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INSIDE



PRODUCTS • TRENDS • ISSUES • ANALYSIS

# FrameMaker 2.0

## *The Art and Science of Document Processing*

**By Ronni T. Marshak**

THE STORY GOES like this. Ph.D. candidate at Columbia Charles Corfield was working on his dissertation in astrophysics. Distressed by not finding a good software tool for writing and publishing his highly technical document, he went out and created FrameMaker.

Nice story, with some facts thrown in here and there, but basically false. True: Charles Corfield was a Ph.D. candidate at Columbia. True: He was majoring in astrophysics. But he was not in search of the *(continued on page 3)*

• E D I T O R I A L •

# Unix: At the Forefront of Innovation

## The PC Environment is No Longer the Sole Bastion of Creativity.

**By Judith S. Hurwitz**

ONE OF THE biggest problems with the Unix environment is the lack of innovative applications. Users are quick to point out that the PC developers are the ones who have been responsible for most of the exciting software that has evolved over the last few years. Most of the interesting applications that have started to creep onto Unix platforms recently were first developed for PCs and then ported to run under Unix.

But we are beginning to see a change. Some of the most exciting developments in applications environments are taking place in the Unix world. Much of this work has its roots in the university community. The de facto standard X-Window came out of MIT, while the Andrew System was developed at Carnegie-Mellon (our feature next month). And students from these and other universities around the world have carried the experiments out to the computer companies they helped create.

These graphical environments will become the standards of tomorrow. They will be object oriented and allow for the graphical representation of information. Even more exciting will be the forthcoming use of image within applications, both static and video. Many of the applications written for these environments will become part of the next generation of "office."

The stage was set at this year's UniForum conference. In every corner of this highly charged event, vendors were displaying graphical interfaces, X-terminals, and X-Window-based systems. Even the "good old" standard applications are beginning to change their look.

We expect that the stars of next year's UniForum will be the applications. In the future, industry watchers might well flock to this and other Unix conferences to see the next-generation applications, much the same way they now flock to Comdex. It's not a farfetched notion. We're already beginning to see PC hardware vendors like Dell Computer and Tandy display at UniForum, pledging to become key Unix players. These slick marketeers are smart enough to realize where the industry is moving. The conversion of the low-end hardware vendors will help draw application designers to initially develop their new applications for the Unix market.

The Open Desktop announcement made last month by Digital, SCO, Locus, Relational Technology, and Tandy is another indicator of the transformation of Unix into an applications platform. By bundling X-Window, Digital's XUI Toolkit, OSF's Motif, Ingres/386, and SCO Unix/386 System V.3.2 into a $995 package, these vendors are reaching for the mass market that was to belong to OS/2. The pricing is incredibly aggressive. If users were to purchase the same version of Ingres/386 outside of Open Desktop, they'd pay $2,000. (Is Digital trying to clobber OS/2?)

It is no coincidence that, at the same time traditional mass market PC vendors are hopping on the Unix bandwagon, the low-end market is in turmoil. The reason is simple: OS/2 applications have not hit the market. OS/2 is not yet a 32-bit operating system and, therefore, is not yet capable of handling the new graphical, object-oriented environments, which will define the next generation of innovative applications. The Unix operating system has been there, waiting in the wings—at the right time, the right place, ready to jump in and steal the show.

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## •FRAME•

(continued from page 1) ultimate document processor when he created Frame. Rather, Corfield became fascinated with the computer industry and with the idea of writing a widely-used software product. His original plan was to develop a hypertext system. But, realizing that hypertext isn't interesting until you have interesting things to put together, he set about developing a program to integrate text and graphics. Corfield found that the card metaphor for hypertext was confining. He felt that the document was a better representation of knowledge. And technical documents were particularly well suited for eventual use by a hypertext system.

**FRAMEMAKER PROTOTYPE.** In 1985, Corfield sent out a prototype of FrameMaker to a number of hardware and software firms. The software had been written on a Sun system, and, indeed, it was at Sun that Steve Kirsch (inventor of the optical mouse) and David Murray, both of Mouse systems, first saw the product in the spring of 1986.

They were so impressed with the software that it took only four weeks from their first sighting to the creation of a company to develop and market the product. In April of 1986, Corfield, Kirsch, Murray, and a fourth party, Vickie Blakeslee, became the founders of the internally funded Frame Technology Corporation. (Frame had its first round of venture capital investment just under a year ago.)

*Between Versions 1 and 2, Frame took a split focus. It set about to improve the technology and to open FrameMaker to new platforms, recognizing that a Sun-only approach was very limiting.*

Three months after its founding, the company shipped Version .6 to a limited number of sites. Between 5 and 10 copies of FrameMaker were sent off to the engineering departments of large corporations. The sites paid full price for the product and were guaranteed free upgrade to Version 1.0 plus significant input into the development of the product.

This strategy allowed the company to become profitable in its fourth month, a condition that has prevailed ever since.

The popularity of FrameMaker spread via word of mouth, and, by the release of Version 1.0 in March 1987, there were over 300 user sites. All users had direct E-mail contact with Frame. Free E-mail contact is still available to any Frame user.

It has been two years since the release of FrameMaker 1.0. The company has shipped incremental versions, the latest being Version 1.3, plus an international version and an X-Window version. Two years isn't an enormous time lapse between versions, but, considering how quickly Version 1 happened, it seems like quite a while. David Murray, vice president of Advanced Development, explains that, between Versions 1 and 2, Frame had to take a split focus. Of course, it set about to improve the technology of the products, but it also is committed to open FrameMaker to new platforms, recognizing that a Sun-only approach was very limiting. Version 2.0 not only vastly improves functionality, but also runs on a variety of platforms.

