

Marshall Center names flight simulator 2004 'Software of the Year'

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A flight simulation program, developed by Marshall Center aerospace engineer James McCarter, has been named Marshall's 2004 "Software of the Year" winner. This year's honoree is MAVERIC-II – a program designed to more rapidly create flight simulations for spacecraft and launch vehicles. The software has become one of NASA's primary tools for simulating space transportation vehicle designs.

A flight simulation program developed by an aerospace engineer at NASA's Marshall Space Flight Center in Huntsville, Ala., has won Marshall's 2004 "Software of the Year Award."

This year's winner is the Marshall Aerospace Vehicle Representation in C II — or MAVERIC-II — program, designed to more rapidly create flight simulations for spacecraft and launch vehicles. It can be used for all steps of vehicle development — from concept design to actual flight of a finished vehicle. MAVERIC-II simulations can provide detailed predictions of how vehicle designs will actually perform before the craft is built and flown.

The software — which has become one of NASA's primary tools for simulating space transportation vehicle designs — was developed by James McCarter, an aerospace engineer in the Guidance, Navigation and Control Group in Marshall's Space Transportation Directorate. The organization pursues advanced guidance, control and navigation research and technology intended to dramatically improve safety and reliability for space transportation vehicles.

"Some software programs existed that had a few of the qualities we needed, but none provided the flexibility, ease of use and speed we require during vehicle development," said McCarter, a Marshall Center employee for nearly 40 years. "We needed a generic program that allowed for the rapid construction of simulations for any type of vehicle," said McCarter, "so we just developed our own software to suit our specific criteria."

The Marshall Center annually recognizes significant software achievements which are judged by an evaluation committee of representatives from various technical organizations at the center. The winner of the Marshall award then competes in the NASA Software of the Year contest. Each NASA center and component facility participates in the competition.

When McCarter began development of MAVERIC-II in February 2001, he knew two features had to be part of the design — speed and the ability to simulate any type of flight vehicle. Previously, it would take several trained technicians working approximately six months to create a flight simulation for a single vehicle design. With this new software it takes a single technician only one week to create the same output. Another advantage of the new software is its ability to accurately test a variety of flight vehicles. While past versions of the technology were designed for specific types of vehicles, MAVERIC-II software can be used to test any type of flight vehicle and mission scenario, allowing for wider usage and more accurate results for the user.

McCarter said the simulation program will improve the quality of vehicle testing. "The MAVERIC-II simulations include mathematical models for various vehicle subsystems. This allows early detection of design and subsystem integration issues, which ensures a safe and robust design."

Since its inception, the software has been used in the development of a number of vehicle designs. The software — which can be used on a desktop computer when linked to a mainframe server — is currently available only to NASA users and several federal research partners.

The original press release can be found [here](#).

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