

# US panel sets sights on Mars

Sending humans to red planet touted as NASA's wisest long-range goal.

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Reviving the moribund US human space-flight programme requires shooting not just for the Moon, but also for Mars, says a report released today by the US National Academy of Sciences. It lays out three potential paths to the red planet — while warning that reaching Mars will require NASA to rethink how it plans its missions.

Continuing on the agency's present course “is to invite failure, disillusionment, and the loss of the longstanding international perception that human space-flight is something the United States does best,” the report says.

The shortest route to Mars envisioned in the report would begin with a journey to retrieve a small asteroid in near-Earth orbit — a goal [endorsed by US President Barack Obama](#) — followed by a mission to Mars's two moons and then a trip to the planet itself. More complicated schemes would involve stopping at a gravitationally stable area between Earth and the Moon called Lagrangian point L2, at an asteroid in deep space or at the Moon's surface on the way to Mars.

The report's plans would put humans on Mars sometime between 2037 and 2050 at a cost of hundreds of billions of dollars and “significant risk to human life”, the report says. Reaching the red planet would require a decades-long commitment to funding NASA's human space-flight programme at a level that outpaces the rate of inflation, ending 30 years of flat budgets for manned missions.

“We will not get to Mars, period, if we don't adopt a highly different way of doing business,” says Mitch Daniels, president of Purdue University in West Lafayette, Indiana, and co-chairman of the committee that wrote the analysis.

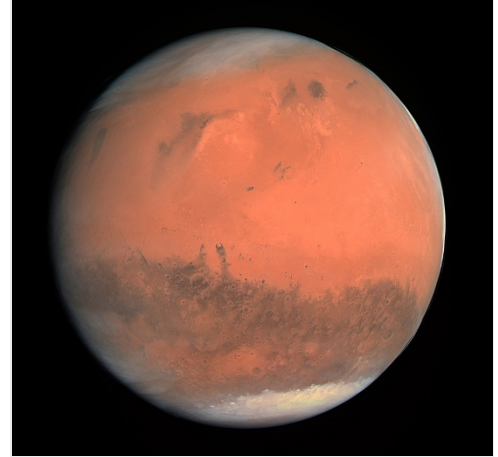
NASA, which retired the space shuttle in 2011 now relies on Russian rockets to ferry its astronauts to the International Space Station (ISS). The space agency is developing a new heavy-lift launch vehicle, the Space Launch System, and a companion spacecraft, Orion, for manned missions to deep space. Their first flight is scheduled for 2017.

But the [ultimate goal of the agency's human space-exploration programme](#) has been in flux. In 2010, Obama cancelled plans to return US astronauts to the Moon by 2020. Instead, the president backed a mission to retrieve an asteroid and tow it into orbit around the Moon for further study. NASA says that this would allow crews to practise manoeuvres in deep space, with the hope of putting humans on Mars by the 2030s, but the plan has drawn scepticism from scientists and lawmakers who doubt its value and feasibility.

Overall, the analysis “is certainly an indictment of the current plan”, says John Logsdon, a historian and space-policy expert at George Washington University in Washington DC. “If this nation wants to send humans beyond low-Earth orbit, it can't do it with business as usual.”

The new report favours a return to the Moon, arguing that the lunar surface has “significant advantages” as an intermediate step on the way to Mars. Aiming for the Moon would also bring US goals in line with those of its historical space partners, including the European Space Agency, says Marcia Smith, a space-programme analyst and founder of SpacePolicyOnline.com, based in Arlington, Virginia.

Mark Sykes, chief executive of the Planetary Science Institute in Tucson, Arizona, says that he is disappointed that the report committee did not pursue a more radical vision, such as exploring a mix of robotic and manned missions or even proposing the development of a human settlement on Mars.



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The United States should aim to put humans on Mars sometime between 2037 and 2050, a new report says.

Aiming for a short visit to the red planet's surface is a dead end, Sykes says. "I'm concerned that the failure to ask the hard questions, the failure to be audacious, could result in our human exploration programme coming to an end," he adds.

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