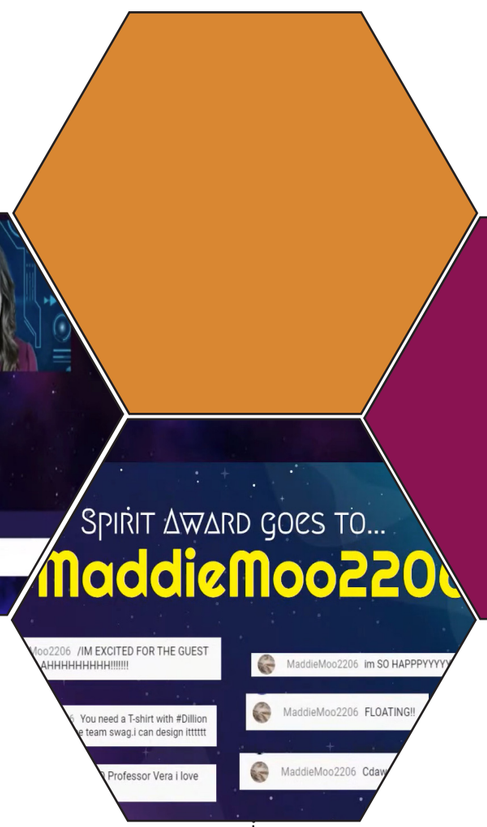
SPACE TEAMS

INTERNATIONAL SPACECRAFT EXPLORATION CHALLENGE

SEPTEMBER 20-25, 2021

WWW.SPACE-TEAMS.COM

Contents



What is

SpaceCRAFT Exploration Challenge

The International SpaceCRAFT Exploration Challenge gives students an incredible opportunity to participate in space exploration themselves - virtually. It has been developed by former NASA Astronaut, Dr Gregory Chamitoff and brought to Australia by Jackie Carpenter from One Giant Leap.

What did Students Do?

As part of a mission team, students designed spacecraft, navigated to another planet, landed their vehicle, built a planetary habitat, and explored a new planet to find resources in order to sustain human life!

Students learned from subject matter experts including astronauts, scientists and engineers who are directly involved in ongoing missions as they compete with other teams for the best mission design.

Lessons on topics ranging from planetary science to spacecraft systems, orbital mechanics to robotic exploration, brought all aspects of space exploration to an understandable level for young students, who learnt by doing and creating with these concepts themselves.

Students used SpaceCRAFT, a platform for collaborative space system and missiondesign. SpaceCRAFT provided a high fidelity simulation of the universe, including real planetary data from NASA/JPL and correct physics for models of space and planetary environments.

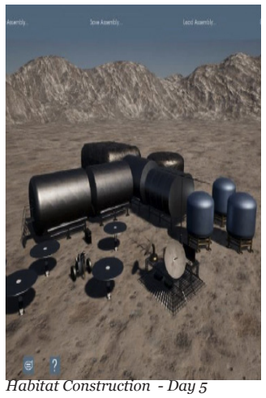
What were the Outcomes for Students?

The outcome of this program resulted in them being inspired young explorers to possibly pursue STEM subjects in school and ultimately enable them to join the international community of scientists and engineers working on the spacefrontier. Students got to interact with STEM professionals who work in the space industry!

Banner designed by Mark Murphy, WhatNot?! entertainment

"SpaceCRAFT provided a high fidelity simulation of the universe"

Atmospheric Entry & Landing - Day 4



Habitat Construction - Day 5

SpaceCRAFT Design & Assembly - Day 2

"interact with STEM professionals who work in the space industry!"

In the News

Border Mail SEPTEMBER 24 2021,
Ellen Ebsary

The same software NASA teaches astronautics with is being used by Border teens in a six-day international challenge.

Scots School student Liam Murphy, 12, is taking part in the International SpaceCRAFT Exploration Challenge.

"On the first day, we got to build our own planets with the software," he said.

"There's two live streams per day usually, and then there's also a leader board system with your teams - there are daily challenges.

"One of the people who spoke to us has previously been on the International Space Station, and they said that when they came down, it was hard to adjust.
"I've been really enjoying it."

