

SciTech Cafe

24th April 2026

The idea is to keep the meetings informal, but with a little structure so everyone gets a chance to contribute. No technical knowledge needed – *just curiosity and a cup of coffee.*

Plan for the meeting:

- A quick chat about how we organise the group and a volunteer to chair the next meeting.
- Suggestions for topics members might like to present at future meetings
- A short Science & Technology News Round-up – bring along anything interesting you've seen or read recently.
- A short presentation followed by a discussion.
- Suggestions for the next meeting.

If anyone would like help with smartphones, tablets, the u3a website or email attachments, we will have an informal help session at the end of the meeting (roughly 12 - 1 pm if needed)

Group Organisation

- Group continues to meet in John Lewis Cafe
- Change of venue is an option for the future
- Use more than one table if numbers are high, volunteer Chair
- Members invited to chair a meeting or present a topic for discussion

Suggestions for topics in future meetings

Self Driving Cars

Renewable Energy

Space Exploration / Terraforming Mars

Net Zero / Reducing CO2 in the atmosphere

AI / The Singularity

Big Tech Companies

What is Gravity

The Theory of Relativity / Space Time

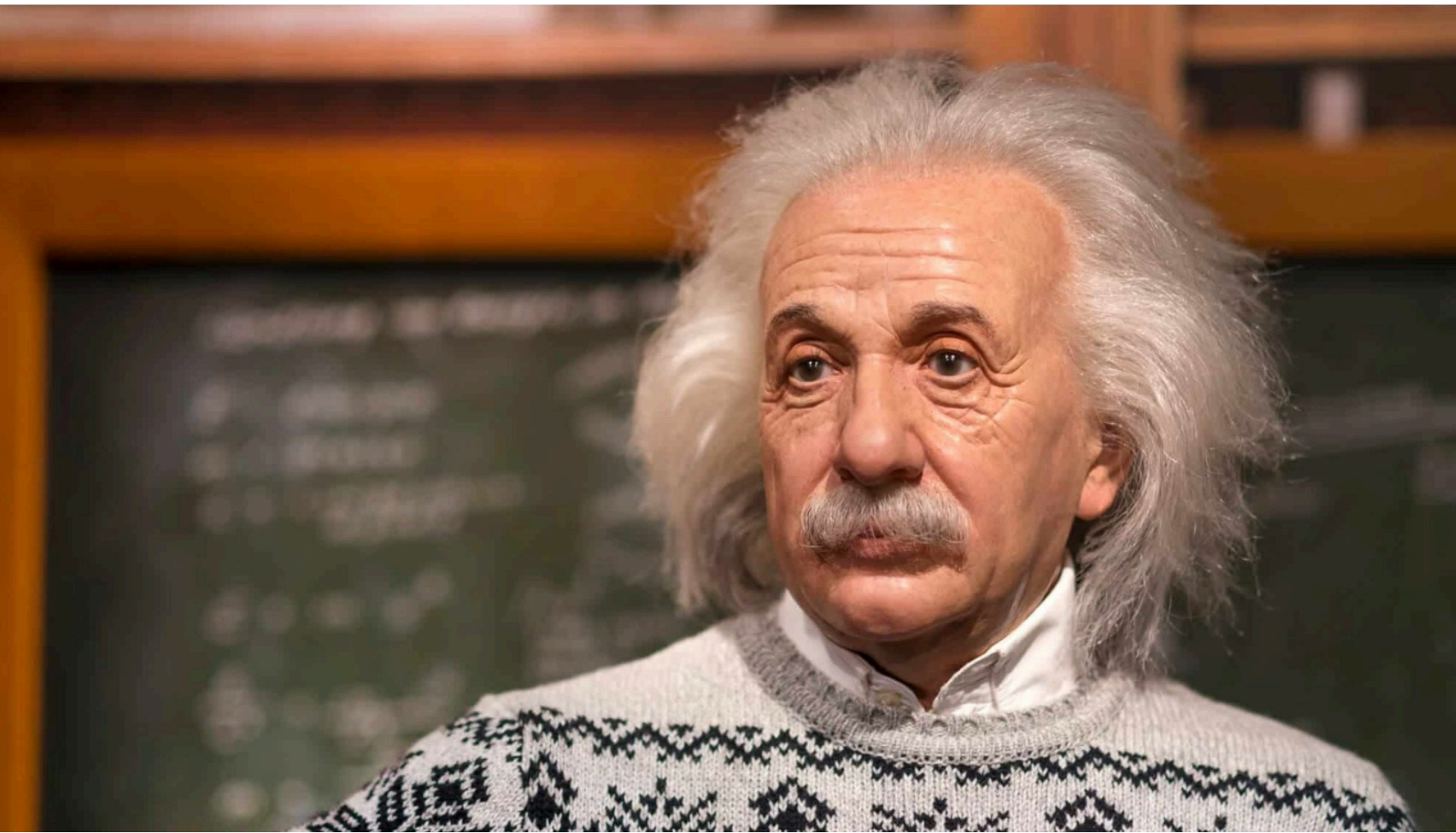
3D Printing

Electricity Explained

Robotics

The Technological Future

What is Neuroscience?



