

# 'A terrific investment'

## NASA salutes team of Boeing engineers for software innovation

By Ed MEMI

**N**ASA recently recognized a Boeing team of engineers for their effort to develop an easy-to-use Web-based database system to operate the International Space Station Software Development and Integration Laboratory more efficiently.

The effort, called the Support Systems Upgrade project, consolidated a number of spreadsheets and localized data sources into a centralized database. The innovative use of Open Source Software earned the Boeing team a NASA Johnson Space Center Exceptional Software Award.

The lab, located at the Johnson Space Center in Houston, is used for integration testing and certification of flight-control software for the 50 computers used throughout the ISS. The lab is also used to test software and hardware together as a system and is used to help resolve ISS on-orbit anomalies.

The flight control software controls virtually everything on the ISS, including electrical power, communications, payloads, life support systems, guidance, navigation, thermal control and other systems that keep the ISS flying safely.

"We are making sure the flight software when uploaded to the ISS works perfectly the first time. That is why this lab is so important,"



Manfred Hornung (left), manager of the Boeing International Space Station Software Development and Integration Laboratory (SDIL) Support Systems, and Neel Sheth, software engineer, are inspecting bus connections in the SDIL computer room. Boeing recently won a NASA award for improving the way the SDIL is used. PATRICK ARMSTRONG PHOTO

said Manfred Hornung, a Boeing ISS software engineering manager and a leader of the team project. "In a nutshell, we consolidated and integrated the way we operate the software laboratory."

Prior to the Support System Upgrade, setting up a test in the laboratory could be a complex task, especially with computers and subsystems interacting with one another.

"One of the problems was that there was no linkage between the different products, so you could not get an overall picture of what was going on with the lab," said Butch Gaston, a Boeing senior software engineer who designed the new Web-based application. "You often had to go to different people and look at different databases, and there were often

data-integrity problems, since everything was separate."

Typical tasks handled by the software include configuration management, scheduling testing tasks, metrics gathering and new automation capabilities that allow quick setup from one test to another. Under the old process, it would take two to four hours to re-configure the laboratory following each software test. Now that the test configurations are pulled directly from the central database, the process takes only about 30 minutes.

Said Susan Creasy, head of NASA ISS Avionics and Software, about the Support Systems Upgrade: "It turned out to be a very successful project and a terrific investment." ■

[edmund.g.memi@boeing.com](mailto:edmund.g.memi@boeing.com)

## IN BRIEF

- The U.S. Air Force could pay as much as \$44 billion more in fuel bills over 40 years to operate a fleet of 179 Airbus A330-200 aerial refueling tankers, compared with a similar number of tankers based on the Boeing 767-200ER, according to a study.

This assessment is based on a Conklin & de Decker Aviation Information study, funded by Boeing, that calculated the Air Force's cost with oil at \$130 per barrel, \$150 per barrel and \$200 per barrel. Oil prices recently hit a record high above \$147 a barrel, and many analysts expect prices to continue climbing. As the largest consumer of fuel in the Department of

Defense, the Air Force spends an additional \$600 million annually for each \$10 increase in the price of a barrel of oil.

The Pentagon decided last month to request revised bids for recapitalizing the Air Force's air tanker refueling fleet, after the Government Accountability Office ruling in June to uphold a Boeing protest over the initial award. In February, the Air Force selected the Northrop/EADS team to supply new tankers; Boeing protested this award, arguing that the procurement process was flawed.

Boeing welcomed the decision to request revised tanker bids but expressed caution over the possibility of changes in what the service is seeking.