Scots teacher Brad Murphy, Liam's Dad, is leading a group in the six-day challenging ending on Saturday.

"There's about 170 students doing it, from Australia, the U.S. and Egypt, and there's 39 students in the group that I'm running, which is pretty huge for our area," he said.

"I think a big thing is for them to actually have exposure to space industry professionals involved in all different parts of the space industry."

Those professionals include former NASA astronaut Gregory Chamitoff.

"He was six years old when his parents took him to Cape Canaveral and they saw a rocket launch. He said, 'I want to do that', and ended up doing hundreds of hours in space," Mr Murphy said.

"The software the kids are using is actually what Greg uses to teach students who are doing aeronautics and astronautics in university degrees.
"They're learning stuff as well - about science, technology engineering - what you need to know now to go and do these kinds of jobs."

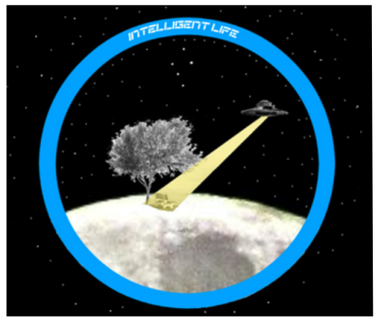
“The software the kids are using is actually what Greg uses to teach students who are doing aeronautics and astronautics in university degrees!”

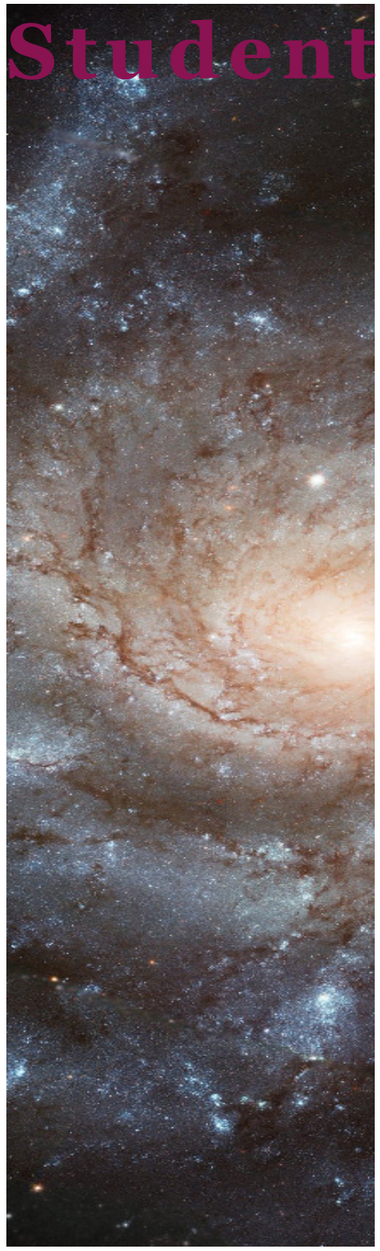
Triffid Nebula, Xavier College (Our Solar Siblings)

“The probability of success is difficult to estimate; but if we never search the chance of success is zero.”

