

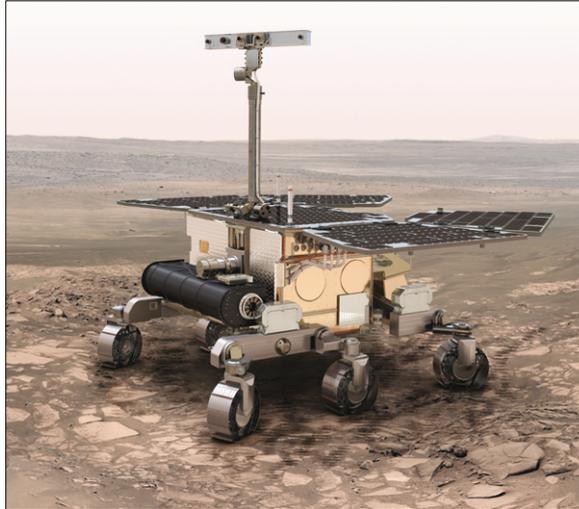
News & Analysis

Mars mission in doubt as US pulls out

The future of a joint US and European mission to Mars is uncertain after NASA told the European Space Agency (ESA) that it is pulling out of the €850m ExoMars venture. The US withdrawal comes following the US president's budget request, released last month, which sees NASA's \$1.5bn planetary-science budget slashed by 21%, with Mars exploration receiving \$360m – a 39% cut from 2012 levels. ESA is now in discussion with the Russian space agency Roscosmos about ExoMars's future.

ExoMars, which is supposed to launch in 2018, consists of two parts. The idea is to launch a Trace Gas Orbiter in 2016 to orbit Mars and map the red planet for sources of methane and other gases. Two years later, an ExoMars rover, weighing almost 300 kg, would be launched to search for possible signs of life on Mars, characterize the water and geochemical distribution of the surface, and identify any hazards for future manned missions to the planet.

While NASA's overall 2013 budget is similar to 2012 – roughly \$17.7bn – the agency still needs to pay for its flagship James Webb Space Telescope (JWST) mission, the costs of which are expected to balloon from \$476.8m



in 2011 to \$659m in 2014. It is this hike that has resulted in the need for cuts elsewhere in the programme and the cancelling of NASA's involvement in ExoMars. NASA administrator Charles Bolden said in a statement that the agency would instead “develop an integrated strategy to ensure that the next steps for Mars exploration will support science as well as human-exploration goals, and potentially take advantage of the 2018–2020 exploration window”.

The president's budget request still

Down and out

Budget constraints mean that NASA will pull out of the €850m ExoMars mission, which was set to launch its first stage in 2016.

has to pass through Congress, which is unlikely to be easy in an election year. However, regardless of what budget emerges, severe cutbacks will have to be made. “Having just been involved in a near-death experience for the JWST, I am very sympathetic to the feelings of my scientist colleagues who are dealing with the cancellation of a key Mars mission,” says astronomer Garth Illingworth, who is chair of the JWST advisory committee. “I am particularly concerned that these cuts are affecting our international partners significantly.”

Meanwhile, a report by the National Research Council recommends the US makes a £20m contribution to ESA's Euclid dark-energy mission. Euclid, to be launched in 2019, will map the large-scale distribution of dark matter and characterize the properties of dark energy. The committee says that the US should still go ahead with building the Wide-Field Infrared Survey Telescope, to be launched in 2020, which would search for dark energy as well as search for exoplanets. “NASA involvement in Euclid is, I hope, a start to renewed international collaborations,” adds Illingworth.

Michael Banks

Russia

Plans unveiled to reincarnate Phobos-Grunt

Russia has announced it may launch a second mission to Mars's moon Phobos after its original Phobos-Grunt mission ended in disaster in January when scientists lost contact with the craft and it crashed back down to Earth. Lev Zelenyi, director of the Institute of Space Research at the Russian Academy of Sciences, which was behind the Phobos-Grunt mission, told a press conference in Moscow that a new spacecraft, named provisionally as Phobos-Grunt 2, could be launched in 2018.

The timing of the new mission is designed to take advantage of a launch window when Mars will be particularly close to the Earth. Such windows occur roughly every 26 months, but the next window in 2013 does not leave enough



Second time lucky?

Russia may launch a successor to the failed Phobos-Grunt mission to Mars' moon Phobos.

time to prepare for the new mission, while the 2016 window coincides with Russia's planned lunar projects.

Zelenyi says the new mission will be a pared-down version of Phobos-Grunt, retaining the control systems from the original design but with less instrumentation and simpler rovers for exploring the surface of Phobos. However, he cautions that the plans for the new mission are still in the very early stages. “Nothing has been decided yet,” he told *Physics World*. Indeed, Roscosmos, the Russian federal space agency, has been in discussions with the European Space Agency (ESA) since late last year about participating in the ExoMars mission – another mission to the red planet that is set for 2016 (see above). “If no deal is

reached [with ESA], we will repeat the attempt [to launch a Phobos mission],” says Roscosmos boss Vladimir Popovkin.

Meanwhile, following intense speculation about why Phobos-Grunt failed, an official report has concluded that a computer malfunction, possibly caused by a burst of cosmic radiation or defective microchips, was to blame. Phobos-Grunt's failure also affected China, which had its own Yinghuo-1 orbiter aboard the craft. Wu Ji, director-general of the National Space Science Centre of the Chinese Academy of Sciences, told *China Daily* last month that the country has had to rethink its plans for Mars exploration, with a new mission in 2016 at the earliest.

Simon Perks