

NASA 'headache' trying to find a way to bring samples from Mars back to Earth

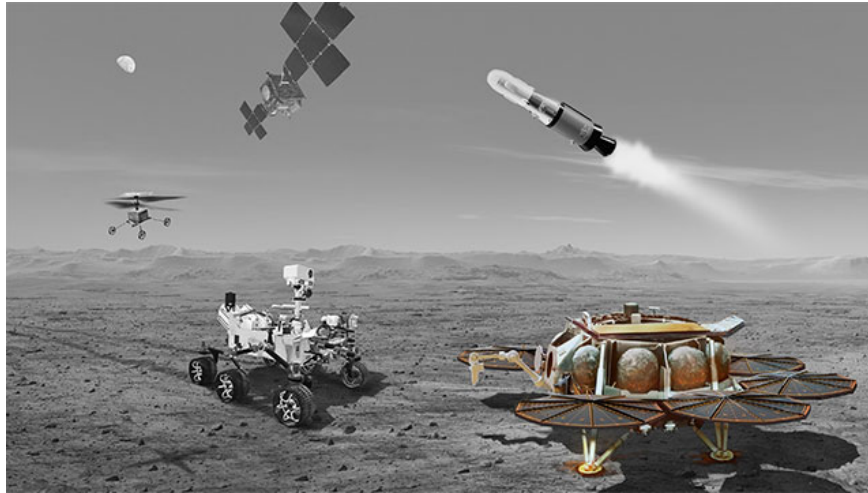
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NASA has big goals for Mars. The agency wants to collect the first samples from the Martian surface and return them to Earth in an ambitious mission called Mars Sample Return. But even in its development phase, the mission has run into problems. With its budget ballooning and its time frame becoming unrealistic, NASA decided last year that it needed a new approach for the Mars Sample Return mission. The agency's scientists are studying two potential ideas, with the best one to be selected for launch in 2026.

"A carefully thought-out plan will ensure that NASA can return samples collected from Mars to Earth at a significant cost and time savings compared to previous deployments," said NASA scientist Bill Nelson. *"These samples have the potential to change the way we understand Mars, our universe and - ultimately - ourselves."*

Returning samples from Mars sounds simple, but it's actually incredibly difficult. While the Perseverance rover has collected and sealed some samples and left them in a repository on the Martian surface, getting them back to Earth will require a complex series of coordinated maneuvers, including some that have never been done before, such as launching a rocket from the surface of a planet other than Earth.

That means the lander for the mission would have to carry a lot of mass, and landing a lot of mass on Mars is difficult because the thin atmosphere doesn't provide much resistance for parachutes. One landing option NASA is considering is to use a similar system to the one used to land the Curiosity and Perseverance rovers, called an airborne crane. Another option is to use a commercially developed lander, which would encourage partnerships with companies like SpaceX and Blue Origin to develop independent ideas.



In both cases, the mission's launch vehicle, the Mars Ascent Vehicle, would have to be smaller than originally planned. It would also use a nuclear power system instead of solar panels, which would simplify rocket operations even in dusty conditions.

' NASA's rovers are enduring the harsh environment of Mars to collect groundbreaking scientific samples ,' said Dr Nicky Fox, head of NASA's Science Mission Directorate. ' We want to return these samples as quickly as possible to study them in state-of-the-art facilities. Mars Sample Return will allow scientists to understand the planet's geological history and the evolution of climate on this barren planet where life may have existed in the past, and shed light on the early solar system before life began here on Earth. It will also prepare us to safely send the first human explorers to Mars .'

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