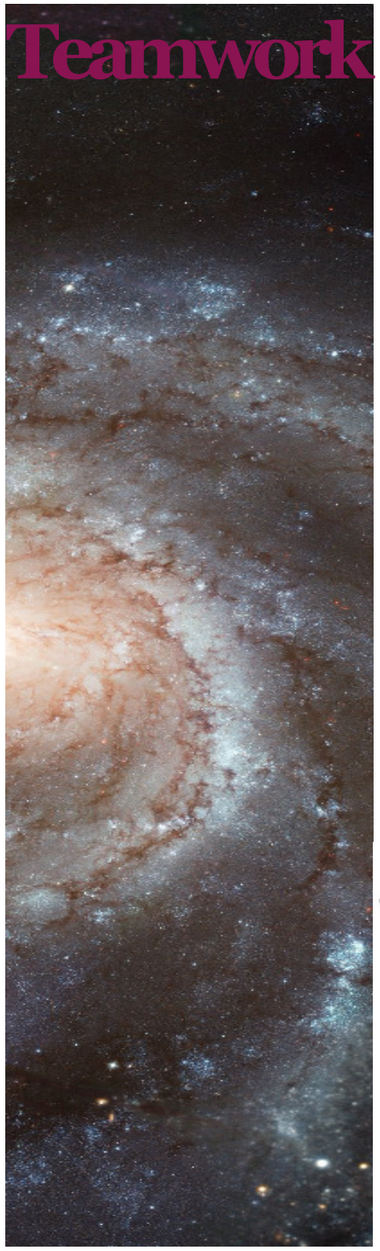
Giuseppe Cocconi and Philip Morrison

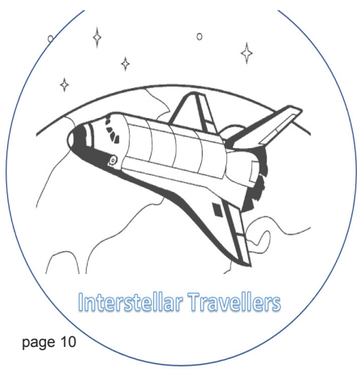
Saturn’s Rings and moon Titan





Student Teamwork





Students had to work as part of a team in the SpaceCRAFT Challenge. One of the first things they had to do was to create a mission patch. On this page you can see some examples of these. Here is one students explanation of their patch.

"My name is Ammar Syed, I go to The Scots School Albury and my team is called Space Bomb, we are all high schoolers in years 7 and 8.

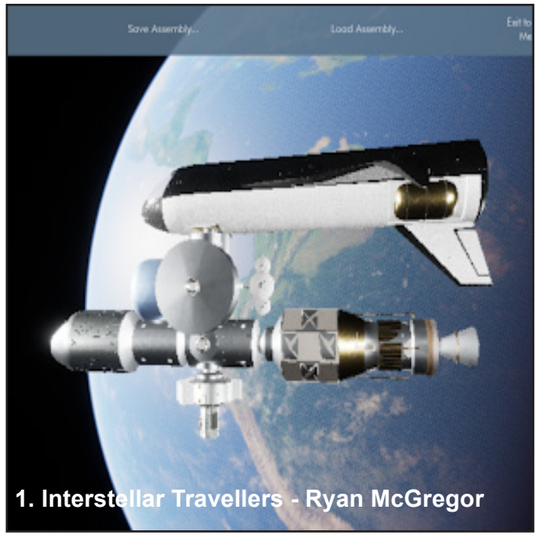
Our mission patch consists of a planet that is exploding like a bomb and it has a fuse coming out of it like a bomb, hence our team name, Space Bomb, which is written on the planet. Our names and the name of the competition are written around the circle.

The inhabitants are escaping the planet in a rocket. But the 4 members of my team have been left behind. So now they have to face the challenge of escaping the exploding planet, just like we will have to face the challenges of the spacecraft exploration challenge. To escape the exploding planet they will have to work together just like we will have to work together in the spacecraft exploration challenge. All the astronauts left behind are different, just like all the members of my team are different and have different talents."

