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cas Fig From left, Tom Furness, Bob Jacobson, Suzanne Weghorst and Staven Aukstakalnis of the Human Interface Technology peer through a motion-detecting DataGlove, which lets wearers "grab" objects in cyberspace. The lab is working on new tec replace the already outmoded glove approach. technology to

WARP SPEED INTO

UW lab hopes to go where no one has ever gone before by James E. Lalonde Times business reporter

hanks to a \$1.4 million grant from Digital Equipment Corp., a fledg-ling computer research lab at the University of Washington is about to blast off into one of the newest and potentially most lucrative frontiers in computing – cyber-space.

space. Also known as "virtual reality." cyberspace is the "space" that exists only as data inside a computer. After spending the 1980s forcing people to act like computers, says Tom Furness, director of the Human interface Technol-osy Laboratory and an engineering profes-sor at the UW, it is time to make computers act more like humans. The way to do that is to put people "inside" computers with all that data, where they can touch it and control it

where they can touch it and control it

where they can fouch it and control it directly, in the same way people deal with the real world, using all their senses. "You do that by having the computer create a world, which the human exper-iences as if it were a three-dimensional place, a place the human visits," says Furness.

Computer users enter "virtual worlds" using special devices such as stereoscopic goggles. 3-D sound head-phones and motion-sensing gloves. Such gear creates the illusion of moving through a three-dimensional space, or virtual reali-ty, by generating an image of the wearer moving inside the computer.

In virtual reality, the computer images

In virtual reality, the computer images are as real as you are. Or as unreal. The expenence of cyberspace, says Furness, is a powerful, even emotional, one. "Something magc happens when we create a wide field of view display," says Furness about the stereo googles. "When you wear those monitors, they fill your field of vision... it is like you really are in a new place." If you touch a virtual switch in cyber-space, a virtual light might be turned on. Or if that switch is hooked by computer to a real light, then real light will go on. Turning complex data into three-dimen-sional visual and audio forms also makes it easier to understand.

easier to understand. For example, a stock or bond trader, who has to watch haif a dozen financial indicators before making an instant deci-sion whether to buy or sell, might more easily watch a virtual image of a stock or bond controlled by a virtual-reality com-puter program. The computer does the complex work, considering all possible financial factors.

When those factors indicate it is time to sell a bond, the virtual bond might turn yeilow and swell. When it is time to buy, it might turn green and shrink. Such a system would reduce the time needed to make a decision and help one trader to handle more trading.

make a decision and help one trader to handle more trading. The goal of the LW's HITL program is to find new ways for people to prowl inside cyberspace, face to face with three-dimen-sional worlds of computer data. As far out as it sounds at first, cyberspace is drawing senous attention from not only the military and NASA, but a wide range of corporations nationwide, from Digital Equipment Corp. to The Boeing Co. The LW lab will use the DEC grant – and other corporate financting it is seeking through the creation of a -Virtual Worlds

Consortin to explore radically new Consortium" - to explore radically new methods of human interaction with computers and massive amounts of data stored in them

A wide range of uses for virtual reality are being explored in fields from medicine to aerospace:

to aerospace: Architects and clients could tour three-dimensional Computer Aided Design (CAD) copies of their buildings, giving clients the feel of interior spaces, before building the

building. Fighter pilots could fly virtual combat missions, complete with engine roar, firing missiles by simply pointing at virtual images of enemy planes projected on their

Aerospace engineers could test plane

Aerospace engineers could test plane designs by flying virtual jutering pilots try out cockpit instrument arrangements. Physically disabled people could walk or fly in cyberspace, or use a kind of super cockpit to control a computenzed wheelchair with eye movements. The UW's Human Interface Technology Laboratory is part of the state-chartered Washington Technology Centers program, set up to transfer technology from acade-my to industry. The UW lab wants to develop the next generation of cyberspace software and hardware, with a focus on commercial applications.

software and hardware, with a focus on commercial applications. It is that focus that prompted DEC. which has its own virtual reality research under way, to give the lab \$1.4 million worth of computer equipment. We are trying to find that next big breakthrough in what will make a comput-er work station more useful." says Michael Good, the principal software engineer for DEC's software usability engineering group, in Nashua, N H. "When I saw the description of their

