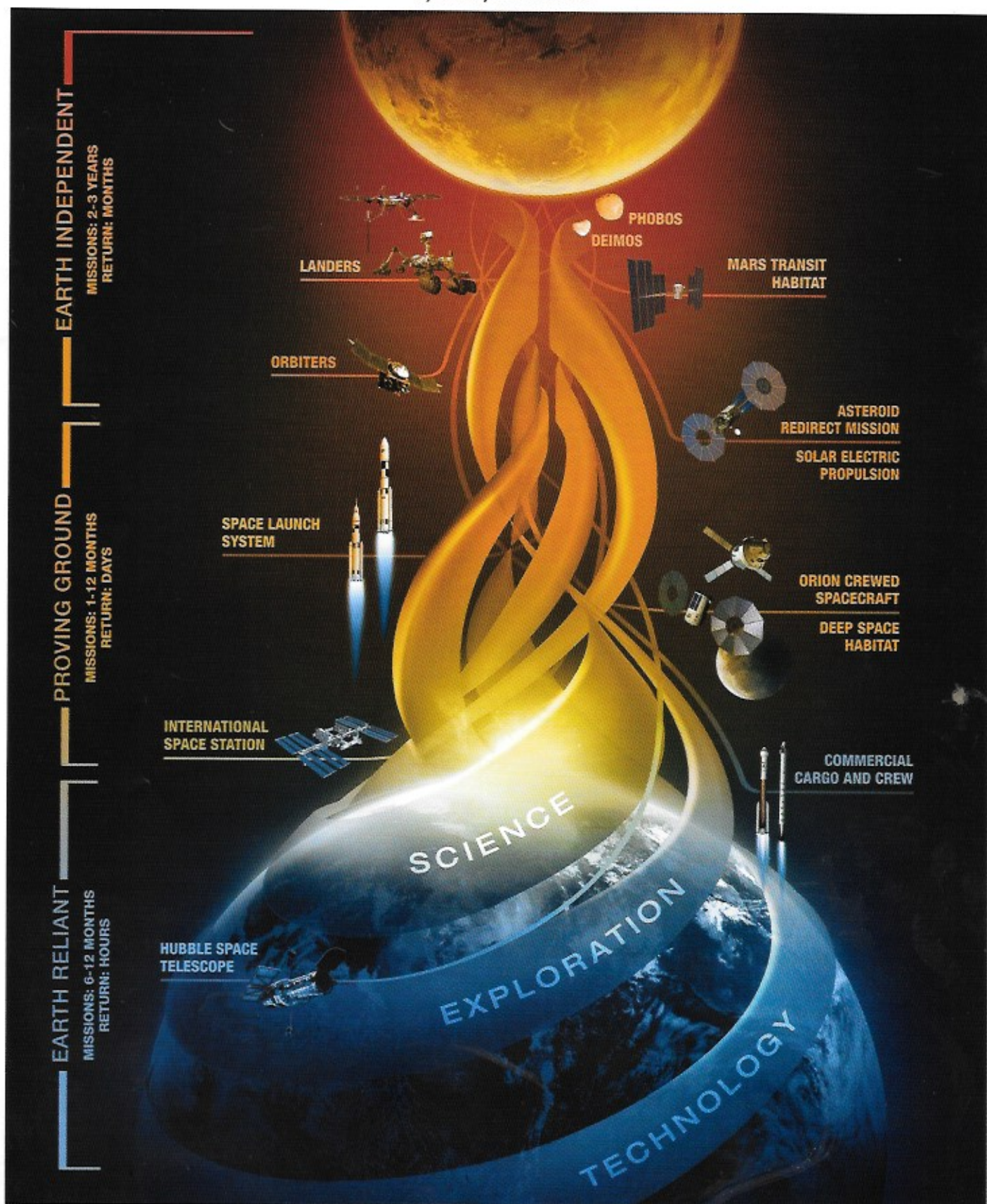


The Space Race You Haven't Heard About

By Henry M. Holden



NASA IS closer to sending American astronauts to Mars than at any point in our history, according to a recent statement made by NASA Administrator, Charles Bolden.

But just how close is NASA? If you take the eight organisations that have skin in the game, NASA is not that close. Of course, NASA did make the first unmanned landings on Mars, and it is working hard at sending a human expedition to the Red Planet, but maybe it is not working hard enough.

You will not read about it in the newspapers or see it on TV, but there is a race to Mars. It has been dreamed about and written about in fiction since the "War of the Worlds" was first published in 1898. There are eight major contenders in the race. Odds makers in Las Vegas have set out the favourites at least as far as the likelihood of a manned mission to Mars.

