mentor, or educator, who will be the point of contact with the Astro Pi team
- Be made up of at least 50% team members who are citizens of an ESA Member/Associate Member State

In addition, each team member must be at least **one of** the following:

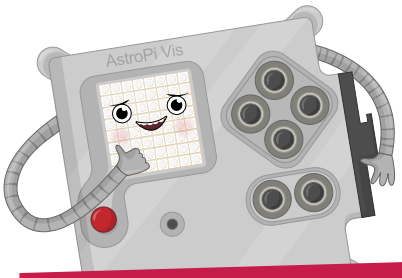
- Enrolled full-time in a primary or secondary school located in an ESA Member/Associate Member State
- Home-schooled (certified by the National Ministry of Education or delegated authority in an ESA Member or Associate Member State)
- A member of a club or after-school group, such as Code Club, CoderDojo, or Scouts

Provided the team's program doesn't contain any bad language or unpleasantness, it's guaranteed to run on the International Space Station for 30 seconds in May 2019. Each team member will then receive an electronic certificate recording the exact start and end of their program's run — their piece of space science history to keep!

The teacher/mentor has the responsibility to register their team(s). There is no limit to the number of teams a school or club can enter, but each student or young person can only be part of one team, and each team can submit one entry only.

[1] **ESA Member States in 2018:**
Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, United Kingdom.
ESA Associate States in 2018: Canada, Slovenia

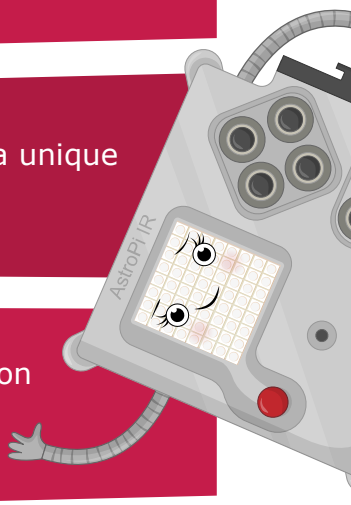
[2] In the framework of the current collaboration agreement between ESA and the Republic of Malta, teams from **Malta** can also participate in the European Astro Pi Challenge. ESA will also accept entries from primary or secondary schools located outside an ESA Member or Associate State only if such schools are officially authorised and/or certified by the official Education authorities of an ESA Member or Associate State (for instance, French school outside Europe officially recognised by the French Ministry of Education or delegated authority).



→ HOW TO PARTICIPATE

1. Head to the Astro Pi website **astro-pi.org**. If the Mission Zero challenge hasn't launched yet, you can sign up to the Astro Pi newsletter here to keep in touch.

2. Teachers/mentors register their team(s) on the website and receive a unique classroom code for each team to use when they submit their entry.



3. Students/young people follow along with our handy guide (available on the Astro Pi website when Mission Zero has launched) to complete the programming activity.

4. The teacher/mentor submits the finished program(s) through the Sense HAT web emulator for Mission Zero. For each team's entry, the teacher will receive an email receipt with the team member details, along with a link to a snapshot of their code. The code cannot be changed once it has been submitted.

5. All programs that follow the challenge rules will automatically be granted flight status, and the teams that wrote them will have their code run in space!

6. In June, teachers and mentors will receive their teams' official Mission Zero certificates by email.

The deadline to submit entries for the Astro Pi Mission Zero challenge is **20 March 2019**. Late entries, and entries that have not been submitted through the Sense HAT web emulator for Mission Zero, will not be accepted.

→ QUESTIONS

Thank you for your interest in the European Astro Pi Challenge: Mission Zero!

If you'd like more information, or updates on the challenge, head to the Astro Pi website.

For resources and project ideas, head to resource page of the Astro Pi website.

If you have any questions, you can reach the Astro Pi team at astropi@esa.int or follow us on Twitter @astro_pi

The European Astro Pi Challenge is an ESA Education programme run in collaboration with the Raspberry Pi Foundation.

For more information on ESA Education programmes, head to: www.esa.int/Education

For more information on the Raspberry Pi Foundation, head to: www.raspberrypi.org