# Product Philosophy

FrameMaker was not originally designed as the primary tool for a user. Nor was it intended for use by one person writing about another's work. Corfield conceived of the software as a product for authors of technical documents, with FrameMaker sitting on the Sun alongside the CAD/CAM or other technical/engineering design tool.

The product was also intended to provide all the authoring/publishing tools you might need, either directly or through interfaces to specialized tools, such as spreadsheets.

FrameMaker directly includes a document processor (object-oriented/structured text editor with desktop publishing capabilities), vector graphics editor (with capabilities falling somewhere between MacDraw and Adobe Illustrator), a WYSIWYG equation editor with basic arithmetic and algebraic capabilities, live links (compound documents), and book handling (very large document management).

Interfaces are being developed with third-party programs. As yet, no specific announcements have been made, but we do know that targeted applications include business charting, spreadsheets, and database management systems.

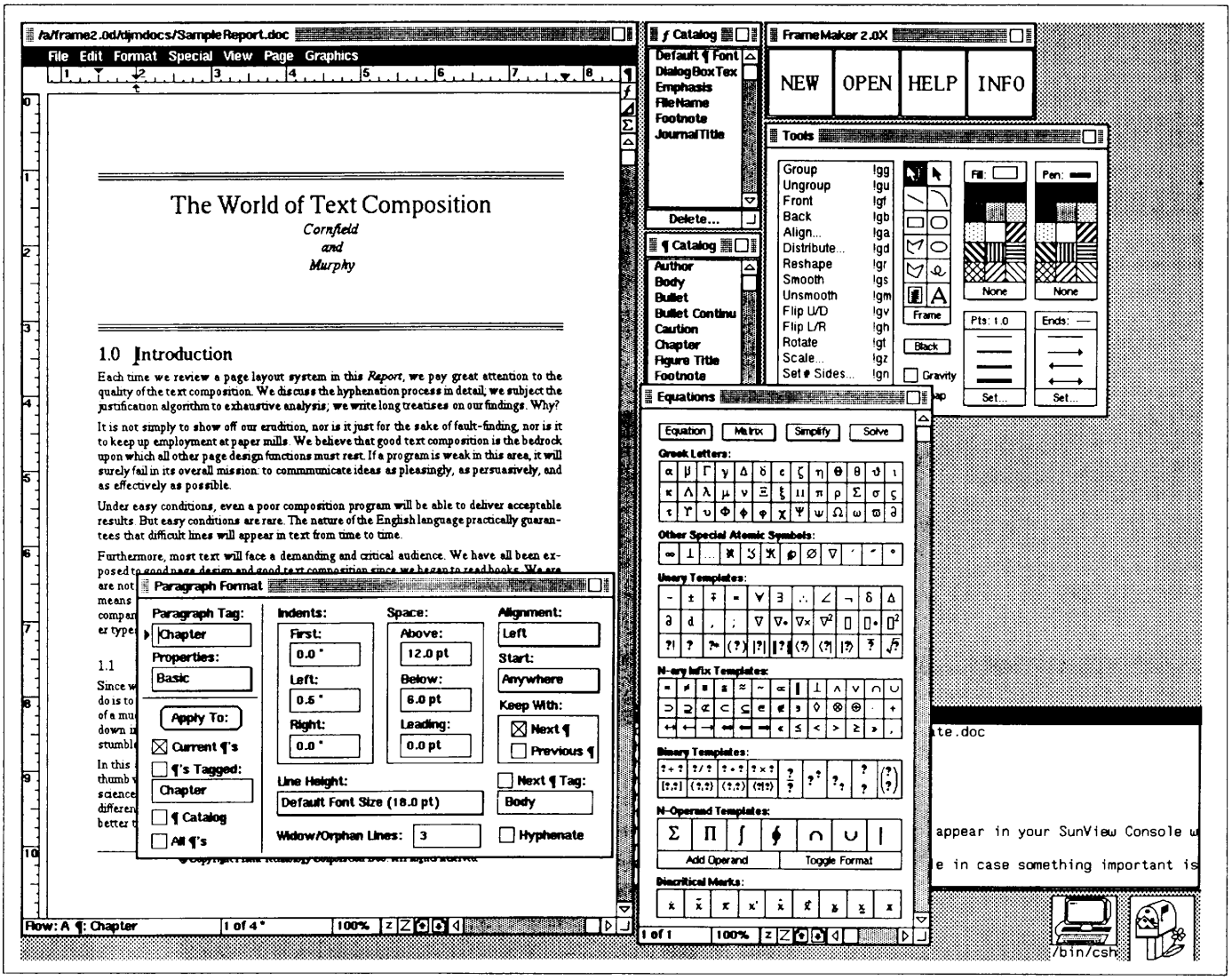
**INTEROPERABILITY.** One of the stated goals for FrameMaker is interoperability. It is part of the strategic plan that the product run transparently on a heterogeneous network. Unlike its major competitor, Interleaf, which has created its own operating environment and conventions that work on various platforms, FrameMaker is designed to fit into the native environments of the various platforms—to be a good citizen. FrameMaker on the Sun will look like a Sun application, on NeXT, it will be a NeXT application, and so on. Though there has not yet been any announcement, rumor has it that a good Macintosh citizen is also in the works.

In addition, Frame has committed to supporting both X-Window and Open Look.

For the purposes of this article, we will review FrameMaker 2.0 as it runs on Sun systems under SunView.

