When Tim Berners-Lee developed the World Wide Web using a NeXT workstation, his software allowed users to browse and edit. The two functions have since split. Many Web developers use trusty old Unix editing tools such as Emacs, vi and pico to write HTML code, then they view the results with various Web browsers. This save/switch/reload cycle has become as familiar to Web developers as the compile/link-edit/run cycle has been for programmers for decades.

From a standing start a couple of years ago, many companies (and some talented individuals) have delivered HTML editing tools, including SoftQuad’s HoTMetaL, Quarterdeck’s HTML Editor for Microsoft Word, plug-in modules from Microsoft and WordPerfect for their word processors and HTML Edit from Murray Altheim (see Resources, page 26, for pointers to these and other Web development aids). Most of these tools offer WYSIWYG display and editing; all of them are designed to deal with one Web page at a time.

These applications still leave WebMasters with plenty of unsolved site-management problems, and Web authors with complex tasks to master in order to make their sites more interesting or useful. It takes a rare combination of programmer, designer, editor, project manager, inventor, publisher, artist and masochist to master the art of Web creation with current tools.

Now several software vendors are beginning to offer Website development tools that should save Web developers plenty of time and money in the long run, not to mention irritation and stress. Instead of treating the page as the work unit, they focus on the entire Website. They not only make editing simpler, but they also solve problems, starting with managing links to and versions of the mass of files -- some local, some strewn across the world on the Internet -- that constitute a Website.

This issue of Release 1.0 is a roundup of site-oriented Web development tools in various stages of development. It covers new offerings from six companies: NaviSoft, Vermeer, Ceneca, Netscape, Microsoft and NeXT. Their descriptions begin on page 8.

Site-aware tools make it easier to create and focus on the

WELCOME, CHRISTY AND LUBA!
structure of content. They combine aspects of team programming and design. Think of them as Computer-Aided Software Engineering (CASE) meets network-aware desktop publishing.

This issue doesn't cover Web server software, server management or clickstream tracking and analysis, nor does it cover secure servers and electronic commerce per se -- though some of what it covers is clearly beneficial to electronic commerce. It also doesn't cover turnkey or market-specific Website generators (see box).

### Turnkey solutions

Several companies offer automated Website-generation tools that typically focus on a specific task or vertical market and make extensive use of templates and other predesigned elements. One example is Alumnet from Amicus Communications, which focuses on getting university alumni-relations departments on the Web. Its clients include the Wharton School at the University of Pennsylvania and Virginia Tech. Its template offerings include an alumni directory, a career development center and a bookstore listing. It also offers communication tools such as e-mail, bulletin boards and chat, and a Website manager's ToolBelt of utilities. Amicus has a lot of depth working with university affinity groups. The Web is simply a tool it offers them. The company plans to expand into serving professional associations.

Other examples include NetMarket for electronic brochures (see Release 1.0, 1-95); Open Market for company Web presences with product offerings (1-95, 2-95); Lotus InterNotes for Notes documents that turn into Web pages (9-94, 2-95); EIT's HyperMail for Webbing mailing-list archives (9-94, 2-95, 6-95); Dave Winer's AutoWeb for turning outline-friendly information into structured Web pages (6-95); and InfoAccess' upcoming HTML Transit product for high-volume Web publishing from ordinary word-processing files.

Of course, we're selfishly motivated to investigate Web authoring tools. We'd love to find an environment that would allow us to create our material once, then publish it in many forums and formats, including the eminently portable, annotation-friendly paper newsletter.

**SKIRMISH, BATTLE OR WAR?**

It's easy to think of the Web as desktop publishing on communications steroids, but there is more at stake here. The battle for primacy of the communications and computing infrastructure has flared up again. Boxing agent Don King might bill this fight as Microsoft vs. Netscape, though it's not that clear cut.

Just as desktop publishing was born in the confluence of various technologies (i.e., the Macintosh, Adobe's PostScript, Aldus PageMaker and laser printing), now another confluence is underway that is potentially larger and farther-reaching. The burst of activity was sparked by the sudden critical mass of network connectivity that the Internet has brought. It is largely focused on the World Wide Web and new software architectures (e.g., components, helper apps and distributed programming systems).

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The movement is expanding and drawing in other domains. It has already begun to shake up the worlds of client/server computing and multimedia communications; soon it will draw in telephony. It has also reinvigorated several slow-growth markets, including text retrieval, document management and groupware. The Internet provides the conductive medium all these markets needed but couldn’t generate on their own.

Is the network the computer?

We’re in the middle of a major burst of evolutionary activity in what constitutes the computing and communications environment (see What’s a zine?, Release 1.0, 6-95). The earliest client/server systems had applications that ran on servers and screen-control systems such as X Windows on client machines, which didn’t offer much flexibility or local power. On the Web alone, developers now have a wide range of functionality available to them, from simple helper applications to increasingly integrated functionality (for a glimpse at where it’s headed, see Netscape’s news on page 16). Here are some examples, to illustrate the richness (and emerging complexity).

- Separate viewer applications, such as audio and video players.
- More interactive helper applications, which allow users to manipulate information rather than merely view it.
- Standalone applications that use the Internet as a transport, such as MathSoft’s MathBrowser and Key Curriculum Press’ Geometer’s Sketchpad (see Release 1.0, 4-95 and 5-95).
- Linked but separate environments, such as multi-user virtual environments or the three-dimensional worlds feasible with the Virtual Reality Modeling Language (7-94 and 2-95).
- HTML extensions and hacks, such as WebChat (6-95) and various special effects.
- Collaborating application suites such as Ubique’s Virtual Places, which coordinates activity between Web browsers, multiparty chat and live audio links (2-94, 9-94, and 2-95).
- Next-generation integrated viewers/players (see Netscape, page 16).
- OLE and OpenDoc-style component software (5-94).
- Integrated, multimedia applets written in distributed application languages such as Sun’s Java.

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1 The text retrieval market has undergone the most visible revival so far: Services such as Infoseek, Infonautics’ Homework Helper, WebCrawler (now owned by AOL), the McKinley and Lycos, and tools such as PLSWeb, ArchiText, OpenText, Fulcrum, WAIS (also AOL’s) and Verity’s Topic have become essential to find out what’s where on the Web and in the Usenet newsgroups. Many of those tools are also used to find things on corporate networks.

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Some companies see this chaos as an opening for companies to beat Microsoft. They think: If the Web is the new OS, maybe Microsoft doesn't matter much anymore. Others are rushing to benefit from the publicity windfall that Microsoft just received from Windows 95. Microsoft, of course, is trying to take advantage of the opportunity to make its own offerings the platform of choice all across the Internet (see page 18).

Battles will rage at all levels. The new environment will require development platforms, but it is not clear what the programming language(s) of choice will be -- Java, Telescript, ScriptX, Safe-Tcl, C, C++, Perl -- or even Microsoft's Visual Basic.

Purging the paper paradigm

In fact, nobody's quite sure what applications and publications will look like when the dust settles. Because language has such profound effects on what we try to build and how we try to use things, it's worth taking a moment to question the language we're using. "Site" and "browser" are leading words. Is this activity about sites? platforms? events? places? What's the right terminology?

For some Websites, the publishing model works well. Others have different needs and a different rhythm. You can't think of them as ever being finished. They don't stop once they're opened to the public. Many people are trying purposely to abandon the print/publishing frame of mind. Some of the publishing world's formal process may be useful, such as the flow of work between contributors, editors, production staff and so on, but the process can also hinder innovation.

