



Brendan Hughes, a Kiwi, is a PhD candidate at UNSW with a passion for the evolving science of deep space.

The Future of Humankind & Space

By Brendan Hughes

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International Space Station (ISS) – Modular space station in low Earth orbit. Continuously crewed since 2000. The ISS's main purpose is for research, whether that be for private companies, public knowledge, or as a platform to solidify humankind's presence in space.

SpaceX – A private American company started by Elon Musk in 2002. As of May 2020 SpaceX became the first and only private company to launch humans to space by doing so under the NASA commercial crewed program. They are the first to re-land and reuse spent boosters after launch.

Curiosity Mars Rover – Landed on Mars in August 2012. Initially intended to run for 2 years Curiosity has run for over 8. Curiosity's discoveries include evidence of persistent liquid water in the past, chemical compositions that can support life, organic carbon (a building block of life), and evidence of water being in the atmosphere in Mars's past.



The Present



Artemis Program – Much the same as the ISS, Artemis is a collaboration of multiple space agencies. Its goal is to once again send humankind to the Moon by 2024. The Artemis program includes a moon orbiting space station called Lunar Gateway and moon surface infrastructure. Artemis is intended by NASA to be a steppingstone to Mars exploration.

SpaceX – In development and currently being tested is SpaceX's new rocket system Starship. Starship is intended to be fully reusable and carry both cargo and crew to space. As of September 2020 SpaceX have flown two rudimentary prototypes for testing purposes. SpaceX has been contracted by NASA to fly Starship for the Artemis program and Elon Musk intends it to take humans to Mars.



Perseverance Mars Rover – Launched in July 2020, Perseverance will land on Mars in February 2021. It includes multiple cameras, microphones, and sensing equipment such as spectrometers, radar, sensors (for temperature, wind speed, pressure, humidity), machines to produce oxygen and many more. Also, for the first time, flight will be attempted on Mars with a Mars drone.



The Next Decade



Potential future space exploration could include:

- Mining asteroids and meteorites for precious minerals, ores, and gases.
- Low Earth Orbit (LEO) tourism. Using orbiting tourist space stations around Earth and other planets and moons.
- Space colonies – Setting up outposts/towns/cities on planets like Mars.
- Further scientific and technological research and the ever-continuing search for other life.

The Far Future

YouTube channels for more content: [Everyday Astronaut](#), [SmarterEveryDay](#)