# FrameMaker 2.0 Interface

As stated, the FrameMaker philosophy is to take advantage of the native environment under which it runs. Therefore, the Sun version of the product takes full advantage of SunView, including all SunTools. Data can be exchanged between any Frame window and any other SunView application. The SunView




*A sample FrameMaker screen. Note the Main FrameMaker window in the upper right corner. This remains open throughout the FrameMaker session. Once opened, the palette of graphics tools, the equations palette, and the catalog and format boxes can remain open, or they can be closed by the user.*

"stuff" command, which will take any unformatted text from a SunView window and put it into a special buffer, can copy this text into a FrameMaker document or dialog box. This can come in very handy. For example, if you need to supply a very long pathname to a file within a dialog box, you can grab the pathname from a Sun directory and stuff it in. Or you can stuff an E-mail message into a document.

**WINDOWING.** Up to 20 sizable Sun windows may be opened at one time. Any or all of these can contain FrameMaker files. New document windows always open at the same position on the screen, so they, in fact, cover each other, but they may be moved as well as sized. And the system remembers the position of a document when its window was last closed, so the file will always redisplay where it was last positioned.

Document windows can also be iconized.

**MAIN FRAMEMAKER WINDOW.** When you load FrameMaker, a small row of menu options, called the Main FrameMaker Window, displays in the upper right corner of the screen (see illustration above). From this menu bar, you can create a new document, open an existing file, get help, and find out basic information on the system, such as copywrite information, version number, and licensing information. This window stays open for the entire Frame session.

**MENUS.** FrameMaker uses pull-down menus and dialog boxes. The designers at Frame were faced with a challenge: How to offer a lot of functionality in an unintimidating fashion. They determined that the number of menus should be restricted. So there are only seven standard pull-down menus within documents—Document, Edit, Format, Columns, Special, Page, and Graphics. All functionality is found within these menus and the

corresponding dialog boxes. Ah, but those dialog boxes. All the functionality had to be accessed somewhere, and the boxes are the chosen vehicles. Most dialog boxes (we won't say all, because some are very simple) are chock-full of options, addressing several related operations within the one box. This can be confusing initially, especially in some of the formatting boxes, where the same or similar words are used for similar actions. (For example, as shown below, within the Column Layout dialog box, you can apply the layout information to the master page or to pages using the master page.) If you approach these dialog boxes systematically, they are actually easy to figure out. And once you have used them a few times, they become a snap. It's the first time that's a dilly.

**KEYBOARD COMMANDS.** Every mouse stroke has a keyboard equivalent. In fact, of the three Frame employees who demonstrated the system to us, not one used the mouse as the primary command tool. Commands are mnemonic, but, since there are so many of them, it takes a while before you can learn them all. The pull-down menu options indicate the keyboard alternatives so that a user can learn the commands almost by osmosis.

The keyboard is also fully programmable, so commonly accessed operations can be mapped to a specific key using macros (see below). The documentation provides instructions for more dramatic keyboard mapping. An experienced user can set up his or her personal keyboard map at login. Or a systems administrator can set up a standard keyboard map for a site. However, the process is not intuitive for the average user. Best stick with macros.

Whenever possible, FrameMaker offers the Sun keyboard-mapping conventions, though these, too, are customizable.

**MACROS.** FrameMaker provides a keystroke macro capability. Any set of up-to-150 keystrokes can be easily captured, named, and saved in the macro file. Temporary macros can be created for the current session only. Macros can include menu commands, editing commands, and dialog box commands. Note that this is a *keystroke* capture only. Mouse clicks will not be saved.

The main drawback of the current implementation of macros is that there is no online listing of available macros; you must remember what you saved and under what name. Also, there is no way to edit your stored keystrokes online in a comprehensible (not Unix code) file.

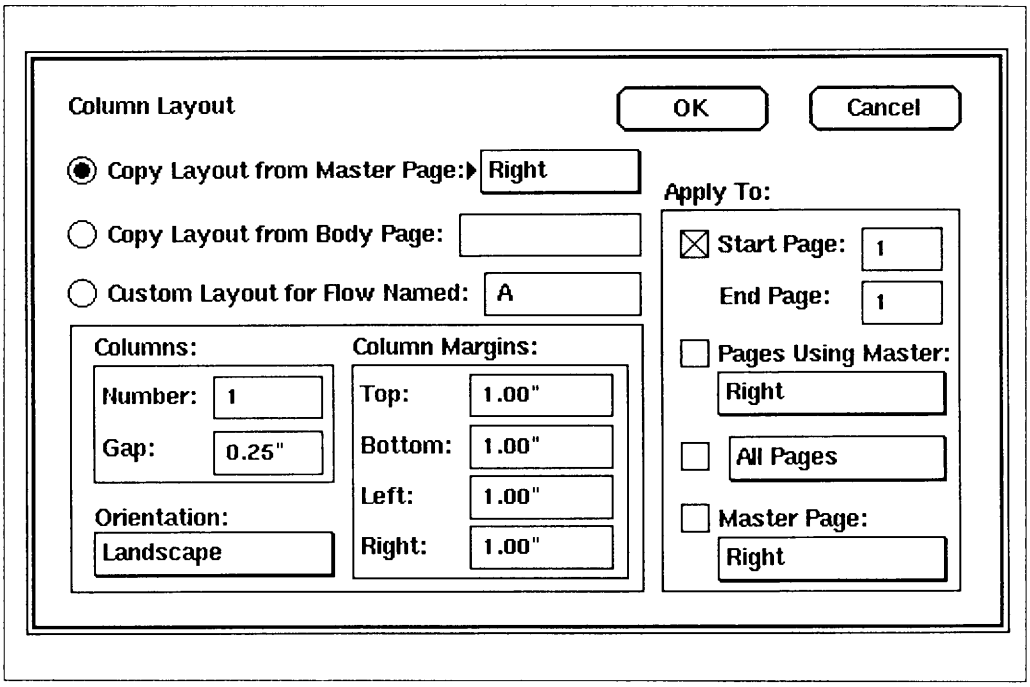
**HIDING UNIX.** Most of the time, the user is shielded from the Unix operating system, but occasionally FrameMaker falls down on the job. For example, the paragraph numbering feature requires you to notate the levels of numbering with Unix-like commands. So, to notate something like "1.2.1", you must type in "#.#.+\t". Not particularly intuitive.