"The publishing model is misleading. We had to reject the process to avoid the consequences of a text orientation.... On the Web, the designer is very close to the end-user. They are both using the same device to view and use the product. This doesn't happen in other media, such as TV and print."

-- Andrew Wanliss-Orlebar, Total New York

Finally, some sites are super-dynamic: They consist of a home page, scripts and a database. (Soon they may also include Java or other animatable applets.) The entire experience is custom-generated for each person who visits. NeXT's WebObjects is designed for this kind of Website (see page 22), as is Bluestone's Sapphire/Web (see box, opposite). Richly linked, interactive or narrative experiences are nearly impossible to automate in this way. They require an author's direct involvement.

THE STATE OF THE ART

At worst, creating Websites without site-oriented tools leads to chaos as the site gets larger and requires more maintenance. At best, the variety of things a developer has to keep in mind makes it difficult to focus on the overall project theme or concept. "Although it's a pain to have a dozen different tools, it's almost a necessity." says Kyle Shannon, producer of the Web zine Urban Desires.

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Developers have to use the various tools in the proper sequence or suffer from the tools' undesirable interactions. For example, to create a transparent GIF image optimized to present quickly on a Web browser, you might use one tool that turns images into transparencies, then another that makes them interlaced. Unfortunately, if you use the interlace tool second, it removes the transparency.

Bluestone's Sapphire/Web

Founded in 1989, Bluestone is a New Jersey-based Unix consultancy that has recently focused on Web development. It created a back-end application called Sapphire/Web that helps automate scripting and database access -- sort of a PowerBuilder for the Web. Sapphire runs with practically any Web server, database and browser.

Sapphire is in early beta test on several Unix platforms now; versions for Windows 95 and NT as well as Mac should be available in the first quarter of 1996. Bluestone is talking with many of the companies in this issue about integrating with their tools.

Some of the tools do a nice job, but not in the format you need. They also take up a lot of RAM. Many of the most popular tools are shareware, which means they often lack support, documentation, APIs, drivers and maintenance releases -- or maybe they just crash. Every so often a jewel emerges that is well designed, community-supported, useful and extremely popular.

This market's relentless pace favors a plug-in software architecture similar to Photoshop's and Quark's, or component software. In any case, software features need to be integrated so that they are aware of their place in the broader sequence of events.

It takes too many tweaks and workarounds to make things work today on the Web. In fact, some of the most creative things people have done on the Web take advantage of loopholes in Netscape or use features in an unexpected way. The loopholes go away with the next release, then the cycle repeats. It's difficult to keep up-to-date on the nuances and fashions, but it's those nuances that define the leading edge. As is true in more conventional programming, though, leading-edge developers tend to use the equivalent of assembly-language programming. The tools described in this issue are not designed for them, but rather for people with more conventional needs.

Here's a quick description of what an average Website creator has to go through today.

Text, glorious text

Many Web copy writers use simple text editors. Those who don't, often save their work as raw text files anyway. If they don't, someone else might use

2 If many people start publishing for each other in public and private Webs, the traditional word processors with proprietary formats will be in jeopardy.

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a converter that turns RTF, Word or other formatted files into HTML files. More likely, that person must manually tag the document with HTML, for which he might use an HTML editor such as HTML Edit or BBEdit from Bare Bones Software with Carles Bellver's HTML Extensions. Like all tools, HTML editors have weak and strong points. For example, BBEdit is smart about including image size in an HTML tag, which makes pages display much better. HTML Edit doesn't allow direct editing of tags. You have to retype them. Both of these are developer's tools, not really author's tools.

WYSIWYG HTML editors are a big step forward because they make it relatively easy for writers to do much of the linking. That's important, because it's a key aspect of what makes this medium different from traditional publishing. Links aren't things you put in as afterthoughts; they are essential structural elements, the author's value-added to the content itself. They create the framework and the context.

Text pages are usually the skeleton of the site, because they are invoked first. HTML tags that point to images, sounds and other pages are kept in the text. A page might have two or two hundred graphic elements. Even with only a few, the tags and links are a pain to maintain and debug. More on them in a moment.

Graphics, sounds and video

To add images to their Websites, developers often scan pictures, take digital snapshots (with digital cameras such as Apple's QuickTake and Kodak's Digital Camera) or create original computer art (which can, of course, blend all of the above). Some images come from Hi-8 video cameras via frame grabbers and programs such as Avid's VideoShop. Adobe Photoshop (and its plug-ins) seems to be Web developers' favorite image-manipulation application.

Then the trouble begins. Image size can rapidly grow out of control, making the Web-browsing experience intolerable for all but those directly connected to the Internet backbone. To optimize images for transport and presentation, developers must know a lot about bit color planes, special effects, interleaving, caching and placement. Again, the vagaries of task-oriented software applets come to the fore. An application might be great at converting images from TIFF to GIF, but it may mess up the number of bits per pixel the designer wants to use.

Color is a headache of its own. Some machines that only support eight-bit color will dither incoming backgrounds to the 16 basic DOS colors, often making the overlaid text completely illegible.

So-called image maps allow developers to create clickable portions on an image in a Web page. Several shareware applications help build image maps (as do most of the authoring tools in this issue). Of course, much of this effort could be bypassed if the Web offered good object graphics capabilities, which remains a major opportunity.3

3 With a bitmapped rendition of a car engine, it is difficult to define clickable areas around each of the parts. If the engine were composed of separate objects, each of which might be separately scriptable, the application would be much more powerful.

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Because of their temporal dimension and the variety of platforms and drivers out there, audio and video are more complex than still images.

File management, version control and other headaches

Here are a few system-level issues that complicate Website development:

- Web links (URLs) point directly to files, rather than using some form of indirection that would shield users from missing files and the unsatisfying "404 Not Found" message.

- Not all Web browsers are alike. Developers have to test for compatibility with growing numbers of them, including the text-only browser Lynx.

- Websites are often moved to different machines, raising cross-platform issues such as file-naming conventions (when files go to a PC, they all have to be in 8.3 format, which means ".html" files have to become ".htm" files) and file-format conversions (including the eternal Mac/PC carriage return/line feed problem in the simplest text files).

- Often many people are working on Web documents at once. Over time, procedures slip. Developers stop FTPing new versions and make changes to the production site itself, overwriting existing files, which can quickly lead to messed-up sites.

A Web design project typically has no more useful representation than a folder or directory. For all intents and purposes, the operating system on the developer's platform is the document-management system, which is a pretty sorry state of affairs. When developers put pages into production, they often use applications that make global changes to URLs, such as HTML Grinder from Matterform Media (for the Mac). There aren't many other applications in use today to solve these problems.

No wonder so many companies have been inspired to create better Website development tools.
WebMasters will soon have a wide variety of satisfying tools to help them create and maintain Websites that are sophisticated, if not necessarily bleeding-edge. The six offerings profiled in this section have similar implementations and base feature sets. For example, many of them consist of a client-side HTML editor and a set of server extensions that work with many different servers. Most of the offerings feature transparent file-transfer capabilities, Web visualization and navigation tools, special features to facilitate building clickable image maps and forms, and link management.

Despite these functional similarities, the vendors’ goals and visions are considerably different from one another. NaviSoft, Vermeer and Geneca focus on making Web development very simple for specific audiences. Netscape and Microsoft are battling about the future of distributed application architectures. NeXT has chosen some unique territory, leaving the WYSIWYG editing and link management to others.

