Martin Schweiger
Department of Computer Science
University College London
London WC1E 6BT, UK
Tel: +44 (0)20 7679 7213
Email: martins@medphys.ucl.ac.uk
www.orbitersim.com

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Orbiter – Mission statement

Orbiter is a comprehensive freeware spaceflight simulator for the PC that offers accurate physics, excellent 3D graphics, astronomy features, and a first-person astronaut's perspective. Since its first release in October 2000, Orbiter has undergone continuous development, and the next release is scheduled for the beginning of 2009.

Orbiter allows users to virtually experience many aspects of space flight, including launching to orbit, orbital maneuvering, rendezvous/docking with the International Space Station, deploying satellites from the Space Shuttle, and even flying to the Moon, Mars, and beyond. It comes with several simulated spacecraft, including the Space Shuttle Atlantis and the futuristic "Delta Glider," which takes off like an airplane and has sufficient fuel and power for interplanetary flights. Open architecture allows the world-wide Orbiter community to create a wide range of add-ons, hundreds of which are available on-line. These allow users to simulate complete Apollo missions, recreate historic exploration missions such as Voyager, try out NASA's next generation CEV, and even fly many fictional spacecraft from movies and books.

Orbiter combines entertainment and education – it is proof that learning about science doesn't have to be boring, and that video games can be a perfect medium to demonstrate physical concepts and phenomena in an engaging fashion. Orbiter is free for personal and educational use, which serves to maximize its distribution and impact.

Playing and learning.

Orbiter is designed to be fun to play with, but without sacrificing the accuracy with which the underlying physical laws of spaceflight are incorporated into the simulation experience. Its first-person perspective puts the player into the pilot's seat of a spacecraft, providing a unique hands-on approach for a variety of tasks and manoeuvres, including launch and re-entry, rendezvous and docking, as well as interplanetary transfers and slingshots. An understanding of the mathematics and physics of space flight – while useful for advanced missions - is not required. Instead, Orbiter aims at conveying an intuitive understanding of orbital mechanics that is more accessible to users of all ages and backgrounds than working through a physics textbook. Orbiter can be approached at many different levels, and appeals to a wide audience of users of all ages. It is also an excellent teaching aid to get students interested in celestial mechanics and aerospace engineering.

From user to developer.

One of the most important features of the Orbiter software is its programming interface which allows the development of external modules that can be plugged into the core application. Plug-ins include different

types of spacecraft, instrumentation or celestial bodies. The ability to create add-on modules allows users to go beyond the limits of the pre-packaged distribution and experiment with their own ideas. The possibilities range from the recreation of historic spacecraft and missions to hypothetical or future vessels. The effects of multi-stage rockets, engine performance and layout, aerodynamics, navigational aids and autopilot computers can so be tested. And for all those who don't want to write their own add-ons, a large and growing collection of modules provided by the Orbiter community is ready for free download, including virtually every historic and planned spacecraft.

A team effort.

Orbiter is not a commercial product – it depends on the voluntary contributions of a diverse worldwide community of users and developers. The focus of development has shifted from the simulator core application towards the plug-in modules. A variety of developer teams are using Orbiter as a simulation environment and test bed for creating ever more sophisticated spacecraft systems. The ability for users to share their experiences, and for teams to collaborate and communicate online is an integral part of the Orbiter experience. The Orbiter web forum at www.orbiter-forum.com has become the most important meeting place for users and developers alike. The forum not only features general Orbiter-related topics, but also includes tutorials, physics and mathematics discussions, tools for software development and testing, and "real-life" space news. The forum is maintained and financed from voluntary contributions by the community, and its growing popularity is an indicator for Orbiter's lasting success.

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