

## A Riot of Rockets

An unprecedented number of private launches are planned for this year, showing real progress toward inexpensive space travel.

By David Chandler



SpaceShipOne was the first private spaceship to carry three people to 100 kilometers altitude, return safely, and repeat the feat with the same craft within two weeks. Two years after it won the \$10 million X Prize for this achievement, an unprecedented flurry of private rocket launches are expected later this year. (Courtesy of Scaled Composites.)

Last week saw the successful launch of the Space Shuttle, but this week may see something far more relevant to the future of space travel: the launch of a prototype piece of a future orbiting hotel. It comes amid an expected flurry of private launches of small, innovative, and reusable rockets that will make 2006 a watershed year for privately financed rockets.

Taken together, these expected launches could usher in an era of relatively inexpensive space travel. "Even as the shuttle sweeps overhead, we have new items on the real road to practical spaceflight -- private market development -- popping up," says Boston-based aerospace engineer and consultant Charles Lurio.

The first of the new companies to launch this year is developing a potential new destination: a hotel in space. Using a design originally conceived as an add-on module for the International Space Station, Las Vegas hotelier [Robert Bigelow](#) is planning his first test flight of a subscale version of an inflatable space station module, scheduled to take place by July 14 at a launch pad in Russia. He hopes to have a full-sized orbiting hotel open for tourism by 2012. While some have been skeptical about Bigelow's plans, partly

because of his relative secrecy, Lurio says "by all accounts...this is a serious, technically careful project."

But the Bigelow launch is only the first in a series of expected private launches. Some of the loudest roars will be heard this fall in New Mexico, at the [X Prize Cup](#). That's an exposition to showcase developments in new rocket technology, following the 2004 awarding of the \$10 million X Prize for private manned rocket launches that reached suborbital altitudes and returned safely. The X Prize Cup will kick off with multiple launches and takeoffs of rocket-powered vehicles.

The Cup will see at least two launches of prototype vertical takeoff, vertical landing rockets that might evolve into a vehicle that could someday land on the moon. These will be made as part of a NASA-sponsored lunar challenge -- a challenge that includes a \$2.5 million prize for demonstrating a rocket's ability to take off and land vertically, and move sideways while aloft. Fifty teams have registered for the contest and two are considered almost certain to compete: Armadillo Aerospace of Texas, which was a competitor for the original X Prize, and startup Masten Space Systems of Mojave, CA.

Meanwhile, Space Exploration Corp., or [SpaceX](#), founded by PayPal founder Elon Musk, this October expects to make a second launch attempt of its Falcon 1 rocket, at the Kwajelein Atoll in the Pacific Ocean, after an attempt last spring that failed less than one minute after liftoff (see "[Space Tourism or Bust](#)"). When it comes to putting satellites or astronauts into orbit within the next couple of years, as opposed to suborbital flights, SpaceX may be the only real contender.

If the Falcon 1 launch works as expected, the company plans to begin test firings of a much bigger craft, the Falcon 9, as early as this November. Using nine rocket motors identical to the single motor in Falcon 1, the huge rocket could deliver payloads and humans to the International Space Station (ISS), or anywhere else in low Earth orbit. The tests slated for this fall would be static firings -- engine tests while strapped to the launch pad -- but after a series of tests next year, actual commercial flights could begin in 2008, Musk said.

Finally, [Virgin Galactic](#), a partnership between Sir Richard Branson and Burt Rutan -- founder of Scaled Composites, whose SpaceShipOne won the X Prize in 2004 -- is getting close to test flights of a suborbital tourist spaceplane (although Rutan never announces a schedule for his test flights until they happen).

Still more rockets may be soaring soon under a NASA project called COTS, for Commercial Orbital Transportation Services, which represents "really a sea-change for NASA," says Musk of SpaceX. Several companies, including SpaceX, have been competing under COTS for contracts to develop alternative ways to get astronauts to the ISS once the space shuttle is retired (see "[NASA's Bold Plan for Private Spaceflight](#)").

While this may be a record year for liftoffs by independent rocket-powered vehicles, it's just the start, according to X Prize Foundation spokesman Ian Murphy. "I think you're going to see a new record every year" for private space launches, he predicts.

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