## Document Design

The Frame paradigm for document design is based on the concept of master pages, reference pages, and body pages. These govern the general layout of the document, though individual body pages can be modified at any time.

**REFERENCE PAGES.** Multiple reference pages can be defined for a document. A reference page includes the following information:

- Positioning and separator for footnotes. You draw the type of line you want as a separator right on the page.
- Separator frames for artwork attached to paragraph formats. For example, if you want a paragraph format called Title to always be followed by a thick line three inches long, you would create the line on the reference page.




*In a FrameMaker dialog box, the same options can apply to more than one action. In this Column Layout box, the options for Pages Using Master and for Master Page are the same. This can cause confusion initially.*

- Shared artwork for artwork that is named and shared across document. For example, diamond-shaped bullets.

- Table of contents format.

- Any instructions specific to using this set of reference and master pages (used primarily in templates; see below).

Multiple reference pages can be assigned if, for example, a different footnote style is used on certain pages.

**MASTER PAGES.** Master pages determine the layout of a standard (or body) page, including the following:

- Columns. These used to be called TextRects (text rectangles), but Frame got wise and renamed them. The master page includes the general column layout (i.e., single column, two evenly spaced columns, one banner column across the top third of the page with a three-column format running down the rest of the page, etc.).

- Flow. This determines the flow of text from one column to another. Text flow does not need to be sequential from column to column. For example, in a two-column layout, the first column on page one could flow into the first column on page two, then back to the second column on page one, etc. This is particularly useful for maintaining storylines or sidebars, often used in publishing. Since flow can be easily defined, the text can be rearranged quickly.

- Headers and footers, including their positioning and any shared text (e.g., the word "page"). You can also reference any named text object or variable (see below) in the header or footer. For example, if you had a paragraph format called "Title," you could indicate that the header should include the Title paragraph contents closest to the top of the page.

- Repeated graphics. For example, the company logo can be positioned on every page.

You can define an unlimited number of master pages. For example, it is quite common to specify a different master for left pages than for right pages.

**Templates.** Any existing document can be accessed as a template on which to base another document. The template document includes any reference pages, master pages, paragraph format catalog (see below), and text. Most users delete all but the reusable text (e.g., the word "memo" in a memorandum template) before saving the document.

**ANCHORED AND UNANCHORED FRAMES.** The columns set up on the master pages are standard text columns. Graphics, image objects, or text which is not part of the main flow are positioned in one of two types of frames:

- Anchored frame. A frame whose position is anchored between two characters in a text flow. Thus, if the text flow is edited and the anchoring characters move, the frame moves with it. This type can also be considered a relative frame because its positioning is relative to the text, not fixed on the page. The anchored frame command is on the Special menu.

- Unanchored frame. A frame whose position is fixed at a specific position on the page. This type of frame is created with the frame command off the graphic tools window.

Frames can be sized with a mouse or by specifying the desired height and width.

**PARAGRAPH STYLES.** Typical stylesheets, those popularized in the word processing world by Microsoft Word, are hierarchical. In other words, paragraph styles are based on other paragraph styles. According to Frame, this method is very convenient for static designs, but the company feels that it is crippling for changing documents because of the "ripple effect." If a paragraph style is based on another style, what happens when the original style is changed?

FrameMaker works on a nonhierarchical method of style definitions. Each paragraph style is a separate, but equal, entity. Paragraph formats, as Frame calls them, are named, and can be stored in a document-specific Paragraph Catalog.

*FrameMaker works on a nonhierarchical method of style definitions. Each paragraph style is a separate, but equal, entity.*

**Designing a Paragraph Format.** The Paragraph Designer window (which looks like a dialog box, but can remain open on screen) allows you to specify a multitude of formatting options for a paragraph, including the following:

- Default font, which defines the font family (Times, Helvetica, etc.), font variation (bold, italics, etc.), point size, style (underline, small caps, etc.), color (used in color separations only—FrameMaker does not support on-screen color), and spread (amount of space between characters).

- Numbering, which supplies formats for numbered lists, bulleted lists, numbered section headings, numbered figures and tables, etc. You can specify text to be included (e.g., "Illustration number"), tabs, and numbering styles (e.g., numeric, lowercase alphabetic, roman, etc.).

- Tabs, which define positioning, alignment, and leader.

- Advanced, which supplies hyphenation parameters (maximum number of consecutive lines with a hyphen, etc.), word spacing (how much space is permissible between words to achieve more even spacing), and paragraph frames (graphic elements, such as ruling lines, which are to display either above or below the paragraph).

While all these options are available through the same window, they are not all chosen at the same time. A single field in the window lets you choose which set of characteristics you want to work with, thus minimizing on-screen clutter and confusion (see illustration below).

**Paragraph Format Catalog.** As mentioned, once a paragraph format has been designed, it can be assigned to the catalog. The formats within the catalog are always available within the document. But the true value of its catalog is in the ability to globally change all instances of a paragraph style in a single move. If, for example, you determine that the format tagged "Section" should change from Times Roman to Helvetica, you could change a marked instance of the paragraph, all the Section paragraphs within the current document, or all the "Section" paragraphs yet to be built with your catalog.

While catalogs are document specific, you can copy individual paragraph formats or entire catalogs to other documents.

**MARKERS AND VARIABLES.** FrameMaker uses markers, nonprinting characters stored in text, to contain text and/or other information to be used to generate headers and footers, indexes, lists of figures and similar list, nonprinting comments, or hypertext links or commands (see "Hypertext" below).