Ammar Syed

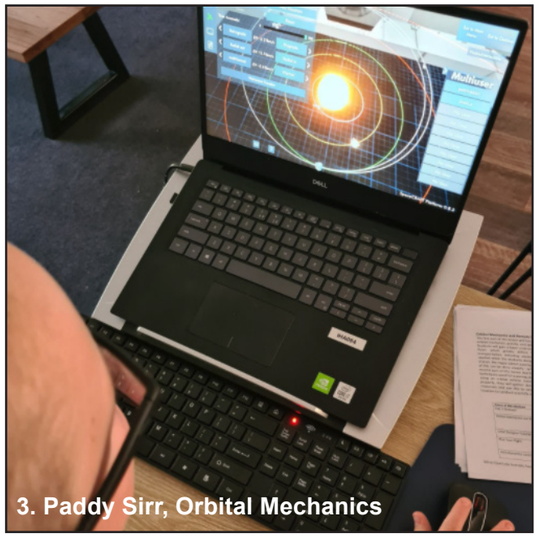
TEAM11

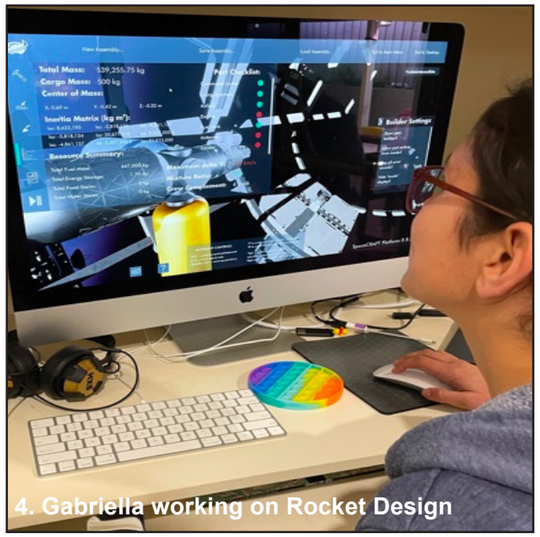
Example of Student Work



1. Interstellar Travellers - Ryan McGregor

2. Red Rockets


3. Paddy Sirr, Orbital Mechanics


4. Gabriella working on Rocket Design

1. Students had a chance to design & test Rockets that had to include a lander and modues for astronauts to inhabit & cargo to be transported including scientific equipment.

2. Once their rockets were designed, students had to design orbital trajectories to launch from Earth and reach the planet 'Vulcan', where habitats were designed.

3. Orbital trajectory design was one of the most technical parts of the challenge where students had to design multiple stage orbits to use gravitational fields to get from Earth to Vulcan.

4. Whether it was rocket design, orbital trajectories, habitat design, or surface exploration, students had to consider multiple STEM factors invovling life support the scientific mission.





The expert presenters: Dr Chamitoff, 'Box' Johnson, both astronauts. JPL propulsion engineer from NASA, Todd Barber Vera Mulyani, Mars City Design founder. Dr Ben Morrell, Robotics Technologist at NASA/JPL who attended our pre-school at Scots! Students asked questions from them as well!








The 16 mentors from Microsoft & Amazon were Lynn McDonald, Nick Moretti, Rocky Heckman, Lee Hickin, Anthony Hayduk, Akshay Sharma, Angelo Griguoli, Gonzalo Ron, Laurent Tran Dien, Lakshminarasimhan Sundarrajan, Jasminder Hayer Giulio Griguoli, Prashit Dhingra, Tiffany Bloomquist, Venkat Sistla, Mani Thiru.

