

Billionaire Teams Up With NASA to Mine the Moon - NBC News

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[Moon Express](#), a Mountain View, California-based company that's aiming to send the first commercial robotic spacecraft to the moon next year, just took another step closer toward that lofty goal. Earlier this year, it became the first company to successfully test a prototype of a lunar lander at the Kennedy Space Center in Florida. The success of this test—and a series of others that will take place later this year—paves the way for Moon Express to send its lander to the moon in 2016, said company co-founder and chairman Naveen Jain.

Moon Express conducted its tests with the support of [NASA](#) engineers, who are sharing their deep well of lunar know-how with the company. The NASA lunar initiative—known as Catalyst—is designed to spur new commercial U.S. capabilities to reach the moon and tap into its considerable resources. In addition to Moon Express, NASA is also working with Astrobotic Technologies of Pittsburgh, Pennsylvania, and Masten Space Systems of Mojave, California, to develop commercial robotic spacecrafts.

Jain said Moon Express also recently signed an agreement to take over Space Launch Complex 36 at Cape Canaveral. The historic launchpad will be used for Moon Express's lander development and flight-test operations. Before it was decommissioned, the launchpad was home to NASA's Atlas-Centaur rocket program and its Surveyor moon landers.

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"Clearly, NASA has an amazing amount of expertise when it comes to getting to the moon, and it wants to pass that knowledge on to a company like ours that has the

best chance of being successful," said Jain, a serial entrepreneur who also founded Internet companies Infospace and Intelius. He believes that the moon holds precious metals and rare minerals that can be brought back to help address Earth's energy, health and resource challenges.

Among the moon's vast riches: gold, cobalt, iron, palladium, platinum, tungsten and Helium-3, a gas that can be used in future fusion reactors to provide nuclear power without radioactive waste. "We went to the moon 50 years ago, yet today we have more computing power with our iPhones than the computers that sent men into space," Jain said. "That type of exponential technological growth is allowing things to happen that was never possible before."

An eye on the Google prize

Helping to drive this newfound interest in privately funded space exploration is the [Google Lunar X Prize](#). It's a competition organized by the X Prize Foundation and sponsored by Google that will award \$30 million to the first company that lands a commercial spacecraft on the moon, travels 500 meters across its surface and sends high-definition images and video back to Earth—all before the end of 2016.

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Moon Express is already at the front of the pack. In January it was awarded a \$1 million milestone prize from Google for being the only company in the competition so far to test a prototype of its lander. "Winning the X prize would be a great thing," said Jain. "But building a great company is the ultimate goal with us." When it comes to space exploration, he added, "it's clear that the baton has been passed from the government to the private sector."

Testing in stages

Jain said Moon Express has been putting its lunar lander through a series of tests at the space center. The successful outing earlier this year involved tethering the vehicle—which is the size of a coffee table—to a crane in order to safely test its control systems. "The reason we tethered it to the crane is because the last thing we wanted was the aircraft to go completely haywire and hurt someone," he said.

At the end of March, the company will conduct a completely free flight test with no tethering. The lander will take off from the pad, go up and sideways, then land

back at the launchpad. "This is to test that the vehicle knows where to go and how to get back to the launchpad safely," Jain explained.

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Once all these tests are successfully completed, Jain said the lander—called MX-1—will be ready to travel to the moon. The most likely scenario is that it will be attached to a satellite that will take the lander into a low orbit over the Earth. From there the MX-1 will fire its own rocket, powered by hydrogen peroxide, and launch from that orbit to complete its travel to the moon's surface.

The lander's first mission is a one-way trip, meaning that it's not designed to travel back to the Earth, said Jain. "The purpose is to show that for the first time, a company has developed the technology to land softly on the moon," he said. "Landing on the moon is not the hard part. Landing softly is the hard part."

That's because even though the gravity of the moon is one-sixth that of the Earth's, the lander will still be traveling down to the surface of the moon "like a bullet," Jain explained. Without the right calculations to indicate when its rockets have to fire in order to slow it down, the lander would hit the surface of the moon and break into millions of pieces. "Unlike here on Earth, there's no GPS on the moon to tell us this, so we have to do all these calculations first," he said.

Looking ahead 15 or 20 years, Jain said he envisions a day when the moon is used as a sort of way station enabling easier travel for exploration to other planets. In the meantime, he said the lander's second and third missions could likely involve bringing precious metals, minerals and even moon rocks back to Earth. "Today, people look at diamonds as this rare thing on Earth," Jain said.

He added, "Imagine telling someone you love her by giving her the moon."