Variables are special text strings which can be used as system variables or user variables.

**System Variables.** System variables are predefined tags for changing information that is to be included in headers and footers (e.g., current date, document name, page number, section titles). The values of system variables are updated automatically when a page is redrawn. References to system variables must be positioned on master pages.

Users can change the definition of a system variable—for example, the current page number variable can be modified to include the word "Page" followed by the number. But users may not change the names of the system variables. The system does provide four variables, called Header/Footer 1-4, which can be modified for individual use. A scroll list of building blocks—the proper tags in the proper Unix syntax—is available for creating your own system variable definitions. For example, with the building blocks, you could specify that Header/Footer 2 contain the document name (<$docname>), total number of pages (<$total pages>), and the current year (<$year>). Although the building blocks are not in the friendliest syntax we have come across, they can be selected from a list, and the names are pretty self-evident.

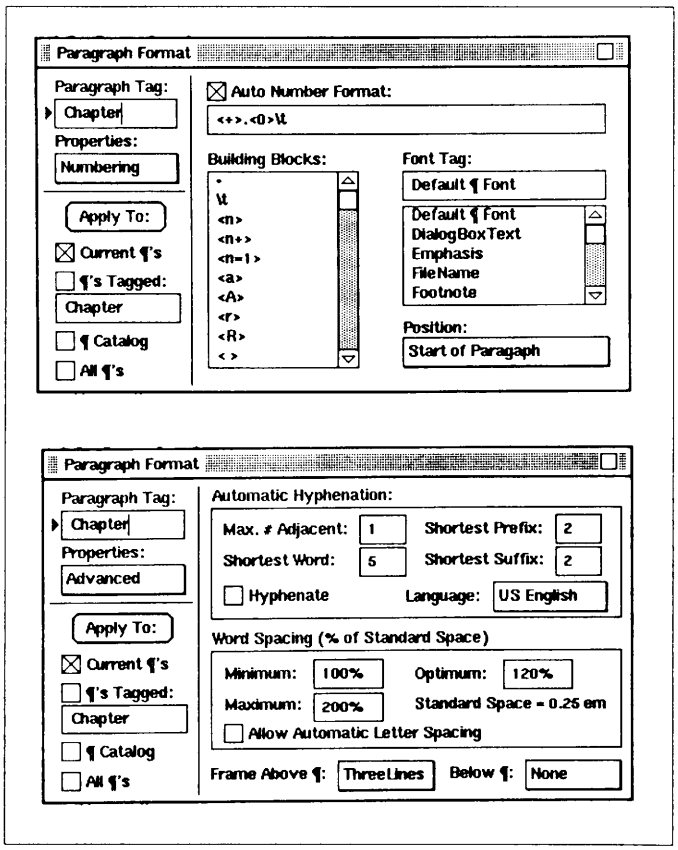
**User Variables.** User variables can be considered glossary entries or boilerplate text strings. The value of a user variable changes only when its definition is edited. User variables may be referenced anywhere in a document.

Variables can only include up to 255 characters, and, if you remember, the macro facility only stores up to 150 keystrokes, so neither will accomodate long boilerplate sections.

Defining a user variable is fairly easy, but there is no keystroke capture mode. You would use a macro for that. The variable definition is entered into the dialog box. If you want to use a specific font, you can select the appropriate one from the list of building blocks.

**HYPERTEXT.** One of FrameMaker's claims to fame is that the hypertext documentation system for the Sun 386i was written in FrameMaker, as is Frame's help system.

Hypertext links are markers that link two different sections of a document or several documents together. You can enhance the linked words in any way (underline, italics, bold, etc.), and




*Two views of the Paragraph Designer window. The left side of the window remains constant, while the right portion changes depending on the properties being addressed. The first window sets numbering options, while the second addresses the advanced properties. Notice in the numbering window the Unix style of specifying tabs—"(\t)"—in the building blocks box.*

when you click on the linked text, you jump to the referenced position in the file.

Hypertext documents must be stored in a locked format. This renders the document uneditable, thus limiting the ultimate power of the feature. But hypertext links are very useful for online documentation or for any other static document that is distributed online.

**BOOK-HANDLING.** Like many publishing packages, FrameMaker provides a group of features for managing large documents or books. These typically include creating a single table of contents and index for multiple related documents and ensuring consistent numbering schemes for illustrations, footnotes, tables, etc. In FrameMaker, book documents are displayed in a sequential list. Changing the position of a file within the list will change its sequence in the book and, thus, all affected numbering schemes. You can also change the format of all documents within a book in one step, using a book catalog of formats, and you can print the book in one command. You cannot view a book as a single document (a nice feature which is available in Interleaf), but you can easily view the documents in order.

**Support for Coauthoring.** Redlining and annotation are not available yet. But there are workarounds. For example, you could create a separate tag for each reviewer and then search for comments by tag. There is a "margin comments" tag which does not affect the printing of a document, an important aspect of annotation, but comments are limited to one line.

You can also use change bars to point out editing changes. The automatic change bar feature will indicate anything you delete or add. All change bars can be cleared with a single command. You can also choose change bars as a font attribute, so, if you didn't want to mess up the screen with change bars throughout your document, but you did want to call attention to one specific change, you could apply the bar as a paragraph characteristic.

Security is also not optimized for collaborative writing. Read/write permission by individual, group, or public may be assigned at the file level. But there is no safe mechanism to allow more than one person to work on the same file simultaneously. There is a nice warning system: If you access a file that someone else is already editing, you get a warning. However, if you go ahead and open it, the last person to save the document wins. In general, the second person to open the file thinks, "I'm not going to change anything. I just want to read it." But what happens when he or she notices a typo, instinctively corrects it, and then, forgetting the warning message, saves the document? He or she could have clobbered a lot of someone's work.

