

NASA Ames tests prototype software for future spaceflight

Software that astronauts could use during spaceflight and in future moon habitats was tested by a NASA Ames team in a Utah desert April 23 to May 7, 2006.

The research took place in Utah's southeast desert, at the Mars Society's

"By using the systems we are developing in the habitat, we are both testing our ideas and validating our assumptions about what kinds of tools people really need," Clancey said.

"A total systems perspective - developing our software in a setting analogous to where it will be used - provides direct experience and new insights about how people and automated systems can be designed to fit together," Clancey added.

Team members used prototype tools, including a wireless computer network, and voice-commanded mission control communication services that partly automate the role of capsule communicator (CAPCOM) personnel, who monitor and advise astronauts like they did during the Apollo missions to the moon in the late 1960s and early 1970s.

Scientists made audio and video

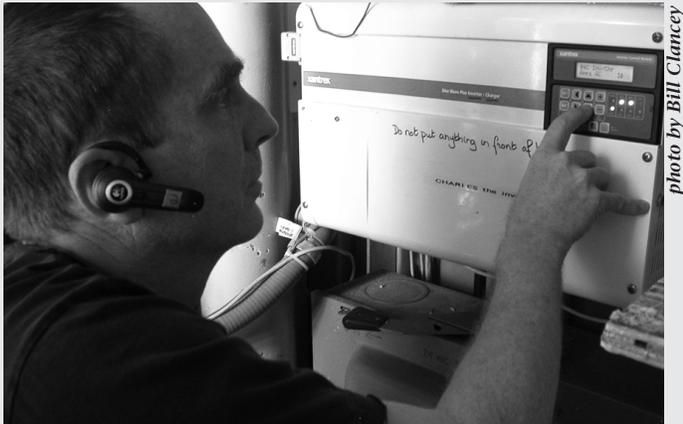
recordings of the activities using the crew-activity analyzer system developed under a Small Business Innovation Research Program grant to Foster-Miller, Inc., Waltham, Mass. It synchronized audio and video recordings with records of the crewmembers' locations in the habitat.

From analysis of the recordings and other data, investigators can evaluate the prototype power system monitoring software and develop requirements for computer systems to interact with people.

"Human-systems interaction is one of the focus areas for exploration research," said David Kormsmeier, chief of the Intelligent Systems Division at Ames. "Ames participates in several space autonomy, health management and advanced software projects that can increase future exploration spacecraft capabilities," Kormsmeier explained.

The Spacecraft Autonomy Project is a component of the Exploration Technology Development Program within NASA's Exploration Systems Mission Directorate, and funds mobile agents research. The project is developing a computer language, simulation environment and operational network for modeling and simulating how software 'agents,' people, tools and facilities interact in practical settings.

BY JOHN BLUCK



A crew member at the Mars Society's Mars Desert Research Station near Hanksville, Utah, wearing a wireless headset, inspects the power system inverter to monitor or modify the power settings. He is interacting with his 'personal agent' using voice commanding to inquire about the current and historical status of the power system.

Mars Desert Research Station near Hanksville, where scientists field-tested a computer network to monitor space power systems. The network uses the same kind of intelligent software that also may assist astronauts to conduct planetary exploration with robotic systems.

"We will experiment with sensors and software that will help us manage a generator and batteries that provide power to a habitat, while we are living and working inside (of it)," said Bill Clancey of Ames, the project's principal investigator, just before the tests began.

Nine scientists and engineers from NASA Ames took part in the experiments with the software and hardware systems. The Mars Desert Research Station simulated a spaceship in flight or a habitat on the moon.

During the field exercise, the researchers' objective was to test software 'agents' that will assist astronauts by monitoring an electrical power system and sounding alarms that indicate problems. The agents also will provide procedural advice when problems occur. The system could keep track of astronaut locations, timelines and important tasks. Researchers triggered some simulated problems to learn how the computer systems help or hinder the crew's response.

Be safe - avoid being a distracted driver

We all know that distracted driving is hazardous. We now know precisely how hazardous it is.

Ken Thomas of the Associated Press reports that "Researchers reviewed thousands of hours of video and data from sensor monitors linked to more than 200 drivers and pinpointed examples of what keeps drivers from paying close attention to the road."

For more than a year, researchers studied the behavior of the drivers of 100 vehicles in metropolitan Washington, D.C. They tracked 241 drivers, who were involved in 82 crashes of various degrees of seriousness (15 were reported to police) and 761 near-crashes. Air bags deployed in three instances.

We are all frequently made aware these days of the dangers of cell phone use and eating while driving, but even worse, "A driver's reaching for a moving object increased the risk of a crash

or potential collision by nine times," according to the researchers at the National Highway Traffic Safety Administration and the Virginia Tech Transportation Institute.

This caught my eye because years and years ago, I caused just such an accident right here at Ames.

I had an object on the passenger seat of my car. I was approaching an intersection and a truck in front of me came to a stop. As I began to apply my brakes, the object shifted and I instinctively reached for it, releasing the pressure on my own brakes. I was not injured, and the hefty truck survived intact, but my car was totaled.

So when you are reminded to avoid distracted driving, remember two things -- we now have scientific proof of its danger, and the distraction you are not thinking of, is worse than the distraction you know about!

BY PAUL K DAVIS