The Artemis Moon Mission



What is Artemis?

- Artemis is a program to send astronauts back to the Moon and build a long-term presence there.



ARTEMIS 2 CREW

- Reid Wiseman — Commander
- Victor Glover — Pilot
- Christina Koch
- Jeremy Hansen

ARTEMIS 1

- No human crew
- Tested the spacecraft and rocket
- Carried instrumented mannequins
- Paved the way for astronauts on Artemis II

ARTEMIS 2

This was the first mission of the Artemis program to carry astronauts. It is planned to fly astronauts around the Moon and safely return them to Earth — a major milestone not achieved since the Apollo era. It was a 10 day mission.

ARTEMIS 3

This is the mission that is planned to land astronauts on the Moon for the first time since 1972. It will be the most historic step in the modern lunar program and the moment when humans return to walking on the Moon.

The Rocket



A very powerful rocket called the Space Launch System launches astronauts from Earth into space.

The rocket produces about 8.8 million pounds of thrust, making it the most powerful rocket currently in operation.

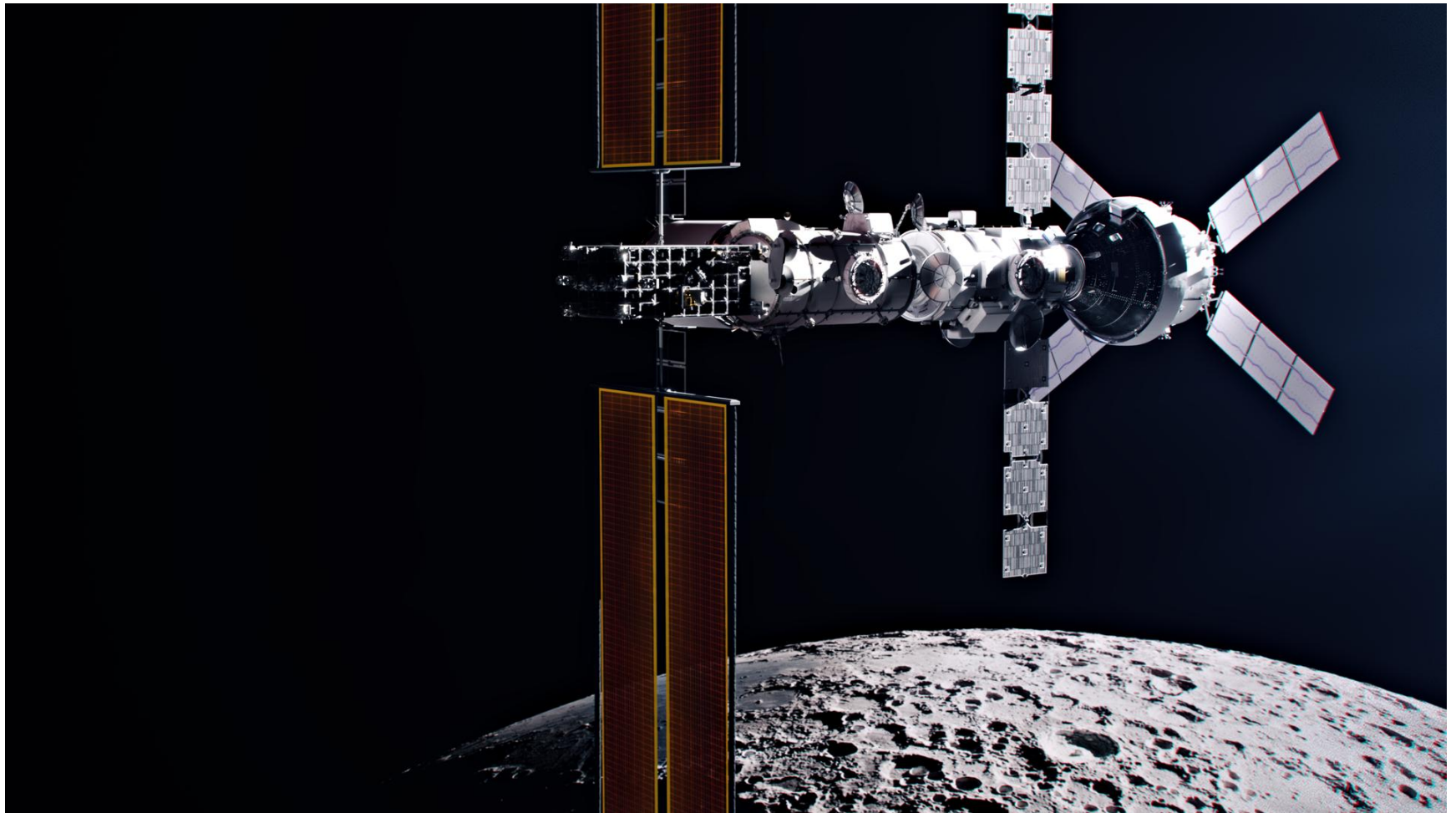
The Spacecraft

- Astronauts travel inside a capsule called Orion, which keeps them safe and provides air, water, and power.



A Space Station Around the Moon

- A small station called Gateway will orbit the Moon and act as a stopping point for crews.



Landing on the Moon



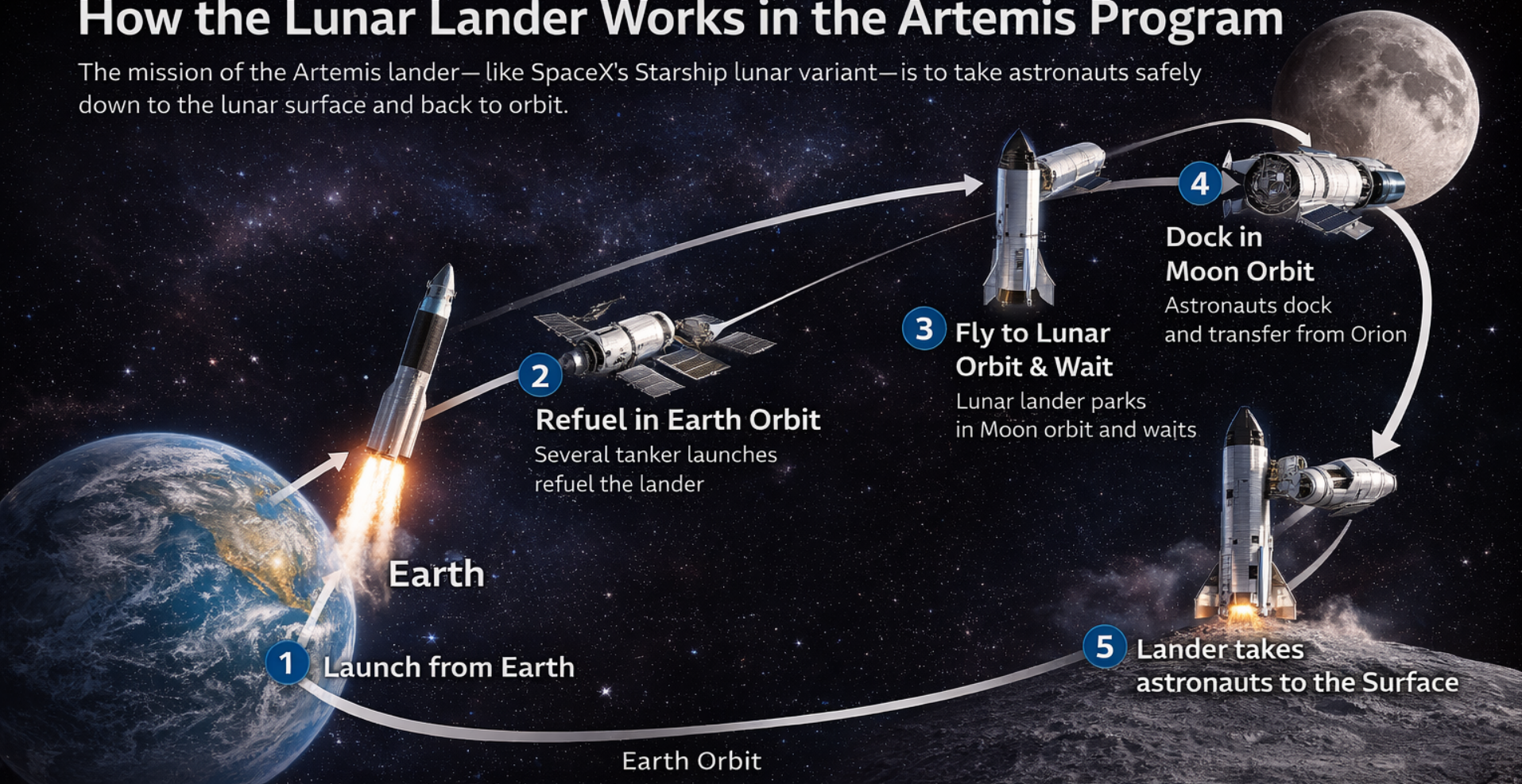
Astronauts will transfer to a special lander to travel from orbit down to the Moon's surface.