We look forward to document security systems based on the database model of record-locking, where different sections of a single document can be locked as they are being edited.

We said that these coauthoring features are not available—yet. This is not to say that Frame has promised that they are on the way. But we are confident that Frame and its competitors are realizing the value of coauthoring tools and are hard at work to supply them. Call it a leap of faith.

## Graphics Capabilities

FrameMaker does not offer high-end graphics for design work, but it does offer a basic drawing package with an internal resolution of 65 thousandths of a point for text or graphics. Features include:

- Rounded rectangles
- True spline-handling or Bezier curves
- Customizable arrowheads on any open line, arc, or spline
- Custom line-widths (from .015 to 360 points)
- Color separation
- Gravity
- The ability to flip and rotate text and graphics

Graphics tools and fill patterns are selected off a palette or, if you choose the "small palette" option, the less popular options are available on the Graphics menu.

## On Structure and Object Orientation

While FrameMaker is not as structured an editor as, say, Lotus Manuscript (by structured editor, we mean that each section of the document—introduction, executive summary, conclusion, etc.—is part of a larger defined structure, so that, for example, if a section is moved, any corresponding subsections are also moved), it does provide basic relational structure capabilities. For example, you could define a paragraph format tagged "section" to always be followed by a paragraph tagged "subsection."

*While FrameMaker is not as structured an editor as, say, Lotus Manuscript, it does provide basic relational structure capabilities.*

Nor does FrameMaker offer the level of object-oriented editing as one of its main competitors, Interleaf. In the Interleaf products, each paragraph tag is displayed so that, by moving the tag, you move the entire paragraph.

But FrameMaker is very flexible, very user definable. And, indeed, paragraph tags, markers, and variables are all structured objects that can be manipulated as individual items, as evidenced by the ability to edit an paragraph's definition, thereby globally changing all such tagged paragraphs.

# Compound Documents

FrameMaker offers three different levels of links between a Frame document and an external file:

- Imported text and graphics
- SunView Clipboard copy and paste
- Live links

**IMPORTED TEXT.** Through the import command on the File menu, text in the following formats can be pasted into a Frame document:

- ASCII
- DCA
- MultiMate
- troff
- WordStar
- WordMarc
- Interleaf
- Microsoft Word
- MacWrite
- Microsoft RTF

The content of the external file is not linked to the original in any way. It is a straight paste operation.

**IMPORTED GRAPHICS.** Graphics may also be pasted in, but, in addition, the external graphics file may be referenced, creating a hot link—whenever the source file is changed, the graphic within the document will change—to the document. The link may be cut at any time. Graphics may be imported in the following formats:

- Encapsulated PostScript (eps)
- MacDraw
- IGES
- HPGL
- Sun monochrome and eight-bit raster files
- MacPaint
- TIFF

The process for importing is very simple—a menu pick followed by a small dialog box where you choose whether to paste in the external file or reference it by name.

**SUNVIEW CLIPBOARD.** If the source file has enough intelligence and awareness of SunView to copy both the bit-mapped image of its data and the actual data into the clipboard, FrameMaker can paste the clipboard contents into a document. There is no link between the data and the source file. However, this method can be useful for moving data back to the source application for manipulation. For example, let's say you need to create a spreadsheet specifically for positioning in a Frame document. Now, FrameMaker doesn't have its own spreadsheet facility, so you create the sheet in, say, 20/20. Instead of storing the sheet, you can send it directly to the clipboard and, from there, to the Frame document. Later, when you need to update the figures, you can send the data back through the clipboard to 20/20 for manipulation.

This methodology is not optimal. It makes a lot more sense to create a link between the source file and FrameMaker, but this requires customizing the source application to be Frame aware (see below). It is an easier job to customize an application to be SunView aware. So, for those applications that take advantage of SunView but are not a "Frame Partner" (those companies that have agreed to support this capability), this method is very useful.

**LIVE LINKS.** Live links between a source file and a Frame document can be established. The external application must be customized to allow this flow of information. Frame provides free sample source code to any software developer that wants to establish links to FrameMaker.

Basically, the customization adds an option to the external application's menu or command set: Send to Frame (or some such wording). When a file that is referenced through a live link is modified, the Frame document will not automatically change. Rather, a warm link is established, which requires the Frame user to request an update on all inset data.

The source application can also be used to manipulate data that is stored directly into a Frame document. For example, you would create a worksheet in a spreadsheet application, but, instead of filing it and then referencing the file in FrameMaker, you would send the data directly to the Frame document. The worksheet is not stored at the source. The link between the data and the source application still exists, though. When you want to rework the data, it will flow back to the original spreadsheet application for editing.

When we conducted our research, there were not yet any applications upon which we could test the intelligent inset capability. But the process is simple to do, assuming it all works as planned.

*The compound document capabilities of FrameMaker 2.0 are impressive (or will be, if enough applications are customized to work with Frame).*

The compound document capabilities of FrameMaker 2.0 are impressive (or will be, if enough applications are customized to work with Frame).

We still look forward to the day when a compound document environment could create intelligent insets without first customizing external applications. Only then will heterogeneous environments be truly transparent.