1 - SPACE X

The first is Space X in which Elon Musk wants to go to Mars, and he has built a company with the experience to do it.

The contracts with NASA for supply runs to the International Space Station are now almost routine. Space X has moved on to experiments with recoverable rockets and GPS-guided landing platforms.

Musk has already announced his intention

to debut his company's Mars Colonial Transporter in the very near future. He says they will have a spacecraft that works. Given the available funding, the will, and the leadership, the odds are about 5:1.

2 - THE MARS SOCIETY

The Mars Society is a major advocate of Mars colonisation, and it is promoting a two-stage plan called Mars Direct. First, it will send an unmanned craft to Mars to generate rocket propellant by reacting hydrogen with the Martian atmosphere, followed by a second manned mission landing with a fabricated habitat.

The crew will use the habitat as a base of exploration before launching the first ship back to earth, leaving the habitat behind. A few such trips builds up the number of habitats and the beginning of the infrastructure of a Martian city is formed.

This group has a well-defined plan so the odds are about 9 to 1.

3 - MARS ONE

Mars One is a non-profit organisation based in the Netherlands that has proposed to land the first humans on Mars and establish a permanent human colony by 2027.

Mars One plans to offer one-way trips to the red planet, funded by broadcast advertising

revenue brought in by a proposed reality show. That show is probably not going to happen at this writing.

According to en.wikipedia.org the project's schedule, technical and financial feasibility, as well as ethics have been widely criticised by scientists, engineers and those in the aerospace industry.

The organisation plans to use a series of missions starting in 2020 to build infrastructure and prove its technology before sending the first manned crew in 2026. Assuming the organisation can overcome the negatives, odds are about 15 to 1.

4 - INSPIRATION MARS

Unlike the other organisations, Inspiration Mars, led by billionaire Dennis Tito, the first tourist to go to space (at a cost of \$20-million), does not plan to leave people on Mars. Instead it plans taking advantage of a rare planetary alignment that will occur in 2021 to allow a pair of astronauts to fly to both Mars and Venus on a trip that lasts a gruelling 582 days. Its odds are 25 to 1.

The real question should be if they do not touchdown on Mars, are they really in this race?

5 - RUSSIAN FEDERAL SPACE AGENCY

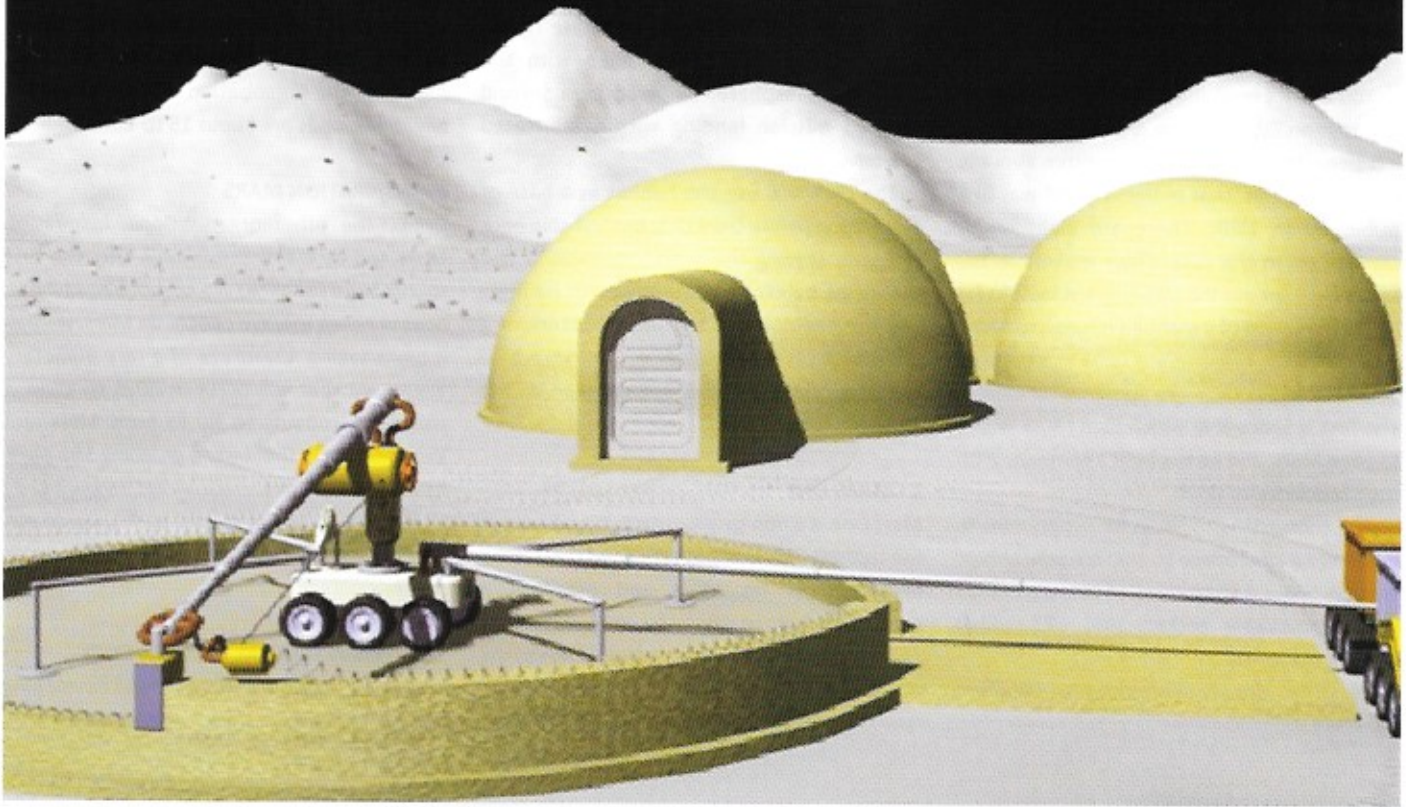
This agency announced that it was developing