Choosing an access provider to act as a Web host or putting up a site of one’s own are still frustrating activities. Of all these companies, only NaviSoft and Microsoft currently plan to offer Web hosting, and for Microsoft Web hosting is a ways off, since it will focus on its own network first. NaviSoft’s complete offering -- from WYSIWYG editor to corporate Web hosting services -- may give it an advantage with novice Web owners, or those who favor outsourcing. However, it’s likely that companies that want to put this much effort into a Website will also be more than willing to run their own sites. If they don’t want to play WebMaster, Web hosting is likely to become a large, competitive business in the near future. Why buy expensive bandwidth and worry about 24-hour uptime when you can hand someone else those headaches?

Netscape Navigator’s current market dominance gives it two large advantages in fielding an integrated editor. With all the other vendors, Website developers still need to save their work and view it in Netscape to make really sure it works properly. Until someone else unseats Netscape as the Web compatibility proof application -- the Web’s Flight Simulator -- it’s the only company that can eliminate that bother. Second, unless it is completely inept or stops being the technology leader, Netscape’s editor will always be the first to support new Netscape features, which is exactly what developers want.

It’s hard to imagine Microsoft succeeding with its dual strategy of pursuing development for its own network as well as the Web, especially with Netscape and others moving as quickly as they are now -- and with far less legacy code to worry about than Microsoft.

Of course, all of the companies in this section have Web presences (at the obvious Web addresses: www.company.com). The way each uses the Internet may play an important role in its success. The Web is not only the target platform for these companies’ software, it is also their communication link to customers for sales, software distribution and customer service. Vermeer’s Website is particularly broad and helpful for Web developers in general; the other vendors’ sites are inwardly focused on their own products.
NAVISOFT: SOUP-TO-NUTS OFFERINGS

In July, when it shipped its client and server applications, NaviPress and NaviServer, NaviSoft was the first vendor to market with Website development tools. At the time, the product suite's many cool features helped to define what such tools should be expected to do. Some of the coolness comes from what developers don't have to do if they use NaviSoft's tools. For example, they don't have to mess with raw HTML, fuss with low-level tools such as FTP to put their pages on their Websites or edit individual URLs within the pages when they move files around or make other changes. For most WebMasters, these are welcome capabilities.

NaviPress also adds nifty features such as the MiniWeb, a bird's-eye view of the elements that make up a site and their links, including remote files that the site points to (see screen shot, next page); files that are not on the NaviServer are grayed out). HTML files, embedded graphics, sounds and other items are shown with their filenames as well as lines indicating their relationships. The MiniWebs for complex sites can be overwhelming, but the ability to get an overview of a site's structure is invaluable.

Imitation, the sincerest form of flattery

The MiniWeb's power becomes more evident when you use it to inspect someone else's site. You can effectively have NaviPress reverse-engineer a site by starting at the home page, automatically following the links and creating a local copy of most of its files (it can't capture CGI scripts or more esoteric stuff that the site has). What's left is quite usable: You might even be tempted to cannibalize it. The software remembers information that a Web browser usually caches.

NaviPress offers blueprints and style sheets, as well as tools to simplify the creation of clickable image maps and Web forms. NaviServer, which is integrated with the Illustra object-relational database (see box, page 11), handles tasks such as user account setup and administration, document version control and site access pricing. Interactions with the Illustra database are mostly through Web-based forms or special-purpose tools.

Web surfers can view pages created with NaviPress with any browser, unless developers add quirky code that is incompatible with a particular browser. NaviPress works fine without NaviServer, though you lose many of the convenient features. You could use NaviPress as a standalone tool and then save the files to a NaviServer site later. You could also develop a site on NaviServer, then FTP it elsewhere, though scripts and custom code reduce portability. Conversely, you could use other Web authoring tools, then FTP the finished files to the NaviServer site. In all cases, users need to have SLIP, PPP or equivalent access to the Internet.

NaviPress costs $100 and runs on Mac OS, Windows and SunOS. Versions tuned for Mac PowerPC and Windows 95 are in the works, as is support for addition-

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4 NaviSoft calls the save-to-site capability "instant publishing." It's implemented with http "put" commands, rather than as a separate FTP session, which mitigates some access security issues.
10

al Unix platforms. NaviServer runs on Windows NT ($1500) and multiple Unix platforms ($5000). So far NaviPress and NaviServer have been downloaded from NaviSoft’s Web site around 10,000 times, total, on 60-day-trial terms.

The NaviTools at work

Since AOL owns NaviSoft, it makes sense that the tools are proliferating inside AOL. (This may be obvious, but you don’t need to be an AOL subscriber to use NaviSoft’s tools. In fact, AOL subscribers can download and use NaviPress, but don’t have access to NaviServer yet.) GNN, another AOL acquisition, will OEM a version of NaviPress called GNN Press. NaviSoft will
also market the system to other Internet service providers and Website developers as features to offer their customers. AOL's initiatives overseas, such as AOL International, should help NaviSoft, too.

David Cole founded the company in 1993, after seven years in venture capital (the Cole Gilburne Fund) and several startups, including Ashton-Tate. NaviSoft began developing software in early 1994, then entered discussions with AOL, which bought the company in late 1994. At that point, Cole moved to AOL to run its New Enterprises Division; in 1995, Lydia Dobyns left her own consulting practice to become NaviSoft's ceo. She had known Cole from Ashton-Tate, where she was the vp of marketing. NaviSoft's 40 employees are in Santa Barbara, CA.

Corporate developers have begun to use NaviSoft's products. Hearst New Media used them to build its Multimedia Newsstand, which generates some HTML pages dynamically and maintains customer ordering records (see Resources, page 26). Dobyns sees corporate Webs -- both private and public -- as a prime market. The tool suite fits the task: It's pretty simple to use and it allows for dividing responsibility for various sections of a Website among many departments, even if they use different operating systems.

Platformness

NaviSoft's first release of products has its share of rough edges, many of which Release 1.1 is intended to smooth. The new version will improve many interface details, from dialog boxes to screen redraw and aspects of the MiniWeb's presentation and use, to make the whole system more intuitive and easier to navigate. It also includes Netscape's Secure Sockets Layer protocol for security.

Illustra's database

Manipulating multimedia objects for Web design is a pain if you're working directly with the file system. Using a database helps, but adds the burden of CGI scripting and database building and maintenance. Illustra Information Technologies, founded in 1992, specializes in multimedia asset management and digital media distribution. Now it's focusing on Web development with its Illustra object-relational Server, which NaviSoft uses.

Illustra's Server adds versioning, work flow and other features to objects it stores in relational tables. It also adds other sophisticated, task- and domain-specific features, including 2D and 3D mapping, multimedia, electronic imaging and time series, which it calls DataBlades.

The new release should also make the tools more appealing to developers and corporate buyers by further opening the APIs and adding ODBC (Open DataBase Connectivity) drivers. These moves will make the product suite independent of the Illustra database, which will satisfy IS managers who are loath to bring yet another database into their organizations. NaviSoft's developers are working to integrate other technologies, including Macromedia Director, Sun's Java and Microsoft's OLE, with the long-term goal of offering a modular, distributed application architecture.