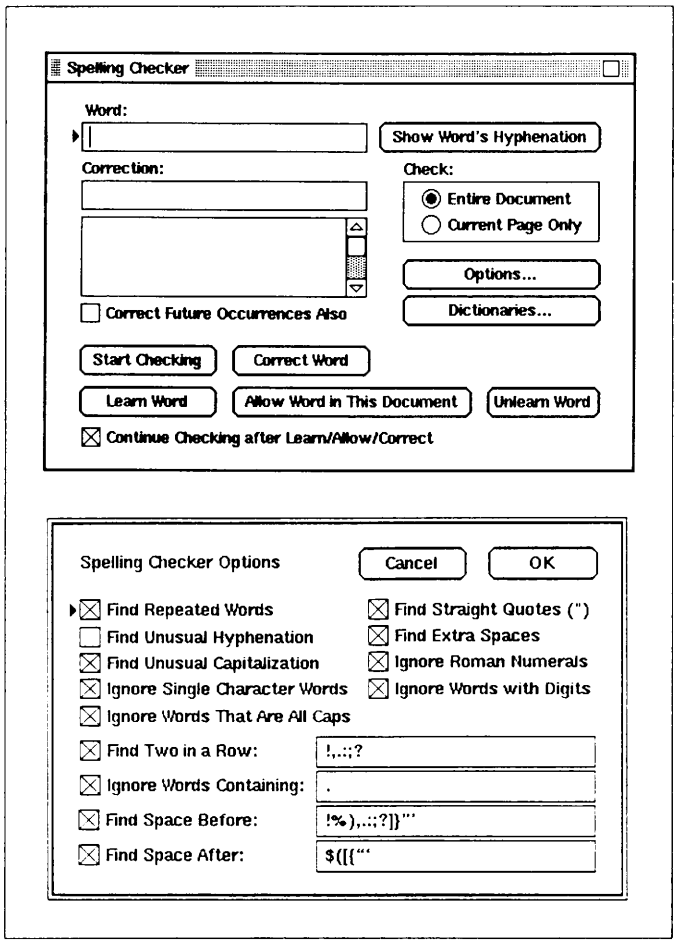
(**Note.** Rumor has it that Digital's DECwrite compound document editor is based on technology from Frame. While no one at Frame or Digital has acknowledged this rumor, we have heard it from several sources.)

# The Art and Science of Document Processing

There is something tremendously appealing about FrameMaker 2.0. And our hunch is that it's the attention Frame has paid to the small details, making a system that offers all the little extras in traditional word processing options that we have all wanted at some time or another. The following are just some of the "nifty" features available. These are not glamorous, nor are they unusual, but they do elevate typical functions to a new level.

**SPELLING CORRECTION.** The FrameMaker Spelling Corrector is exceptionally functional. First, it checks words against four different dictionaries:

- Main. An 130,000-item common-word list.
- Site. A customizable site dictionary that initially contains over 100 technical terms and can be customized by the administrator.




*The options button in the spell checker dialog box (top) opens up a whole new world of options (bottom).*

- Personal. Any number of personal dictionaries may be created by an individual user.
- Document. A document-specific dictionary is saved with a document.

All the standard functions are available, including replacing the misspelling with a word from an alternative list either instance by instance or for all future occurrences of the same error, correcting improper capitalization, adding (learning) the word to the document dictionary, adding the word to your personal dictionary, and a batch spelling option.

There are some nifty advanced features too, such as unlearning a word from the document or personal dictionary (how convenient), checking words within a graphics frame, and showing a word's hyphenation. The latter function comes in pretty handy. For example, the word "standalone" is, by rule, hyphenated as follows: stan-da-lone. Not exactly what you want, is it? But you can change the hyphenation and store it in the dictionary, so that the word will always hyphenate as "stand-alone." Much better.

Then there are a multitude of options (see illustration to left), some of which include finding repeated words or unusual capitalization, finding extra spaces, ignoring words with digits, etc.

**SEARCH AND REPLACE.** The Search and Replace feature is equally functional, offering the ability to search for a multitude of options, including the following:

- Text—case specific or insensitive, whole word, wild cards
- Specific fonts
- Paragraph or character tags
- Specific markers or text within a marker
- Variables
- Footnotes

The feature can replace text with another text string or with the contents of the clipboard. It can also replace the font with another (e.g., make all instances of Seybold into *Seybold*).

**SAVE NOTIFICATION.** When you go to the Edit menu, the Save command will indicate whether a save is required or not (i.e., whether the document has been changed since the last save). There is also an indicator in the lower corner of the document if a save is needed. This is a minor feature, but a welcome one. It's nice to know that the system is watching out for itself and asking for things it needs.

**EQUATIONS EDITOR.** The Equations Editor feature is actually not a spiffy implementation of a typical function. It is a spiffy implementation of an unusual function. The FrameMaker equations editor is impressive because it does more than allow you to create WYSIWYG equations. It also will perform arithmetic calculations and algebraic manipulations, such as

"solve for" (i.e., if a=b+c, solve for c) and simplifying complex equations.

The graphics tools also work within formulas (see illustration).

$$\frac{\partial u^2}{\partial x^2} = am^2e^{-mx}\sin\left(\frac{2\pi}{Z}z - mx\right) + 2am^2e^{-mx}\cos\left(\frac{2\pi}{Z}z - mx\right)$$

*Not only can FrameMaker create equations, it can perform arithmetic calculations and algebraic manipulations. The diagonal line cutting through the equation was drawn with the graphics tools.*

## Work Left to Do

Frame has not, by any means, finished improving FrameMaker. There are still many features which could and should be added. For example, there is no mechanism for indicating that a long footnote is spanning more than one page; the footnote can span pages, but you can't put in a "continued from page #" notation. And there is no Hidden Comments mode; while comments do not need to be printed, blank space will be left in the printed document. We also would like to see an editable online listing of available macros and support for color. And, of course, we want group editing tools—redlining, annotation, etc.—as soon as possible.

Frame also needs to go that one step further in hiding Unix from the user. While, in almost all cases, the user can select any Unix-like command strings from a list, it would be preferable if he or she didn't need to be exposed to the syntax near and dear to system administrators and programmers, but foreign to the nontechie.