One concept NASA is thinking about is finding locations where the astronauts can build a habitat and utilize natural formations on the planet such as deep gullies or shallow caves

(photo courtesy NASA)



Once an organisation actually lands on Mars the crew will need a place to stay. This is an artist's rendition of what building a structure using on-site regolith and additive manufacturing might look like. This is a technology under development for use in deep space exploration. (Photo courtesy NASA)



a rocket that can lift heavier payloads than any rocket currently in operation.

According to President Vladimir Putin, in 2018 Russia will use this technology to launch the first manned missions from Russia. The Russian Government is serious about this and it adds to the growing informal space race between Russia and the United States. However, the odds are still high at 60 to 1.

6 - NASA

Although the low Earth orbit shuttle programme ended in 2011, NASA is at work on a new system of vehicles that take the next generation of missions into more distant orbit.

Space Launch System is a gigantic rocket which will lift an all-new manned spacecraft, called Orion, to near Earth asteroids to develop the knowledge and skill to make possible manned trips to Mars. NASA has astronaut, Scott Kelly, on the International

Space Station for a year-long study of the long-term effects of weightlessness on the human body.

The agency estimates that flight will occur in the 2030s. If the US Congress would stop budget cutting NASA would be the top dog, but right now gets odds 80 to 1.

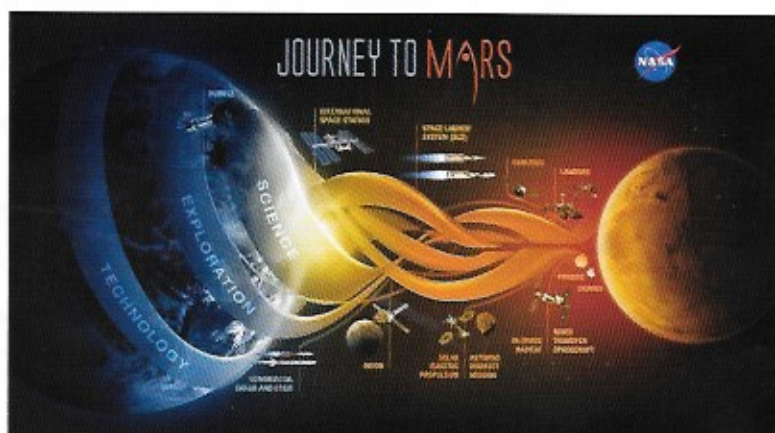
7- CHINA NATIONAL SPACE ADMINISTRATION

China did not send a man into space until 2003, but it has been aggressively pursuing

space ever since. The Chinese are building an orbiting space station and looking to launch a rover to Mars in 2020.

One of their taikonauts (we call them astronauts) was part of the Mars 500 study in Moscow that tested long-term isolation in preparation for a long journey to Mars. The current plan is for a manned Mars mission between 2040 and 2060.

With that timeframe they are clearly late to the race and odds are 100 to 1.



NASA has a plan to get to Mars which involves new technology, new spacecraft and new Landers. (photo courtesy NASA)

8- EUROPEAN SPACE AGENCY

European Space Agency is in the race, but these days European governments have major concerns that reside on Earth, so odds of it reaching Mars any time soon are about 300 to 1. They may team up with Russia to launch a Mars orbit mission in 2016, and a rover in 2018, but since that has already been done, they are not effectively in the race. →