Real pilots and 'virtual flyers' go head-to-head

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(PhysOrg.com) -- Stunt pilots have raced against computer-generated opponents for the first time — in a contest that combines the real and the 'virtual' at 250 miles per hour.

Using technology developed, in part, by a University of Nottingham spin-out company, an air-race in the skies above Spain saw two stunt pilots battle it out with a 'virtual' plane which they watched on screens in their cockpits.

The 'virtual' aircraft was piloted by a computer-gamer who never left the ground, but could likewise see the relative location of the real planes on his own computer screens as the trio swooped around each other during the 'Sky Challenge' race. The event could pave the way for massive online competitions, and also demonstrates the power and scope of the very latest in GPS and related systems.

The technology that made it possible was supplied by the Geospatial Research Centre (GRC), a joint venture between The University of Nottingham, the University of Canterbury in New Zealand and Canterbury Development Corporation.

They were able to merge an electronically-generated world with the real world using a combination of satellite navigation technology (GPS, or global positioning system) and inertial navigation system technology (INS).

Dr David Park, a University of Nottingham graduate and Chief Executive Officer of GRC, said: “We've been involved with the development of Sky Challenge since July 2007. Our role has been to develop a technology solution that can provide the position and orientation of each of the real aircraft, in real time.

“The high G-forces and extreme manoeuvres of the racing aerobatic aircraft make this a very challenging technical and operational problem. GRC is developing a solution for providing the position and orientation of the aircraft using a combination of satellite navigation and INS technology.

“The INS constantly tracks the position and orientation of the aircraft, while GPS signals are used to correct the INS errors — although getting a GPS signal is not always easy as the aircraft twists and turns through the sky.”

The result of the Sky Challenge was a narrow victory for one of the real pilots — but he was only 1.5 seconds ahead of his virtual rival.

GRC has been developing a positioning and orientation solution called POINT-RT — optimised for fast-moving and highly dynamic air-sports — and is looking forward to realising commercial opportunities for it in 2009.

Other potential applications of the POINT-RT hardware and software being developed by the company include tracking people in buildings via shoe-based sensors, geo-referencing video-mapping systems in cars, and real-time thermal mapping from aircraft.

Founded in 2006, GRC is a New Zealand based company providing research and consultancy services in the fields of sensors and data integration, with particular expertise in positioning and orientation,

image analysis, data visualisation and electronics. The growing research team includes over 20 experienced scientists and engineers as well as PhD and graduate students able to support a range of research, development and commercialisation activities.

More information is available at: www.grcnz.com
Video of the pilots in action is at:
news.bbc.co.uk/1/hi/technology/7651500.stm

Provided by University of Nottingham