

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Verification and In-Flight Experimentation (6)

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A HIGH RELIABILITY COMPUTER FOR AUTONOMOUS MISSIONS, DEMONSTRATED ON THE
ESA IXV FLIGHT**Abstract**

The IXV 'space taxi' is the first European initiative by the European Space Agency (ESA) to build a smaller alternative to the American Space Shuttle. The smaller format means lower costs linked to its construction and launch, while the controlled return to Earth, enabled by QinetiQ's powerful and reliable computer, means the spacecraft can be reused. IXV could be a suitable alternative to expensive space missions in the future, transporting cargo as well as astronauts into space and back again more economically. Possible future uses include increasing the lifespan of existing satellites, monitoring the Earth, testing new technologies and performing fundamental research in space. The IXV demonstration flight took place at 11th February.

The IXV was guided by QinetiQ's on board computer technology. QinetiQ's space division has supplied the onboard computer, core of the flight control system with a reliability rate of 99.997 per cent, which ensured IXV's fully automated return to Earth. This powerful computer supplies the spacecraft with the intelligence necessary for a safe return flight, calculating the optimum angle for reentering the atmosphere and making a controlled landing possible. The computer was derived from the successful ADPMS onboard computers for highreliable autonomous satellites.

The paper will describe the design approach and the results from the maiden flight.