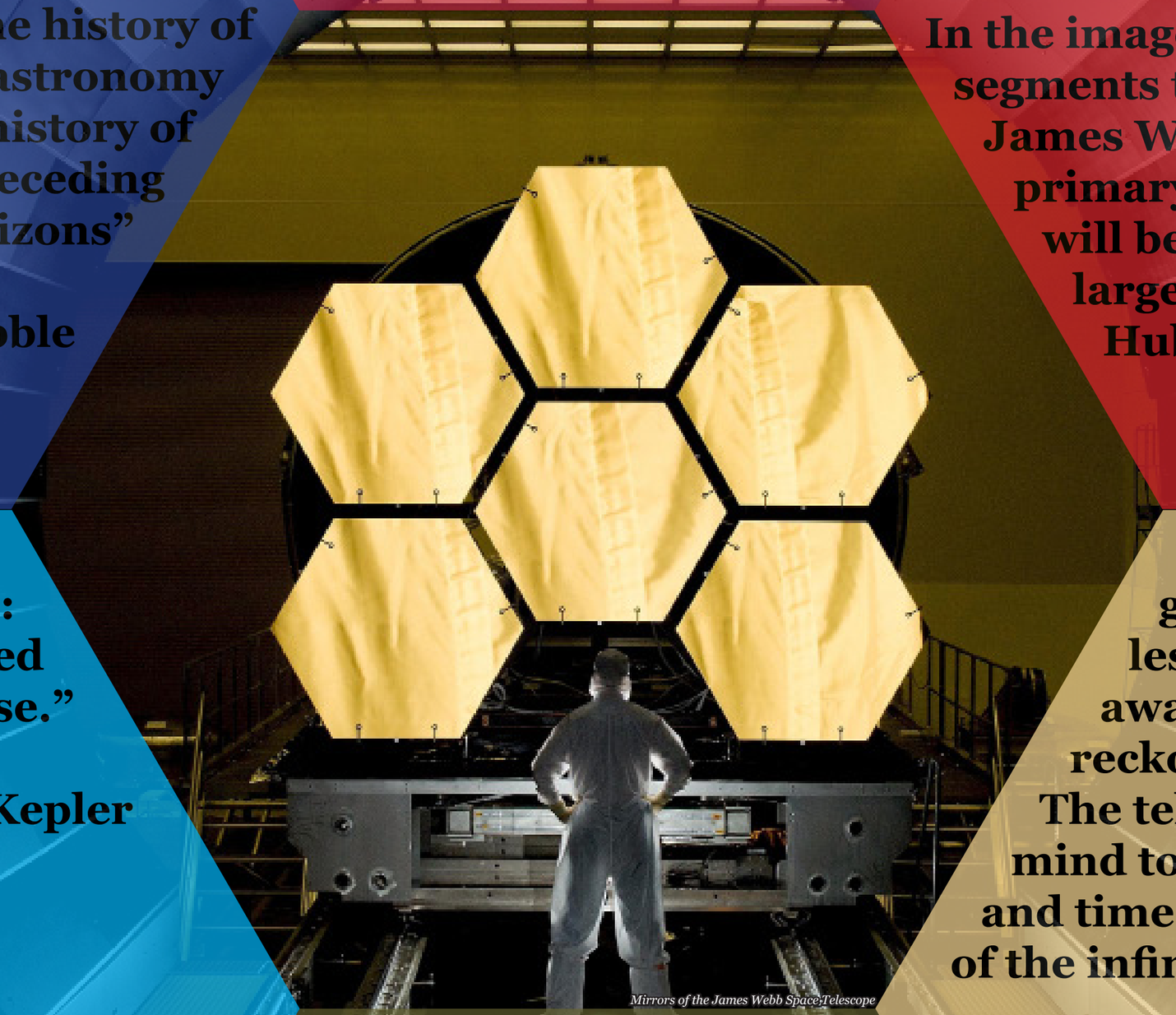
The history of astronomy is a history of receding horizons”

Edwin Hubble

In the image are 6 of the 18 segments that comprise the James Webb Telescope’s primary mirror which will be 2.75m in diameter larger than the Hubble Telescope.

“Discover the force of the skies O Men: once recognised it can be put to use.”

Johannes Kepler



Mirrors of the James Webb Space Telescope

“The Hubble has given us nothing less than an ontological awakening, a forceful reckoning with what is. The telescope compels the mind to contemplate space and time on a scale just shy of the infinite”

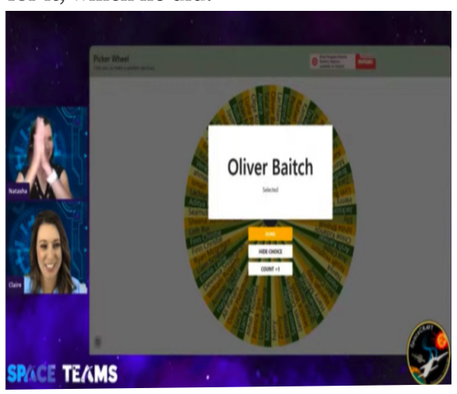
Ross Anderson
(Senior Editor at The Atlantic)

Space Teams Highlights

Daily Morning Meetings

Students met at 10am each morning via live Space Teams meeting on Youtube where expert mentors intoduced them to the activity of the day. The daily meetings were used to help focus students onto the tasks of the day with experts, who also appeared in the recorded lessons, showing them what to do.