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While this may seem quite ambitious, it resonates with the strategies of many vendors covered in this issue. The most daunting one, of course, is Microsoft (see page 18), but because Microsoft is focusing its near-term efforts on developing titles for MSN, it will be a while before NaviSoft needs to worry about them.

The service business

NaviPress is one of the few companies covered in this issue that is entering the Web hosting business. Its offering, NaviService, has four levels of service, from low-priced, entry-level sites of a few simple pages to large-scale corporate production systems. The more expensive offerings include custom domain names, site pricing and data-collection capabilities for traffic analysis. NaviService is available now.

The first level, Home Page, costs $15 a month, with a $100 setup fee, which includes the NaviPress software. Developers get a password-protected directory on the NaviService server, with up to 20Mb of disk space; their sites can take 1000 hits a day.

The second level, Domain, includes a custom domain name, 50Mb of storage and up to 5000 hits per day. It costs $100 per month, with a $200 startup fee. The Commercial level raises functionality and performance. For $200 a month and a $200 setup charge, customers get 100Mb of storage space, up to 10,000 hits per day, plus a variety of added features, including forms, data collection and data analysis. Each page can have separate read and write privileges.

The fourth service level, Dedicated, starts at $2000 a month with a $1000 startup fee. Customers get their own hardware and maintenance resources, including 1Gb of storage and up to 50,000 hits a day. This offering includes access to NaviServer's APIs and custom development tools. NaviSoft also offers consulting services to help Website developers.

VERMEER: ANY SERVER, ANY TIME

In 1992, Charles Ferguson was a management consultant with a book in the works (Computer Wars: The Fall of IBM and the Future of Global Technology, published by Times Books/Random House in March, 1993). During his engagements with Apple, Motorola and others, he began to see how hard companies had to work -- and how much they had to invest -- to develop materials for closed online services. He envisioned an environment and an architecture that was more open, standardized, flexible and powerful than the proprietary systems then in use.

By 1994, Ferguson was tempted to start a software company that would develop a standard infrastructure for online services. Then the Web began to gain momentum and he realized that someone else had invented the environment that he was looking for, but that the tools to make things easier to create were missing. So he decided to focus on Web-development software tools.

On the recommendation of a friend at MIT, he hired Randy Forgaard (who was working on BeyondMail at Banyan) as his technical lead. The two founded Vermeer Technologies in early, 1995, with $4 million in seed capital from
Matrix Partners, Sigma Partners and Atlas Venture (see Release 1.0, 5-95). The company is growing quickly.

The buttoned-down approach

Rather than compete with Web browsers and servers, Vermeer's approach is to make as many of those products' users its customers as possible. Its product suite, called FrontPage, has four components. The server component, Vermeer FrontPage Server Extensions, can add functionality to most Web servers, including the save-to-site feature described above. That means a Web developer could create sites transparently on multiple servers, as long as she had access privileges and the server owner added the Vermeer extensions. The extensions offer user-access control and support collaborative features such as author collision detection, so that two people don't modify the same page at the same time.

Vermeer's other three components -- FrontPage Explorer, Editor and To Do List -- run on the client side. Explorer is similar to NaviSoft's MiniWeb browser, but it's more organized. Its left pane has an Outline view with a list of files similar to that of the Windows 95 Explorer; its right pane has a Link view that offers a bird's-eye Web view. Unlike the MiniWeb, which allows icons and links to proliferate on screen until they become difficult to follow, FrontPage Explorer displays inbound links to the left of the node in question and outbound links to the right. Whatever page is selected in

![FrontPage Explorer - Test](http://127.0.0.1/Test)

FrontPage's Explorer view.

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the Outline view is in the center of the Link view (see screen shot, previous page). FrontPage Explorer cannot automatically follow a Website's links and mirror them locally, as NaviPress can.

Double-clicking on a page icon in the Explorer launches the FrontPage Editor, an elegant WYSIWYG page editor with many useful extras to help developers avoid HTML, URLs, Perl, Tcl and C, wherever possible. The extras include templates, step-by-step WebWizards and support for most Netscape extensions. They also include WebBots that automate Web components that usually require programming, such as text-search query forms, threaded discussion groups, Website registration screens and comment-submission forms.

The combination of wizards and templates is powerful and offers rapid deployment of relatively complex Websites that include automatically regenerated tables of contents, common headers and footers, and a To Do List of things to replace, import or create in order to finish the site. There's also a tool to create clickable hot zones in graphics, which, by the way, the program can import and convert to a Web-friendly format transparently.

The tool suite supports multi-user Website development, including transparent porting of an entire Website from one site/server to any other, including all associated programs. Vermeer is also developing APIs for database access, text search and document management. In 1996, the company will add electronic commerce capabilities and stronger database support.

Vermeer is shipping its products in a few weeks and will announce them formally in October. It will ship client software for Windows 3.1, 95 and NT, and server software on those OSes plus several flavors of Unix. A Mac version is due in early 1996. For $600, customers will get the client software, a personal Web server and the server extensions (the client software isn't useful by itself; the customer can use practically any Web server). To stay current with Web developments and if possible help shape them, Vermeer is active in the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C).

CENECA: ELEGANT OFFLINE PUBLISHING TOOLS

This past January, Robert Seidl and three of his colleagues at Taligent left that company to launch a Web-tool startup called Ceneca Communications. Three of them had worked previously at Apple in the Pink project, which was spun out to become Taligent in a joint venture with IBM. They began coding in March and demonstrated their first application, PageMill, at the Boston MacWorld show last month; it was the hit of the show.

PageMill is a page-oriented HTML authoring and maintenance tool. You can download a version of PageMill for the Mac OS from the Web now, under beta-test terms. (Ceneca creates its software on Macs; it is developing Windows and Unix versions as well.) When it is released commercially for the Mac in September, the product will retail for $200.

Part of PageMill's appeal is its smooth engineering. For example, when the developer drags an image onto a Web page, PageMill can automatically convert the image to a format of the developer's choice. A simple Image Editor allows authors to specify if their images should be transparent or interlaced.
PageMill also automatically includes the image size in the HTML tag, which makes display on browsers quicker and smoother. Ceneca recommends that authors use applications such as Photoshop to get finer control over their images. (The beta version of PageMill doesn't support links inside HTML pages or JPEG images, but the full first release will.) PageMill includes a Pasteboard, which is a souped-up Scrapbook where developers can leave images for later use. PageMill does help authors create forms interactively; it doesn't help with CGI scripting.

A site for sore eyes

Ceneca's second product, SiteMill, includes PageMill and adds link management, clickable image-map- and form-creation tools, navigation tools and automatic link checking. It should enter beta testing soon, and will retail for $800 when it ships at the end of October. Customers who upgrade from PageMill to SiteMill will pay only the difference. SiteMill doesn't add any special code to a Web server. Developers must FTP finished files to the destination server themselves. It does help manage the links. If a site is to be moved to a DOS server, for example, SiteMill can rename the links to comply with the 8.3 naming convention. The program doesn't have a bird's-eye Website view; instead, it has simpler displays that list inbound and outbound links (in the Site and External Views). There is an Error View, which shows broken links. Correcting a link in that view cascades to all the instances where it occurs.

Ceneca's designers favor simplicity over feature richness. Developers who want to see the raw HTML will have to use an ordinary text editor. SiteMill also doesn't offer templates, tables or extensions such as Java, Macromedia or QuickTime. Some of these decisions may change over time, as the system evolves. Adobe Systems recently announced its intention to purchase Ceneca.

