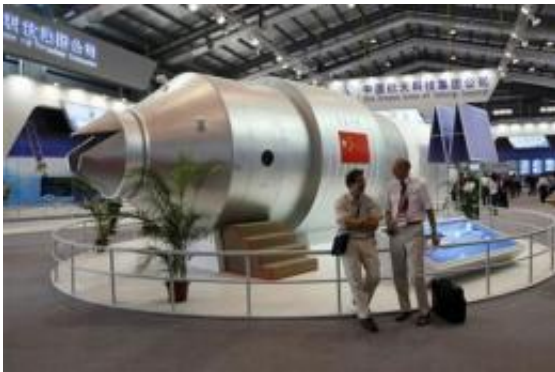


# China's space program shoots for moon, Mars, Venus

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In this photo taken Nov. 16, 2010, visitors sit besides a model of Chinese made Tiangong 1 space station at the 8th China International Aviation and Aerospace Exhibition, known as Airshow China 2010, in Zhuhai city, south China, Guangdong province. In 2011, a rocket will carry a train car-sized module into orbit, the first building block for a Chinese space station. Around 2013, China plans to launch a lunar probe that will set a rover loose on the moon. It wants to put a man on the moon, sometime after 2020. Some experts worry the U.S. could slip behind China in human spaceflight, the realm of space science with the most prestige. (AP Photo/Kin Cheung)

This year, a rocket will carry a boxcar-sized module into orbit, the first building block for a Chinese space station. Around 2013, China plans to launch a lunar probe that will set a rover loose on the moon. It wants to put a man on the moon, sometime after 2020.

While the United States is still working out its next move as the [space](#)

[shuttle program](#) winds down, [China](#) is forging ahead. Some experts worry the U.S. could slip behind China in [human spaceflight](#) - the realm of space science with the most prestige.

"Space leadership is highly symbolic of national capabilities and international influence, and a decline in space leadership will be seen as symbolic of a relative decline in U.S. power and influence," said Scott Pace, an associate NASA administrator in the George W. Bush administration. He was a supporter of Bush's plan - shelved by President [Barack Obama](#) - to return Americans to the [moon](#).

China is still far behind the U.S. in space technology and experience, but what it doesn't lack is a plan or financial resources. While U.S. programs can fall victim to budgetary worries or a change of government, rapidly growing China appears to have no such constraints.

"One of the biggest advantages of their system is that they have five-year plans so they can develop well ahead," said Peter Bond, consultant editor for Jane's Space Systems and Industry. "They are taking a step-by-step approach, taking their time and gradually improving their capabilities. They are putting all the pieces together for a very capable, advanced [space industry](#)."

In 2003, China became the third country to send an astronaut into space on its own, four decades after the United States and Russia. In 2006, it sent its first probe to the moon. In 2008, China carried out its first [spacewalk](#).

China's space station is slated to open around 2020, the same year the [International Space Station](#) is scheduled to close. If the U.S. and its partners don't come up with a replacement, China could have the only permanent human presence in the sky.

Its space laboratory module, due to be launched later this year, will test docking techniques for the space station. China's version will be smaller than the International Space Station, which is the size of a football field and jointly operated by the U.S., Russia, Canada, Japan and 11 European countries.

"China has lagged 20 to 40 years behind the U.S. in developing space programs and China has no intention of challenging U.S. dominance in space," said He Qisong, a professor at Shanghai University of Political Science and Law. "But it is a sign of the national spirit for China to develop a space program and therefore it is of great significance for China."

Some elements of China's program, notably the firing of a ground-based missile into one of its dead satellites four years ago, have alarmed American officials and others who say such moves could set off a race to militarize space. That the program is run by the military has made the U.S. reluctant to cooperate with China in space, even though the latter insists its program is purely for peaceful ends.

"Space technology can be applied for both civilian and military use, but China doesn't stress the military purpose," said Li Longchen, retired editor-in-chief of Chinese magazine "Space Probe." "It has been always hard for humankind to march into space and China must learn the lessons from the U.S."

China is not the only country aiming high in space. Russia has talked about building a base on the moon and a possible mission to Mars but hasn't set a time frame. India, which has already achieved an unmanned orbit of the moon, is planning its first manned space flight in 2016.

The U.S. has no plans to return to the moon. "We've been there before," Obama said last year. "There's a lot more of space to explore." He

prefers sending astronauts to land on an asteroid by 2025 and ultimately to Mars. But those plans are far from set.

Instead, NASA is closing out its 30-year space shuttle era this month, leaving the U.S. dependent on hitching rides to the space station aboard Russian Soyuz capsules at a cost of \$56 million per passenger, rising to \$63 million from 2014. The U.S. also hopes private companies will develop spacecraft to ferry cargo and crew to the space station.

China, having orbited the moon and starting collecting data on it, is moving toward sending a man there - and beyond. It hopes to launch the rover-releasing moon probe in about two years. Chinese experts believe a moon landing will happen in 2025 at the earliest.

"The [lunar probe](#) is the starting point for deep space exploration," said Wu Weiren, chief designer of China's moon-exploring program, in a 2010 interview posted on the national space agency's website. "We first need to do a good job of exploring the moon and work out the rocket, transportation and detection technology that can then be used for a future exploration of Mars or Venus."

In testimony in May to the U.S.-China Economic and Security Review Commission, which reports to the U.S. Congress, former NASA official Pace said what China learns in its space program can be applied elsewhere: improving the accuracy of ballistic missiles and quality controls for industry.

China also offers space technology to developing countries to secure access to raw materials, said Pace, now director of the Space Policy Institute at George Washington University.

There may also be economic reasons to explore the moon: It contains minerals and helium-3, a potential rich source of energy through nuclear

fusion.

"But that's way ahead," said Bond, the Jane's editor. "A lot of it would be prestige, the fact that every time we went out and looked at the moon in the night sky we would say the Chinese flag is on there."

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