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BUSINESS TECHNOLOGY

BUSINESS TECHNOLOGY; A Free and Simple Computer Link

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Free and Simple Link to Computer Network

A Click of the Mouse, a World of Information

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Think of it as a map to the buried treasures of the Information Age.

A new software program available free to companies and individuals is helping even novice computer users find their way around the global Internet, the network of networks that is rich in information but can be baffling to navigate.

Since its introduction earlier this year, the program, called Mosaic, has grown so popular that its use is causing data traffic jams on the Internet. That worries some computer scientists. But Mosaic's many passionate proponents hail it as the first "killer app" of network computing -- an applications program so different and so obviously useful that it can create a new industry from scratch.

"Mosaic has given me a sense of limitless opportunity, which is the reason that I went into computer science in the first place," said Brian Reid, a computer researcher who is the director of the Digital Equipment Corporation's Network System's Laboratory in Palo Alto, Calif.

Digital, a leading computer maker, is exploring ways of using Mosaic as the basis for a whole new system of electronic commerce, letting customers easily browse through on-line product catalogues. Other companies -- including Xerox, the software company Novell Inc. and the publisher R. R. Donnelley -- are also exploring business opportunities they see springing from Mosaic. And in California, a government and private industry consortium called Smart Valley Inc. is using Mosaic to create an electronic marketplace for Silicon Valley high-tech companies.

Before Mosaic, finding information on computer data bases scattered around the world required knowing -- and accurately typing -- arcane addresses and commands like "Telnet 192.100.81.100." Mosaic lets computer users simply click a mouse on words or images on their computer screens to summon text, sound and images from many of the hundreds of data bases on the Internet that have been configured to work with Mosaic.

Click the mouse: there's a NASA weather movie taken from a satellite high over the Pacific Ocean. A few more clicks, and one is reading a speech by President Clinton, as digitally stored at the University of Missouri. Click-click: a sampler of digital music recordings as compiled by MTV. Click again, et voila: a small digital snapshot reveals whether a certain coffee pot in a computer science laboratory at Cambridge University in England is empty or full.

Other data bases searchable with Mosaic include the card catalogues of the Library of Congress and hundreds of American and foreign university libraries, Federal Government archives, various NASA computers and the University of California at Berkeley paleontology museum. The French Government is also considering using Mosaic to display digitized versions of paintings and other art exhibits from its national

galleries.

"Mosaic is the first window into cyberspace," said Larry Smarr, the director of the National Center for Supercomputing Applications in Champaign, Ill., where Mosaic was developed. The center in Champaign, which is one of the nation's four federally financed supercomputer research centers, is receiving more than 600,000 electronic information queries each week from Mosaic users.

Available free to Internet users willing to download it to their computers, Mosaic has been acquired by several hundred thousand computer networkers in less than a year, according to several industry estimates. The users include computer scientists, librarians, software developers, magazine publishers, record companies and catalogue distributors, all of whom see it as the first general-purpose navigational tool for the emerging data highway. Helping Shape a Debate

So sudden and dramatic has been Mosaic's success in attracting commercial software developers that the program may play a decisive role in determining the shape of the national "information infrastructure" now being debated by Government officials and telecommunications and computer executives.

One evangelist for Mosaic is Mitchell D. Kapor, founder of the Lotus Development Corporation, the company whose Lotus 1-2-3 spreadsheet helped ignite the personal computer revolution in the early 1980's. Mr. Kapor, who heads the Electronic Frontier Foundation, a public interest group on computer issues, visited a cable television industry show last week in Anaheim, Calif., and demonstrated Mosaic. He sees it as a tool in his crusade to cajole the telephone, cable television and computer industries to establish an open and accessible national data highway rather than a private toll road that many of the private companies seem to prefer.

"For me Mosaic was a turning point," Mr. Kapor said. "It's like -C-Span for everyone." A Better Way to Browse

Mosaic was created by a small group of software developers and students at the supercomputer center in Champaign, who set out 18 months ago to create a system for browsing through the World-Wide Web. The Web is an international string of computer data bases that uses an information-retrieval architecture developed in 1989 by Tim Berners-Lee, a British computer specialist at the CERN physics laboratory in Geneva.

Mr. Berners-Lee's system originally permitted many of the world's high-energy physics researchers to exchange information represented in a form known as hypertext. With hypertext, highlighted key words and images are employed to point a user to related

sources of information.

"I realized that if everyone had the same information as me, my life would be easier," Mr. Berners-Lee said.

From a small electronic community of physicists, the World-Wide Web has grown into an international system of data base "server" computers offering diverse information. The Web has also fundamentally changed the way information is obtained over the Internet. In the past it has been largely necessary to connect to a remote host computer using a complicated software program that fooled the computer into thinking the far-away visitor was using one of the host machine's own local terminals. But the Web simplifies things by using a networking model called client-server computing, which allows remote requests for information from any personal computer or work station.

"It's like the difference between the brain and the mind," Mr. Berners-Lee said. "Explore the Internet and you find cables and computers. Explore the Web and you find information."

Much of the Web data now available to Mosaic users is being made available by university researchers who are constructing demonstration projects to explore the technology.

But commercial applications are being worked on by a wide range of corporate developers. Novell, the world's largest developer of computer network software, has organized its technical reference literature so that any computer network user can retrieve it. Such browsing represents a form of advertising that is noninvasive and that seems to fit well with the culture of the Internet, whose users tend to be easily infuriated by electronic junk mail.

"I'm convinced that very quickly we'll have a new Madison Avenue kind of industry devoted to this style of advertising," said Tony Rutkowski, an executive at the Sprint Corporation, one of the companies whose long-distance lines provide the backbone for the Internet.

Already, O'Reilly & Associates, a technical book publisher based in Sebastapol, Calif., has used Mosaic and the Web to create an on-line magazine that includes advertising.

There remain, however, significant barriers to using Mosaic. It requires that the user have a computer that is directly connected to the global Internet. Many businesses and almost all universities now have such connections, but the majority of personal computer users currently connect to the Internet only indirectly through on-line information services like Delphi or America Online.

Many companies are now working on software that will make connecting to the Internet no more difficult than dialing into these on-line services. Earlier this week, for example, O'Reilly & Associates, in partnership with a Seattle software developer called Spry Inc., announced that next year it will begin distributing a software package for less than $100 called Internet-in-a-Box. The product, which will permit computer users to connect directly to the Internet, will also probably include a version of Mosaic to permit network novices to browse data stored in the Web.

"The problem with Mosaic is that it's currently for the haves of the Internet," said Tim O'Reilly, president of the publishing company. "This is an attempt to bring this exciting end of the Internet to the average user. We think this is the future of on-line publishing."

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