Getting there

Ceneca's Web creation tool suite is similar to Vermeer's. Seidl and his partners debated becoming Web service providers as well as pursuing other business models, but they decided instead to make a product oriented to a specific audience with a clear need. Their intended audience is corporate marketing communications departments, advertising agencies and others whose task is often to put companies on the Web, but whose staffs are seldom very technical. PageMill and SiteMill are designed to allow these people to focus on their goals and avoid the messy details.

Ceneca is financed by its founders, who would like to grow the company independently, if possible, though their growth goals may require outside capital. So far, the staff numbers only 13, none of whom is drawing a salary. The company wants to take advantage of the Web's dynamics. It plans to ask users for their most-desired features and even have them vote on which features to implement first.
NETSCAPE WON'T BE CAUGHT NAPPING

With Navigator 2.0 and the other tools that it will announce this month, Netscape is fielding an impressive list of innovations that will make competitors hustle to keep up. The dangers for Netscape are feature overload or poor execution -- there's certainly no lack of ambition.

Alongside version 2.0 of the browser, the company will introduce a version with an integrated editor (Navigator Gold) and a Website authoring application called Livewire. Interestingly, the company is positioning its offerings as the operating system for the Internet. While that statement may be overreaching, Netscape is delivering a significant amount of new technology that will change the Internet landscape considerably.

The new products built around the Web's most popular browser will have some interesting features such as client-side image maps (today, processing for clickable images happens only on the server, which is relatively slow); faster display of JPEG images; streaming audio and video; and secure applications such as e-mail, news, transactions and server connections.

More significant is a technology Netscape calls Live Objects, which adds frames, plug-ins (such as inline viewers) and Java applets to the Netscape Navigator. (They are defined as three new HTML tag types.) Think of frames as tables on steroids: They will allow Web pages to have multiple sections instead of just linear text, headers and footers that stay in place on the browser border (for banners, help toolbars, copyright notices and so on), and auto-scrolling text fields (see screen shot, 17). Frames bring much of the screen control available in desktop publishing packages to the Web.

Until now, multimedia objects could either display alongside the text in a Web page (usually only images) or could launch a player of their own, such as a QuickTime or audio player. The plug-in capability will allow developers to integrate inline viewers such as Macromind Director to allow for much richer display than the helper application architecture. So will Netscape's increasing support of embedded OLE objects and Java applets.

Finally, Netscape is making a major commitment to Sun's Java language. Netscape's own scripting language will be a subset of Java syntax. Scripts will fit in HTML code; Navigator will have an embedded script interpreter.

Danger: High Voltage

Livewire, Netscape's development environment, will integrate in-situ WYSIWYG editing with the well-known browsing capabilities. Livewire includes a graphical view of the site, including links to resources outside the site. As with similar products, Livewire automatically manages links as developers add or change them. It can validate links and flag broken ones. Site Manager also includes project organization reporting, wizards and templates. Scripting, again, is based on Sun's Java language, which is being extended to offer more server capabilities.

In fact, Livewire's Server Extension Engine and Server Front Panel consist of HTML documents, Live Objects and Java programs that monitor Livewire applications. They support several user state mechanisms to enable various kinds of interactive programming. The whole kit is tightly integrated with Navigator Gold, but it only works with Netscape's NetSite servers.

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Livewire Professional Edition will include database connectivity. It will ship with a copy of Informix' relational database, but will be compatible with all popular relational databases. Netscape expects that Livewire and Livewire Pro will be available in the fourth quarter of 1995 for under $500 and $1000, respectively.

Netscape Site Manager - C:\Site\My Site.site

<table>
<thead>
<tr>
<th>Site</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Page</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Netscape's Livewire (early version).

Netscape is presenting the new HTML and other specs it has created to the IETF and the W3C. Netscape's ability to drive the Web's technology by fiat is an essential part of its competitive advantage. If it bobbles a transition, such as the upgrade from Navigator 1.1 or 1.2 to 2.0, it could lose its momentum and first-mover advantage (shifts to Win95 and Winsock 2.0 could cause some problems along the way). The good news for Netscape is that it has very little legacy baggage to deal with. The Web is a new phenomenon. Many other technologies are now available to choose from, including multimedia engines, distributed programming languages and component-software architectures. Netscape is making the best of the opportunity, and as a result the Web won't be the same in 1996.

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MICROSOFT: A WAY TO MAINSTREAM OLE

Microsoft's vision of online authoring, as manifest through its development system code-named Blackbird, is the most ambitious of the vendors covered in this issue (Netscape is the runner-up). This is not because Blackbird is a more grandiose or encompassing application suite, but rather because Microsoft's approach is more integrative. Although the vision is based on much technology that is proprietary to Microsoft, it fits well with where we believe the electronic infrastructure is headed (see Choose Your Topology in Release 1.0, 6-95).

Blackbird is Microsoft's attempt to create a system that works well with the public Web, yet also offers proprietary advantages and even private labeling for companies that want to create their own complete service offerings. Beyond that, Microsoft sees Blackbird as an opportunity to merge many disparate development systems, from voice processing to client/server application development, all around OLE. OLE deconstructs applications into custom controls and other software objects; Blackbird helps deploy those applets across the Microsoft Network (MSN), and soon the Internet.

In fact, Blackbird is a way to mainstream OLE and potentially get the rest of the (non-Microsoft) world using it. This will take considerable time, if it happens at all. Whether Microsoft's tools and design concepts are up to the challenge is an open question, and this strategy puts Microsoft's developers in a situation that has all the complexity of its own systems as well as the global Internet.

Bill be nimble, Bill be quick...

Microsoft's challenge is to make MSN flourish soon, so that it won't be eclipsed by more open systems, making Blackbird irrelevant, or at least obsolescent. The situation is similar to AT&T's with Interchange, which is also a proprietary network with more layout flexibility than the Web offers today. AT&T and Microsoft must deliver great development tools in order to maintain their advantage.

In fact, because it owns the operating system that Blackbird is optimized for, Microsoft alone must continue to improve the underlying architectures and protocols, many of which date back to the earliest versions of DOS. The Web is rapidly getting more interesting and powerful, in large part because thousands of companies and individuals are collectively improving it, a process which has its own drawbacks.

Because of the market-access advantages that almost brought about a Department of Justice intervention, MSN is likely to do well anyway as a private service. The question at hand is whether Microsoft's networked-application architecture makes it beyond MSN's walls and becomes more commonly used. The innovations Netscape is introducing, described above, make this a difficult task. This is where the battle between proprietary operating systems and the Internet is being fought.

What it offers

Blackbird isn't a monolithic content-creation environment. Instead, it is a platform within which other OLE-compliant Windows applications can become content-creation tools and even distributed applications.
Microsoft wants Blackbird to be an inviting environment for third-party tools. The pace of technological change will help. Connectivity will change all standalone applications, making many obsolete. With Blackbird, Microsoft is attempting to offer traditional Windows applications a viable path to re-create and re-validate themselves in the networked world. It so happens that this path tends to make the applications dissolve into the Win95/Office framework.

### Blackbird and Visual Basic

Blackbird offers developers a progressive execution environment that is designed to run applications better over online services and the Internet. One could write identical applications in Visual Basic and Blackbird. The VB applications would have to download in their entirety, then run locally. The Blackbird modules would execute dynamically. Also, VB is a programming environment. Blackbird doesn't require programming (though it will have a software developer's kit); it's a tool for professional designers. In Blackbird, developers drag and drop design elements. They can choose custom controls, then modify their property sheets. In a VB environment, they would choose objects, then code them to interact.