1. Astronauts travel to the Moon in their spacecraft
2. They dock with the **Gateway** (or meet the lander in lunar orbit)
3. The **lander docks with Gateway**
4. Astronauts transfer into the lander
5. The lander descends to the Moon
6. After the surface mission, the lander returns to orbit
7. Astronauts transfer back and head home

The Gateway is a staging post around the Moon, and the lander is a visiting spacecraft that docks there only when needed.

How the Lunar Lander Works in the Artemis Program

The mission of the Artemis lander—like SpaceX's Starship lunar variant—is to take astronauts safely down to the lunar surface and back to orbit.



SpaceX Lunar Lander Variant
Starship lunar variant



Tanker Spacecraft



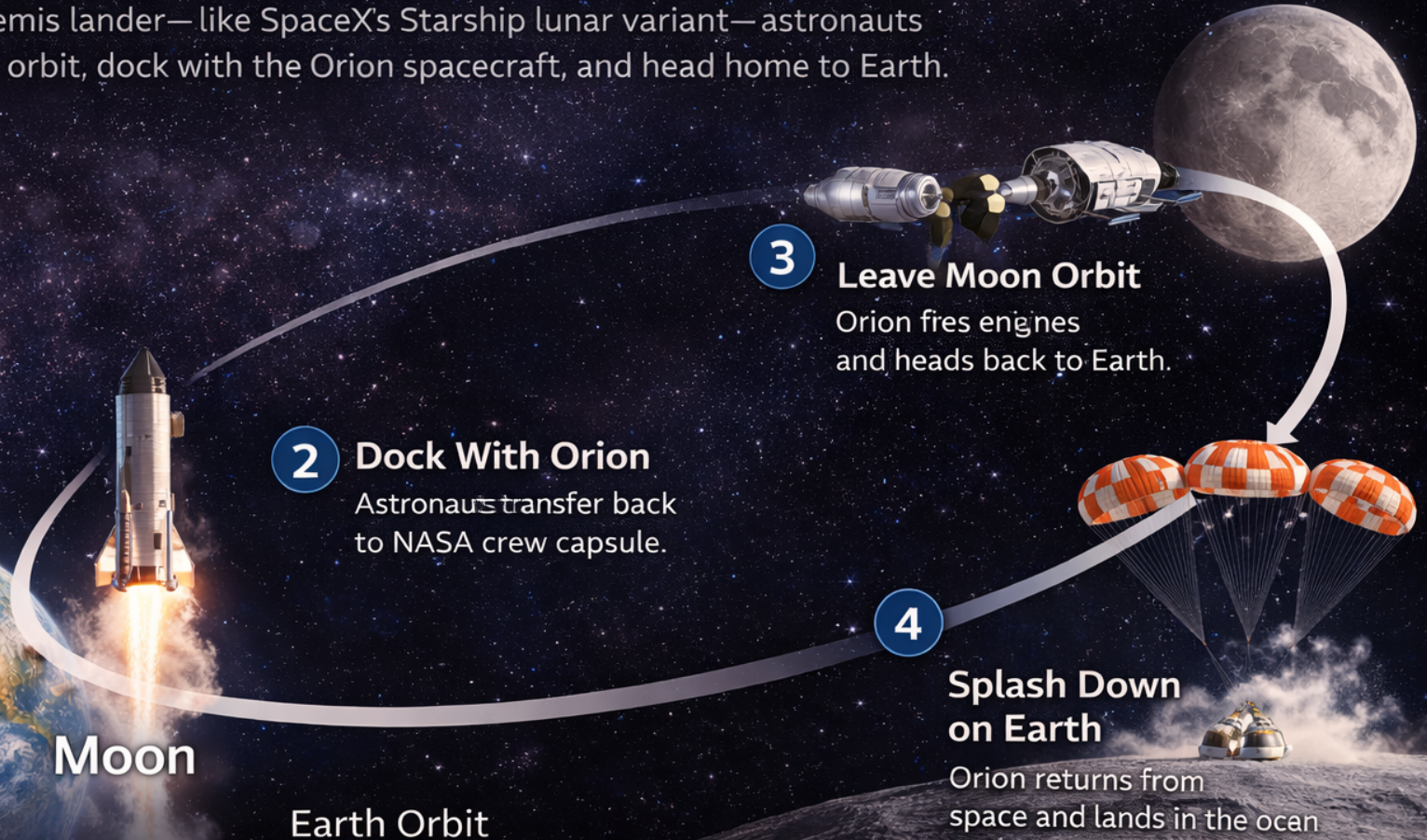
Tanker Spacecraft



Space Launch System

How Astronauts Return From the Moon

Aboard the Artemis lander—like SpaceX's Starship lunar variant—astronauts return to Moon orbit, dock with the Orion spacecraft, and head home to Earth.



SpaceX Lunar Lander Variant
Starship lunar variant



Orion Spacecraft



Orion Spacecraft
NASA crew capsule

Living and Working on the Moon

- Astronauts will use new spacesuits, solar power, and possibly small nuclear power systems.



The Return to Earth

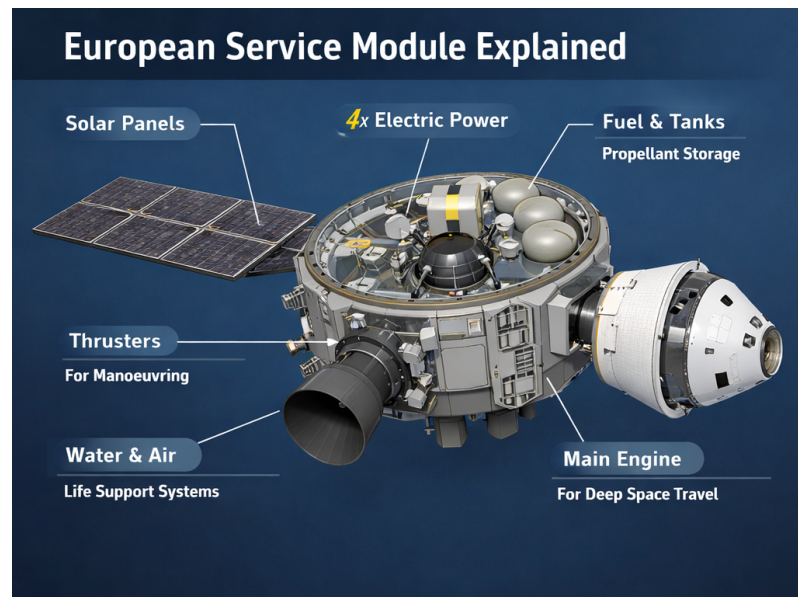
Orion Spacecraft - European Service Module

The European Service Module (ESM)

Located directly below the capsule, the ESM is the "powerhouse" of the spacecraft during the mission.

Role: It provides propulsion, electrical power (via solar arrays), and storage for water and oxygen.

The Return Process: About five hours before splashdown, the Service Module is jettisoned (separated) from the Crew Module. Unlike the capsule, it does not have a heat shield; it is designed to burn up completely in Earth's atmosphere over the Pacific Ocean.



