

# Mars One; creating a human settlement on Mars

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## Abstract

Mars One will take humanity to Mars in 2023, to establish a permanent settlement from which human kind will prosper, learn, and grow. Before the first crew lands, Mars One will have established a habitable, sustainable outpost designed to receive new astronauts every two years. To accomplish this, Mars One has developed a precise, realistic plan based entirely upon proven technologies. It is both economically and logistically feasible, and already underway with the aggregation and appointment of hardware suppliers and experts in space exploration. In this paper Mars One discusses the benefits of the mission for planetary science in general and Mars studies in particular. Furthermore potential contributions from the planetary community to the Mars One project will be identified.

## 1. Introduction

Mars One has performed an exhaustive feasibility study. We have developed a detailed plan incorporating requirements and design goals for all the major hardware components, for instance the launcher, the rover and the living units. We have met with established international aerospace companies who can design, build and produce these hardware components for the Mars mission. We have received letters of interest from SpaceX, Paragon Space Development Company, Hamilton Sundstrand, ILC Dover, MDA Corporation, Thales Alenia Space, Astrobotics and Surrey Satellite Technology.

## 2. Mars One timeline and milestones

A landing area will be determined before the first launch. The humans will leave for Mars after several preparatory missions: a demonstration mission in 2016, a primary rover mission in 2018, and a mission

to deliver the outpost components and a secondary rover in 2020. The rovers will assemble all outpost components and will activate the life support systems. The astronauts will depart when the outpost is operating, and water, air and oxygen production is confirmed and ongoing.

The fact that the astronauts will settle on Mars permanently makes the plan achievable. Settling the astronauts permanently will be far less expensive, complex and risky than a 'round-trip' which would attempt to return the astronauts to Earth.

The goal of Mars One is to place humans on Mars in 2023. As a not-for profit organisation, we can only achieve this with a solid business case. Our business case centres around the public interest that will be generated by a manned mission to Mars.

We will involve the audience in the Mars mission as much as is possible. Everybody in the world can apply to become one of the astronauts. While expert will exclude unsuitable applicants, the audience will have a significant say in the selection process, and will closely follow the groups of astronauts as they train for their new life. They can watch all the robotic activities on Mars as the human settlement is prepared.

The audience will decide which of the groups of astronauts will finally depart. The whole world will be enthralled when the astronauts depart from Earth and land on Mars. Involving and engaging the audience from the very start of the mission will create a long-term, fascinated and committed audience, and will generate revenues through sponsorship, advertising and broadcasting.

Beyond 2022, four humans will migrate to Mars every two years. For decades, applicants will compete for a place on the next rocket, and audiences

around the world will follow the daily lives of the settlers on Mars.

### **3. Mars One and the planetary science community**

Mars One has already a quite extensive list of advisors helping the project with their expertise, some of those advisors are planetary scientists. Together with them a first list of potential collaborations between the planetary science community and Mars One were identified. High priority items are; resource identification on Mars and landing site selection, planetary protection, environmental analyses, dust characterization. On the other hand the people who will be living on Mars could become a huge resource for the planetary science community on Earth to understand Mars even better by doing in-situ resources. The discussion after the talk will be focused on this issue to identify key studies the Martian colonists can do.