Blackbird will have a scripting language, probably C++ in the initial release. Over time, Visual Basic for Applications (VBA) will be the scripting language for Blackbird. VBA is a script-compatible version of Visual Basic that currently drives Microsoft's Office applications.

Much of what other Web developers hope to achieve with Sun's Java language, Microsoft hopes that its developers will do with Visual Basic, OLE and the Windows architecture. Also, someone will likely write an OLE control to interpret Java, which would bring Java closer to the OLE environment.

According to Rich Barth, the group product manager of MSN tools, today developers have to write to the limitations of Web browsers. In Blackbird, developers don't see a browser, they see an empty window in a Win95 environment and have control over everything that happens within it, including the menu bar. In that sense, Blackbird offers more design freedom than Netscape's innovations, the way HyperCard was more flexible than the inviolable Macintosh interface.

### What it is

Blackbird is designed as a full-life-cycle interactive application development system. It has three components: an authoring system called the Blackbird Designer; the Blackbird Server, which runs on Windows NT; and the Blackbird Client, a runtime module that lets users access and run Blackbird applications. Designers create "titles" that contain "articles."

Blackbird titles have three components: form layouts and other design elements, OLE custom controls to render data and the data itself. Articles can be dynamic, defined at runtime (see box, page 19). The whole system is extensible in much the way that developers today write applications for the...
Windows platform. Think of it as a way to turn an online environment into a platform similar to Windows -- no surprise there. (As is true for MSN, Blackbird does not support Windows 3.1.)

Without OLE, integration requires joint coding with each candidate application, as Macromedia is doing to make Director a part of Netscape. In the Blackbird vision, any application that is a good OLE citizen is a candidate for integration online. Macromedia is working with MSN to make this happen, though it could do so without Microsoft's cooperation.

What's in the box

Blackbird Designer will include title-management features such as an outline control, which automatically generates tables of contents; link management; a project editor; and one-button publishing: When a developer has finished a site, pushing a button releases it into production. Blackbird has limited site-management features, though the tools are OLE Automation enabled, allowing other applications to run them. Distributed OLE will do much of the link management (see NeXT's WebObjects, below).
Microsoft will also ship a version of Word customized for Blackbird that includes templates and SGML converters. The stylesheet in Blackbird Word will map to logical tags in BML and generate the right output.\(^5\) Because Blackbird separates content from style and emphasizes dynamic execution, it may never have WYSIWYG editing. Developers won't go in and tweak text so it fits better around images, etc.

Blackbird allows designers to integrate other functions on MSN, such as chat, bulletin boards, file transfer and e-mail. Caligari has announced a 3D development environment for Blackbird that will support the Virtual Reality Modeling Language (VRML).

Blackbird is in early beta test now, with live use on MSN scheduled for this January. The early MSN content-development tools are reputedly hard to use, so Blackbird has a vacuum to fill. Initially, Blackbird will be able to develop materials only for MSN. In fact, in the first release, all content created with Blackbird will have to reside on MSN, in Microsoft's data center, and will be visible only to MSN subscribers.

The second release, which Microsoft expects to put into beta test in the first half of 1996 and offer commercially by the end of that year (let's assume it happens in early 1997), will offer Web authoring. At that point, the same tools will be able to create content for MSN and the Web. That's a long time from now in Internet years.

**HTML, meet BML**

Blackbird has its own representation format, the Blackbird Markup Language (BML), which is a variant of HTML enhanced to be OLE 2.0-aware. Microsoft published BML’s specifications with its pre-beta release and will continue to do so.

OLE is the linchpin of Microsoft's strategy overall and particularly for Blackbird (see Release 1.0, 5-94). With it, online pages won't be limited to HTML, helper applications and Perl scripts. They will be able to contain any file, multiple windows, sidebars -- anything that developers can do with OLE. For example, OLE custom controls might render data and make it useful. They could display stock price data in Microsoft Graph, Excel or a custom applet, instead of in a static image file. If the person browsing didn’t have the applet, she could download or purchase it then and there.

Microsoft wants to make OLE components equal partners on the Internet, alongside helper applications, Java applets and anything else that may catch on. Most components of OLE are available on other platforms such as the Mac OS, so in principle, Blackbird stuff will eventually be useful on non-Microsoft systems. But Microsoft is less likely to be successful across platforms than other players, whose systems were designed to work on multiple machines from the start.

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5 Blackbird Word is more similar to Word Internet Assistant than to SoftQuad's SGML Author for Microsoft Word (see Release 1.0, 9-94). Eventually, the Microsoft team plans to merge Internet Assistant and Blackbird Word, allowing people to create titles (or pages) for either system.
Potential Catch-22?

A potential show-stopper for Microsoft in this scenario is network security, which has already drawn the curtain low over General Magic's Telescript (although General Magic's possessiveness with the environment helped hobble it, too) and has caused less concern with Java and Tcl. Telescript and Java were carefully designed with secure transportability in mind; Tcl has a safer version called Safe-Tcl (see Release 1.0, 2-94).

When it was born as the Direct Data Exchange (DDE) capability in the earliest versions of Windows, OLE was not designed with trustworthy distributed applications in mind. As it has matured toward OLE 2.0, it has increased in power dramatically and now offers options and extensibility so varied it is difficult to imagine how they can be reined in. Will distributed OLE objects be secure, or are they a better opportunity for virus coders? Perhaps Cairo's distributed object capabilities will help (see Release 1.0, 2-92, 8-92 and 5-94).

NEXT: WEAVING THE UNDERLYING OBJECT FABRIC

Over the past few years, NeXT has developed many advanced object technologies that complement -- but are independent of -- the NextStep operating environment, which now runs on Intel, Sun and other platforms (as does its more portable, OS-independent object layer, OpenStep). Recently NeXT announced an offering specifically for the Web called WebObjects.

WebObjects is not OpenStep for Websites, as one might imagine. Instead, it is a framework for building highly interactive Web applications that are database- and Web server-independent. Significantly, it offers access to distributed objects through Microsoft's OLE and the Object Management Group's CORBA specification (the Common Object Request Broker Architecture). Because WebObjects applications adhere to all these standards, they will work across multiple platforms.

These features are particularly important for companies developing highly dynamic, database- and application-driven Websites, such as those for online reservations systems, real-estate listings and those that are highly customized to the persons browsing. WebObjects works without any add-ins or helper applications on the browser (client) side. With it, developers should be able to customize Website logic more quickly than with databases and certainly much faster than by editing individual HTML pages and their related scripts.

WebObjects uses technologies that NeXT has developed over the past few years. The Enterprise Object Framework (EOF) offers flexible database access; Portable Distributed Objects (PDO) offer object distribution and interoperability; Distributed OLE (DOLE, pronounced dough-lay) offers a bridge between PDO and OLE. NeXT expects DOLE to be CORBA compliant in the second quarter of 1996.

Picking a path

NeXT chose this way to enter the Web market by matching its assets with market needs. As John Landwehr, WebObjects product manager, sees it, the
Web is moving in four directions: static publishing (e.g., the San Jose Mercury News on the Web), dynamic access (FedEx's package-tracking site), commerce (CDnow) and internal IS applications (private, multimedia Webs). NeXT is targeting the latter three, leaving publishing to other toolmakers.

