



New Visions for Space Exploration

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Editorial Note

When the first images of the planet Earth were received, many of us discovered our beautiful blue planet, not the darkness of outer space. Based on Tsiolkovsky's discoveries on the rocket principles, Werner von Braun built the Saturn rocket family to launch heavy payloads to Earth orbit and beyond, and the Gemini program helped to design the safe transportation of humans to space.

Nowadays, a lot of new science and technology are helping humans to head again to the Moon. NASA, the European Space Agency, China, India, Japan, and including Canada, have announced plans to send humans to the Moon, or are studying how to go. The European Space Agency has been developing a prototype of an oxygen plant to produce oxygen from lunar regolith, a material found on the surface of the Moon and containing between 40-45 percent oxygen. This oxygen plant could help astronauts reduce cargo since it could make breathable air and rocket fuel as well. NASA is developing an orbital space station near the Moon, named the Gateway. The idea is to use the Gateway to transfer vehicles, reusable lunar landers carrying the crew from the lunar surface to and from low lunar orbit. The ambition of NASA is high, and they described it as an "open architecture" to foster new capabilities to explore the Moon. From new missions to Mars, mining asteroids, fundamental research, and the recent discovery of a sunlike star TYC 8998-760-1 accompanied by two giant exoplanets, human space exploration helps to address fundamental questions about our place in the Universe and ourselves. The challenges we face related to space exploration helps us to leverage technology, create new industries, and contribute to global cooperation between all nations.

Best regards,

Mario Pinheiro