The Return to Earth

Orion Spacecraft - Crew Module

The Artemis spacecraft, known as Orion, is primarily composed of two main sections: the Crew Module and the European Service Module.

However, it is important to note that only the Crew Module actually returns to Earth's surface. Here is how the two parts function during the return journey:

The Crew Module (The Capsule)

This is the pressurised section where the astronauts live and work. It is the only part of the spacecraft designed to survive the intense heat of reentry.

- **Role:** It houses the crew, the flight computers, and the life support systems.
- **Key Feature:** It is equipped with a heat shield that protects against temperatures reaching $2,760^{\circ}\text{C}$ ($5,000^{\circ}\text{F}$) and a parachute system to slow the craft down for a safe splashdown in the ocean.



While most of the spacecraft is lost, NASA recently completed the Artemis II mission (the first crewed flight of the program) on April 10, 2026, with a successful "bull's-eye" splashdown of the Crew Module "Integrity" off the coast of San Diego.

Why This Mission Matters

- The mission will help scientists learn how to live on another world and prepare for future trips to Mars.

Questions and discussion

- What is Gravity?
- Why does the spacecraft travel around the earth a couple of times before travelling on to the moon?
- When is Artemis 3 launching?
- How many people will eventually be living on the moon?
- How long will they stay there?
- What exactly are “G Forces” and “Micro G Forces”?
- How much does it all cost?
- Will it be worth it?