Landwehr foresees plug-in objects that could offer credit-card authorization, calendar capabilities and other stuff. Java would make a great addition, although NeXT has given no indications that it will do so.

NeXT founder Steve Jobs demoed WebObjects at ObjectWorld by showing an interactive car showroom Website that featured Web pages dynamically generated based on user input. NeXT hasn't announced pricing for WebObjects yet. WebObjects should be in beta test this fall, with commercial release scheduled for the first quarter of 1996.
MICROSOFT: THE GOVERNMENT IS US?
by Esther Dyson

Microsoft's biggest challenge over the next few years is not how to fight the government, but how to fight the forces of maturity that would turn the company itself into a quasi-government. There is a general creeping malady that causes most large organizations to resemble each other, assuming characteristics most identified with central governments: one set of products fits all customers, everyone must be served, stability is preferred over innovation. In other words, the challenge is character, not strategy.

Overall, Microsoft has done a good job of continuing to behave like a competitive company. It still has the paranoia of a start-up -- or a dissident -- rather than the complacency of a monopoly or an entrenched government. Microsoft stands in marked contrast to, say, IBM. But the challenge grows greater as the company grows larger -- and as Bill Gates is treated as a visiting head of state wherever he ventures outside the US. The salvation may be the Internet, in the same way that the Justice Department revived AT&T, but left IBM to wither of creeping governmentitis. (And now the Internet and telecom deregulation may spur AT&T to even greater vigor.)

While it may feel unpleasant in the short run, companies need continuing challenge to stay fit and grow healthily. Otherwise they turn into monopolies (we mean this figuratively; the legal definition isn't the issue here). A monopoly resembles a central government, democratically elected perhaps (i.e. customers chose its better product), but with no system in place for new elections. It generally stops innovating, and tries to conserve its advantages rather than explore new markets. What happens next (sometimes much later) is usually a revolution.

So let's look at some other characteristics of central government -- and the contrasting behavior of Microsoft and IBM in each aspect.

First, a government attempts to serve all the people. It feels (properly) a duty to serve those people not adequately served by the market. IBM, for one, spends a considerable portion of its resources to serve customers it acquired years ago who are no longer profitable. It is still maintaining products such as IMS and OfficeVision, and is still working on OS/2. IBM feels a greater loyalty to its constituents (benefit recipients) than to its shareholders (taxpayers). If a particular program is not profitable, it can make it up from other product lines in the recentralized model the company is readopting.

Second, a government doesn't like to abandon mistakes; it tries to justify them. Like a government continuing to pour money into a failing aid program, IBM is convinced that one day its products will win. Besides, it has made a promise.

Microsoft, meanwhile, launches and retires products more scrupulously. It will push something for a few years, but it doesn't (usually) throw money down sinkholes. Unlike a government, it's innovative rather than predictable. It is happy to see new products wipe out old ones, and so it keeps beating competitors as well as cannibalizing its own products. Microsoft is still going after the best markets, rather than feeling an obligation to serve every niche. It wants to dominate the most lucrative markets, not all of them.

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VAT = DOS?

On the other hand, Microsoft does slip from time to time. Consider, for example, the DOS tax. DOS was something a majority of customers voted for, freely, over the years. Now it is virtually a "government" mandate: Until the Justice Department stopped the practice, Microsoft wanted to charge everyone for it (through an indirect tax collected by OEMs), regardless of whether an individual (or reseller) cared to take advantage of it.

Another government-like move. Wisely discerning that the support burden for Microsoft Network might overwhelm it, the company decided to reduce demand -- not by pricing, but by rationing: The first 500,000 customers get the service; the rest have to wait.

And now, the Internet

The Internet gives Microsoft the challenge of an environment where monopoly is hard (impossible) to impose. But it also gives the company the opportunity to fight it out firm to firm, creator to creator, but in a world that values diversity rather than standards, variety rather than commodity.

Thus, although the Internet presents Microsoft with a huge challenge, it's also an opportunity to continue its growth in a new market rather than eke out the last profits from an existing one. DOS will continue to generate revenues -- as will the various implementations of Windows -- but the future is on the Net. And on the Net Microsoft is not the incumbent.

When AOL complains that Microsoft can market MSN for free -- piggybacking on Windows 95 -- we wonder what would happen if Microsoft were to give Windows 95 away for free.... AOL would have far more cause to object -- and so of course would the thousands of retailers and other resellers who would lose their cut. (It is after all better to compete with a P&L-oriented company than with a government.) Of course, in the long run, Microsoft probably will adopt the Netscape distribution model -- as will most software/service vendors (see Release 1.0, 12-94).

While Microsoft continues to form new businesses and supersede the old ones, IBM is recentralizing. Bigness is good, proclaims Gerstner. We can offer worldwide solutions. That's true. But more and more of IBM's customers are downsizing, partitioning, fragmenting, working on local value. Microsoft seems to keep fissioning into new areas in which it can grow as rapidly as a small company.

The character issue

In the end the issue is character. Can Microsoft persuade the world that it is entitled to govern -- even in a portion of a decentralized world? Can it fend off governments and regulators? Can it persuade application and content providers that it means them no harm? Can it learn to co-exist in a fragmented world?

For both governments and companies, the new world of the Net means a different balance of power. In most fields, the majority will not rule; voters and customers will get their individual choices. Majority choices won't benefit from economies of scale the way they do in a world of standards.

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COMING SOON

- Visualization of information.
- Links, filters and navigation.
- Networked object graphics.
- The economics of the Internet.
- The analog world.
- And much more... (If you know of any good examples of the categories listed above, please let us know.)
WEB RESOURCES

Web development tool listings
WWW Virtual Library www.stars.com/Vlib/Providers/Tools.html
World Wide Web Consortium www.w3.org/hypertext/WWW/Tools/Overview.html
Vermeer Technologies www.vermeer.com/soft.htm

Sites built with NaviSoft's tools
Hearst New Media's Multimedia Newsstand www.mmnewsstand.com
Common Ground Software www.commonground.com
iGolf www.igolf.com

Corrigenda:
In Release 1.0, 6-95, we printed the wrong URL for
Factsheet Five's Web listing of electronic zines. The
proper address is www.well.com/conf/f5/f5index2.html

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September 25-28  Interactive Television Conference and Expo - San Jose, CA. Produced by Multichannel CommPerspectives and Microware. In case you still believe in ITV. Call Gary, (303) 393-7449 x225; fax, (303) 329-3453.


September 27-29  The Media Alliances Conference - La Jolla, CA. Sponsored by The Kelsey Group. Come understand who’s doing deals with whom. Call Natalie Kaye, (609) 921-7200; fax, (609) 921-2112.


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September 27-29  The Second Annual Media Alliances Conference - San Diego, CA. Sponsored by Netscape, Editor & Publisher and The Kelsey Group. Call Shirley Buster, (609) 921-7200 x501; fax, (609) 921-2112; tk@ix.netcom.com.

September 28-29  Integrated Office Conference '95 - Del Mar, CA. Organized by the Multi-Function Peripheral Association. For registration questions call (800) 603-6372; fax, (619) 447-6872; mfpa-request@cognisys.com with the subject "Send IOC '95 Info." Other questions, call Bob McComiskie, (617) 229-7021.

