

# Spaceplane re-entry is a European first

Prototype for reusable vehicle opens up potential for ferrying planetary samples and carrying humans.

Elizabeth Gibney

11 February 2015



A Vega rocket lifted off on 11 February to carry the IXV test re-entry vehicle into a 100-minute suborbital flight.

A car-sized European spaceplane splashed down in the Pacific Ocean at 16:19 Central European Time today, marking a milestone in the European Space Agency's efforts to build a craft that can return to Earth from orbit.

European scientists and engineers have launched rockets, sent satellites into space and even [landed a probe on a comet](#). But Europe has never had the ability to bring back a craft through Earth's atmosphere, and so far the European Space Agency (ESA) has relied on US or Russian partners to do so.

The 5-metre-long craft, called the Intermediate eXperimental Vehicle (IXV), is a prototype for a larger spaceplane known as PRIDE (Programme for Reusable In-Orbit Demonstrator for Europe), which ESA hopes could eventually be used for missions that return samples from celestial bodies in the Solar System, as well as for carrying crew. In addition to providing Europe with the means to return from space, PRIDE will open up scientific opportunities closer to home, the agency says. The spaceplane will be able to service satellites that are already in orbit, and to act as a short-term laboratory for Earth observation, high-altitude atmospheric research and microgravity experiments.

After launching at 13:40 from Europe's Spaceport in French Guiana on a Vega rocket, the IXV successfully climbed to 413 kilometres above Earth. It then manoeuvred to decelerate and deployed parachutes to further slow its descent. After a 100-minute trip, the craft splashed successfully inside a 25-km-radius landing circle in the Pacific Ocean, where it will be recovered by the Italian ship *Nos Aries*. "[Balloons are now keeping IXV afloat](#) while the recovery vessel hurries to pick it up," said an ESA statement.

## Taking the heat

Re-entering Earth's atmosphere from orbit requires a craft to withstand enormous heat and to maintain the right aerodynamic properties to avoid burning up. Data from the test flight will enable scientists to study the craft's guidance and navigation systems, as well as its heat-resistance capabilities, says ESA.

The €150-million (US\$169-million) prototype IXV has a design somewhere between that of NASA's now-decommissioned space shuttle, which landed like a plane, and of the descent capsules used by the Russian Soyuz spacecraft and by the US commercial aerospace company SpaceX. Although the European test vehicle has no wings, its aerodynamic wedge shape provides lift. The craft can also

automatically control its descent using two flipper-like flaps and four thrusters (see video below).

ESA says that the eventual PRIDE spaceplane will be a smaller and cheaper version of the US military's mysterious unmanned X-37B craft, which in October 2014 returned from what was rumoured to be a nearly two-year-long trip.

Although PRIDE's eventual design is far from fixed, the success of the IXV mission demonstrates that the re-entry technology works, says Roberto Lo Verde, an ESA spokesman. "This test is about paving the way for all kinds of exciting future missions. Today we made a big step in that direction."