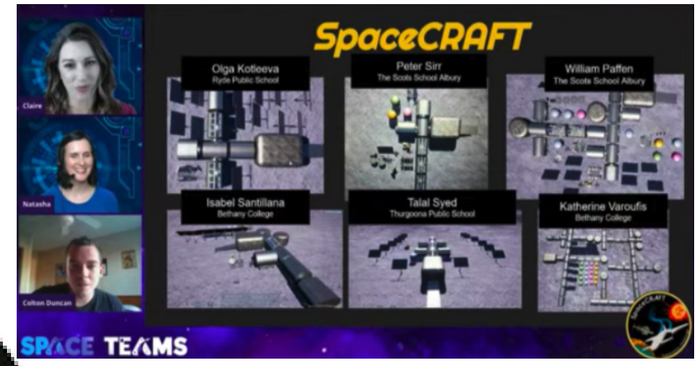
Students who submitted their work to the Space Teams learning platform went into a draw to win prizes. Oliver Baitch was fortunate enough to win one of them but had to submit some great work to be in the running for it, which he did!



Students in our ten teams did a lot of excellent work, some of which was shown during these morning meetings.

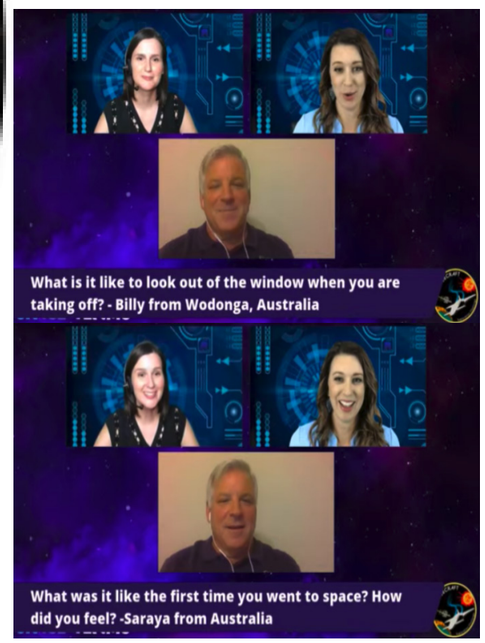
‘ Daily meetings were used to help focus students onto the tasks of the day with experts showing then what to do’

Below are some examples of student work showcased during a morning meeting.



Afternoon expert presentations

During the afternoon, at 1pm each day, there was an expert presentation from guest presenters. This included astronauts, engineers, and designers mentioned on page 13. Students were able to ask questions and have them answered.



Above Gregory 'Box' Johnson, a former NASA Shuttle Pilot is answering questions from Billy & Saraya.

Student & Team Awards

Ammar Syed - Winner 'most Alien Planet'

This planet is named Ra, after the fire god of the sun, light and heat from Ancient Egyptian Mythology. This name is relevant because of the planets fiery appearance and extreme temperatures. Ra is a new planet to the solar system Duat, which is named after the underworld from Ancient Egyptian Mythology.

Maddie Merritt - 'Spirit Award'

“Given to the student who showed the most positive attitude and spirit as shown by her comments during the live sessions”

What have you learned?

“Today's mission was really interesting &and I loved how challenging it was. My favourite part was definitely learning about Orbital Mechanics"

Penny McEachern

3rd Place Elementary Division

Interstellar Travellers came third in the Elemetary Division of the International Space-CRAFT Exploration Challenge!

The team included: Ryan McGregor; Ben Shiao; Sevastien Tecksingani; Joshua Sandral; Patrick Sirr.

Where would you like to take it from here?

Space Teams

Space Bandits: Seamus Bready; Rollo Nickols; Isaac Rolls-Jones; Thomas Sheather

Group 2: Keiran Flanagan; Clyde Morris; Liam Murphy; Gabriella Tecksingani

Interstellar Travellers: Ryan McGregor; Benjamin Shiao; Sevastien Tecksingani; Joshua Sandral; Patrick Sirr

Intelligent Life: Oliver Baitch; Lachlan Baitch; Saxon Coffey; Daniel Steer

Mighty Meteoroids: Abhay Datta; Ben Garvin; Sky Slade; Henry Zhao

A.S.E.T.: Oscar Arnold; Billy Paffen; Johal Thomas; Alexander Fraser

Team 7: Saraya Essop; Heidi Toepfer; Montana Ryan

Space Bomb: Harry Capell; William Johanson; James Shannon; Ammar Syed

Red Rockets: Maddie Merritt; Harry Merritt; Aliera Tucker

Team 11: Josh Davidovic; Pippa Galbraith; Sean McLachlan; Penny McEachern