Sept 30-Oct 3  @Agenda '96 - Scottsdale, AZ. Sponsored by InfoWorld Editorial Products. Stewart's look ahead. Call Lia Lorenzano, (415) 312-0545; fax, (415) 286-2750.

October 2-6  Software Development '95 - Washington, DC. Organized by Miller Freeman Inc. Call Tom Loftin, (800) 441-8826 or (415) 905-8120; fax, (415) 905-2222; sd95east@mfi.com.

October 3-5  PC Expo - Chicago. Organized by Bruno Blenheim. Call Annie Scully, (800) 829-3976 or (201) 346-1400; fax, (201) 346-1532.

October 3-11  Telecom '95 - Geneva, Switzerland. Organized by the ITU. The monster global telecom show, with almost 900 exhibitors. Call Fernando Lagrana, 41 (22) 730-6161; fax, 41 (22) 730-6444; telecominf@itu.ch; http://www.itu.ch/TELECOM.


October 8-10  International Publishing Conference - Frankfurt, Germany. Organized by AIC Conferences. Call Helen Fulda, 49 (69) 6091-9333; fax, 49 (69) 620-677.

October 8-11  Graph Expo '95 - Chicago. Organized by Graphic Arts Show Co. Call Chepi Dicalogero, (703) 264-7200; fax, (703) 620-9187 or (800) 874-0858, option 3.

October 9-12  Microprocessor Forum - San Jose, CA. Sponsored by MicroDesign Resources. The high point of the circuit-maker circuit. Call Lynn Rodriguez, (800) 770-4006 or (707) 824-4006; fax, (707) 823-0504.


October 11-14  Medical Conference - Charleston, SC. Organized by TED Conferences. Will Richard be in ER next? Call Chris Robin, (401) 848-2299; fax, (401) 848-2599; wurman@media.mit.edu.

October 15-18  East-West High-Tech Forum - Bled, Slovenia. The sixth annual sponsored by EDventure Holdings. Call Daphne Kis, (212) 924-8800; fax, (212) 924-0240; info@edventure.com.


October 16-20  8th International Symposium on AI - Monterrey, Mexico. Organized by ITESM. Call Jose Sanchez, 52 (8) 328-4197; fax, 52 (8) 328-4189.


October 18-19  SoftExpo-Europe '95 - Amsterdam. Sponsored by Software Publisher magazine, the Netherlands Ministry of Economic Affairs and the Netherlands Foreign Investment Agency. Call Barb Anderson, (303) 745-5711; fax, (303) 745-5712.

October 19-20  Messaging Solutions Summit - San Francisco. Organized by EMA. Call Jennifer Herzberg, (703) 524-5550; fax, (703) 524-5558; meet@ema.org.

October 22-25  Romancing the Nets - Profit Strategies for the Electronic Marketplace - Toronto, Canada. Sponsored by the Information
October 24-25  @Pricing for Content and Advertising on the Internet - New York City. Organized by Global Business Research LTD. What are the Web equivalents of rate cards and CPM? Call Kelly Silver, (212) 645-4226, 800-868-7188; fax, (212) 645-4490.

October 24-26  Business Application Packages Conference - Orlando. Organized by DCI. Call Margaret Mullen, (508) 470-3880 x315; fax, (508) 470-1992; DCIconfl@aol.com.


October 30-31  International Conference on Electronic Commerce - Austin, TX. Sponsors include the NSF, RGK Foundation, IC2 Institute, UT Austin and the University of Rochester. To register call the RGK Foundation, (512) 474-9298; fax (512) 499-0245. Questions? Call Andrew Whinston, (512) 471-8879; fax, (512) 471-0587; abw@curly.cc.utexas.edu.

Oct 30 - Nov 1  Online '95 Conference and Expo - Chicago. Organized by Online, Inc. Call Tasha Heinrichs, (203) 761-1466; fax, (203) 761-1444; online@well.com.


Oct 30 - Nov 2  @Fall Internet World - Boston. Organized by Mecklermedia. Time to catch up on Internet news. Call Beth Edwards, (203) 341-2807; fax, (203) 226-6976; bethe@mecklermedia.com.

Oct 30 - Nov 2  Columbia University's Third International Training Conference for Telecommunications Regulators - New York City. Organized by Columbia Institute For Tele-Information. Call Alex Wolfson, (212) 854-4222; fax, (212) 932-7816; citi@research.gsbcolumbia.edu.


November 3-5  The Hackers Conference - North Lake Tahoe, UT. Leave your passwords at home. Call Glenn Tenney, (415) 574-3420; fax, (415) 574-0546; tenney@well.com.

November 6-7  SIMBA Online Conference '95 - Washington, DC. Sponsored by SIMBA Information Inc. Call Jenifer Jirouard, (203) 834-0033; fax, (203) 834-1771; simba99@aol.com.


November 6-10  Women.Online - Washington, DC. Organized by The Kelsey Group, Inc. Finally! A conference that addresses women's issues online. Call Nancy Karas, (609) 921-7200; fax, (609) 921-2112; tkg@ix.netcom.com.


November 13-17  Fall Comdex - Las Vegas. Sponsored by Softbank. The Big One. Grab your party list. Call Chris Peterson, (415) 324-2490; fax, (415) 324-2497.

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### November 13-14
**Strategic Uses of Databases** - New York City. Organized by Strategic Research Institute. Call Susanne Sicilian, (212) 302-1800 x259 or (800) 599-4950; fax, (212) 302-9850.

### November 14-15

### November 14-18
**International Association of Amusement Parks and Attractions 77th Annual Convention and Trade Show** - New Orleans. Sponsored by the IAAPA. Find out how all that VR will be used! Call Susan Mosedale, (703) 863-4800; fax, (703) 863-4801.

### November 28-30

### November 29 - Dec 1
**International Conference on Evolutionary Computing (ICEC '95)** - Perth, Australia. Sponsored by the IEEE. Come help find the Web's missing link. Call 61 (9) 380-1969; fax, 61 (9) 380-1101; ec95-request@ee.uwa.edu.au.

### November 29 - Dec 1
**@Western Cable Show** - Anaheim, CA. Organized by the CCTA. If you attend one show to learn what the cable industry is up to, make it this one. Call Mary Pittelli, (301) 206-5393.

### November 30 - Dec 3
**The Fourth International Conference on Telecommunications in Education (Tel*Ed '95)** - Fort Lauderdale, FL. Organized by ACM SIG/Tel. Call Lori Novak, (503) 346-2411; fax, (503) 346-5890; Lori_Novak@ccmail.uoregon.edu.

### December 3-6

### December 3-6

### December 5-7
**DB/EXPO** - New York City. Organized by Bruno Blenheim. Call Annie Scully, (800) 829-3976 or (201) 346-1400; fax, (201) 346-1532.

### January 5-8

### January 14-16
**Second Annual State of the Industry Strategic Business Meeting** - Miami. Organized by the Interactive Services Association. Call Patti S. McKnight, (301) 495-4955; fax, (301) 495-4959; ISA@isa.net.

### March 17-20
**PC (Platforms for Communication) Forum** - Tucson, AZ. Sponsored by us: You read the newsletter; now meet the players. Call Daphne Kis, (212) 924-8800; fax, (212) 924-0240; daphne@edventure.com.

*Events Esther plans to attend.
@Events Jerry plans to attend.

Lack of a symbol is no indication of lack of merit.
Please let us know about other events we should include. -- Luba Yurchyk
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Daphne Kis
Publisher