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CYBERSPACE

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are connected via one global net-work thumans access corporate, c military or entertainment data by r entering the threat-cumensional "virtual" world of the data becom-ing a 3-D computer image them-selves, equable of interacting or rather, doing business in wirtual reality. The competition in Gloson's perveen reality and virtual reality between reality and virtual The constributed or the boundary between reality and virtual reality is often burred or the reviewant. The The competition world is fierce. And II between reality and v is often blurred or irr competition is only nov A. Successful and the second se egy designer, culaborates in the creating all of cylorater software design of cylorator software design of cylorator software design and cylorator cylorator and cylorator software more and the notions of virtual vords. The acceleration and the notions of virtual vords are, however, the working work of the cylorator software s plored in labs around the country of chefty by using one company's co-products. VPI. Research, located near AntoDesk, usid a 5225(00) system comprised of a bulky site. resorotie FyePhones headset and a motion-detecting glow. called a motion-detecting glow. called a motion-detecting glow. called a motion-detecting glow. called burgendo hased the devign of its powerGlowe on the VPL DataG-tore The UW lab would like to restairy gear and make it easisting the rest greatention of virtu- valic stating gear and make it easier to sure and bear services and make it easier to sure and the services is known as the fuller in advanced virtual-reality flight-sime do this projects at the lab will be to flexing the advanced the virtual service on a "later microscenner," which would use try solid laters to scan color mages directly onto a virtual mages directly onto a virtual mages directly onto a virtual make and use and the services a software deviation advanced the representation of the present deviation advanced with a software deviation advanced the representation advanced to the repr expression in the arter term than other responsing to that uses a much promise build. "And if our evaluation, which we are constructing right now, pays off, then the answer will be that, youd, there is some real promise fere: "Benefix is not alond conference and the first mathonal conference and antolobek line. The fleading computer anded in the thermation of a source and design (CAD) comparies and datolobek incorporative and that footback and the first mathonal conference design of a product from this relatively incorporative and that footback." and to suppressive and that footback and the production and the outparts that when the areman product from the relatively in suppressive and that footback." saud Boeing is looking for technol-ogies with commercial promise in the next three to five years. "We believe there is a way of exploiting it that has some promise to five years. we there is a way of hat has some promise arer term than other thought of," says if our evaluation. If our evaluation. I cher the answer will there is some real. Good, speaking of the L research, "my reaction if 1 had wanted to a lab to do the types of th 1 wanted to research, it k like this."

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The left also is about to launch en-adrive to raise another \$1 million by signing up local and matomal to corporations, at \$200 00 more a each. For that amount, the com-pantes would get at that of worlds constraints. The Boeling for has projects as approved in the "Virtual Worlds Constraints". The Boeling for has contracted, with the Wir also to contracted with the world of the wired states of the world of the original species for the equivi-tion of the transfer for human com-ported manager for human com-ported manager for human world full species Al-tionals of the resourth polyer. The distrals of their events project.

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Elmer J. Funk / CS&E

Members of the computer systems group of the Department of Computer Science and Engineering stand behind a MoneyGlove, which they hope will allow them to "grab" funding. The group is working on a new PR-oriented style to replace the outmoded "do good research without a bunch of hoopla" approach.

WARP SPEED INTO FUNDINGSPACE

UW group hopes to shill like no one has ever shilled before

by Elmer J. Funk Cub reporter

Thanks to a newfound awareness of the realities of the funding game, a computer research lab at the University of Washington is about to blast off into one of the newest and potentially most lucrative frontiers in computing - fundingspace.

Also known as "virtual research," fundingspace is "research" that exists mainly in the form of articles in the popular press.

After spending the 1980s quietly building an internationally recognized research program in computer systems, says Ed Lazowska, a member of the computer systems group in the Department of Computer Science and Engineering and an engineering professor at UW, it's time to make hay while the sun shines.

"Times have changed," says Hank Levy, another member of the group. "It used to be that you worked long and hard to assemble a group of outstanding faculty, staff, and graduate student researchers. You carefully studied important problems, disseminated your results in scholarly forums, competed for peer-reviewed Federal funding, sent your students to jobs at the best universities and labs, and tried to infect both undergraduate and graduate students with a love of learning in your discipline. But that approach is really passe." In virtual research, the emphasis is on public relations. "How do you think major funding decisions are made?" asks John Zahorjan, another member of the group. "Take the space station. Do you think scientists advocate it for its research value? No way! The truth is, NASA spends years lining up support for boondoggles like this. And the whole process is driven not by scientists and engineers, but by artists and writers. They paint fantastic pictures of the thing. They write wonderful copy describing how great it's gonna be. And when they're done, the stuff gets mailed to every warm body in Washington, DC. That's the way you get ahead in US science today."

The shift in emphasis in the computer systems group from research to hoopla doesn't sit well with everyone, according to Jean-Loup Baer, Chair of the Department of Computer Science and Engineering. "Ces gars vont bientôt être dans le caca jusqu'au cou."

But the members of the group seem unconcerned about eventually being called upon to deliver on their wild promises. "Look, no one would even *dream* of asking to see anything for a couple of years," say group members Brian Bershad and Tom Anderson. "I'm sure we'll be able to get a couple of sexy demos running by then. Sure, they'll be dead-end, but the likelihood of someone being savvy enough to see through the glitz is next to nil. Meanwhile, we're flying around the world and reading about ourselves in the paper. What could be finer?"

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