## Conclusion

FrameMaker 2.0 is a big improvement over 1.3 both in adding functionality and improving the interface. The product is very appealing and is more approachable than Interleaf, which is usually considered the major competition. It is also much less expensive. Both FrameMaker 2.0 and Interleaf TPS are priced at $2,500 on the Sun platform, however, in Interleaf, the document management features (book control, catalogs, etc.) and advanced graphics (tables, equations, gray-scaling, and image-editing) cost extra, bringing the cost up to about $12,500. FrameMaker is complete at $2,500. (Keep in mind, though, that Interleaf does offer a level of functionality above that available in FrameMaker. If your organization needs these advanced features, as discussed in Vol. 3, No. 12, Interleaf is an excellent—albeit expensive—solution.)

Frame has also made a commitment to keeping price thresholds within the norm for each platform. Thus, when Frame designers introduce a Mac version—and we have little doubt that they will, though there has been no official word on this—the price tag should be considerably smaller to compete in the Apple market.

So, for users who do not need the advanced functionality of an Interleaf-type of system but require excellent page layout seamlessly integrated with word processing functionality, FrameMaker is a fine choice. The coming compound document capabilities are particularly impressive.

**SUN STEALS THE LOW END.** But Sun may have just thrown a monkey wrench into the Frame marketing strategy. Frame was well-positioned to market FrameMaker as a low-to-mid-range solution for Sun platforms. But Sun itself has just announced SunWrite, SunDraw, and SunPaint. These are low-end products, operating under Open Look, which just might steal the low end from Frame and others aspiring to that niche. SunWrite is a WYSIWYG word processor and page layout package that offers live links to SunDraw and SunPaint. Its price is $695. That's hard to beat. And, while SunWrite does not yet offer footnotes, table of contents or index generation, thesaurus, and dynamic outlining, all basic word processing and desktop publishing functions are available.

**THERE'S A PLACE FOR FRAME.** So what does this leave for Frame? Basically, the mid range. And that's probably the largest niche on the Sun platform. Users who outgrow SunWrite could easily move to FrameMaker (the concepts are similar, and Sun is planning to provide Frame, and, incidentally, Interleaf, conversion capabilities). Frame also is expanding to a variety of platforms, including Hewlett-Packard, Apollo, and NeXT. The Mac and Presentation Manager versions can't be all that far behind. These new platforms should prove to be very popular and allow more users to take advantage of a well-designed and -executed product.

*Announcing*
*The Executive UniForum Symposium*

# On the Road to Commercial UNIX

**April 26—28, 1989**

**The Four Seasons Biltmore Resort, Santa Barbara, California**

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This conference offers you an opportunity to learn from prominent computer and communications executives just how they intend to move toward implementing standards. They will explain their strategies for coexisting with proprietary environments.

The conference will be interactive; we plan to informally interview industry leaders, so you won't be listening to canned or promotional presentations. Rather, you'll discover their real opinions about important industry issues. You will also hear from MIS leaders who have already implemented UNIX in their organizations. They will share their experiences, both positive and negative. Two workshops are on the agenda: one is aimed at getting started on the UNIX platform, the other at the responsiveness of UNIX to commercial issues such as security and backup.

The conference will answer the following questions and more:

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- Is IBM really serious about commercial UNIX?
- Why is Digital spending so much money on Ultrix?
- How will Ultrix and VMS co-exist?
- What is AT&T's strategy for becoming a major player in information systems?
- How has Unisys used UNIX to move from two discrete companies into one?
- How will standards affect information systems in the future?
- What will the computing landscape look like in the next 5 - 10 years?
- How can you make sure that you have the information you need to make the right decision?
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## DAY 1 *UNIX and Open Systems: Perceptions and Realities*

As more computer vendors begin to embrace UNIX, data processing organizations need to understand the ramifications of open systems. How will UNIX and open systems fit into the data processing organization of the 1990s? How will they be integrated with the systems that already exist in most corporations today? Where are some of the key market leaders going with this technology?

## DAY 2 *Connecting Open Systems Unix and Open Systems*

In the real world, most organizations have to find ways to slowly migrate from older technology to state-of-the-art systems. Can this happen with UNIX? Does UNIX have the potential to act as a bridge between old and new technologies? What are vendors and industry leaders doing to make this transition faster?

## DAY 3 *Peering into the Future of Open Systems*

The future promises a set of standards that will make it easy to move from one hardware platform to the next. There is already some exciting technology on the drawing board that has great potential to do this and more. How will these emerging technologies help solve the critical problems experienced by today's corporations?

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# NEWS ANALYSIS

PRODUCTS • TRENDS • ISSUES • ANALYSIS

• INSIDE •



• SUN •

## Sun Enters the Applications Market

No longer content with merely providing the workstation and networking platforms for its users, Sun Microsystems has jumped into the hot market of applications software. Three "desktop productivity applications" are targeted at the low end of the market:

- SunWrite is a multifont text processing and page layout program which includes all the basic word processing features as well as page layout capabilities.
- SunPaint is a raster image editor.
- SunDraw is a vector and object editor.

The three products are very competitively priced—$695 for SunWrite, $495 each for SunPaint and SunDraw, and $995 for all three. They are based on the Open Look windowing environment jointly developed by Sun and AT&T.

**GOOD FUNCTIONALITY.** We had a chance to play with the three products, and we must say we were pleased with the functionality. The products are well suited to the target audience—the novice user or those Sun users who use the workstations for some industry-specific applications (CAD/CAM, etc.) and need access to more horizontal applications. Especially impressive is the ability to share data among the three programs, creating live links from the two graphics programs to SunWrite. Any image generated in encapsulated PostScript or Sun raster format can be imported into SunWrite.

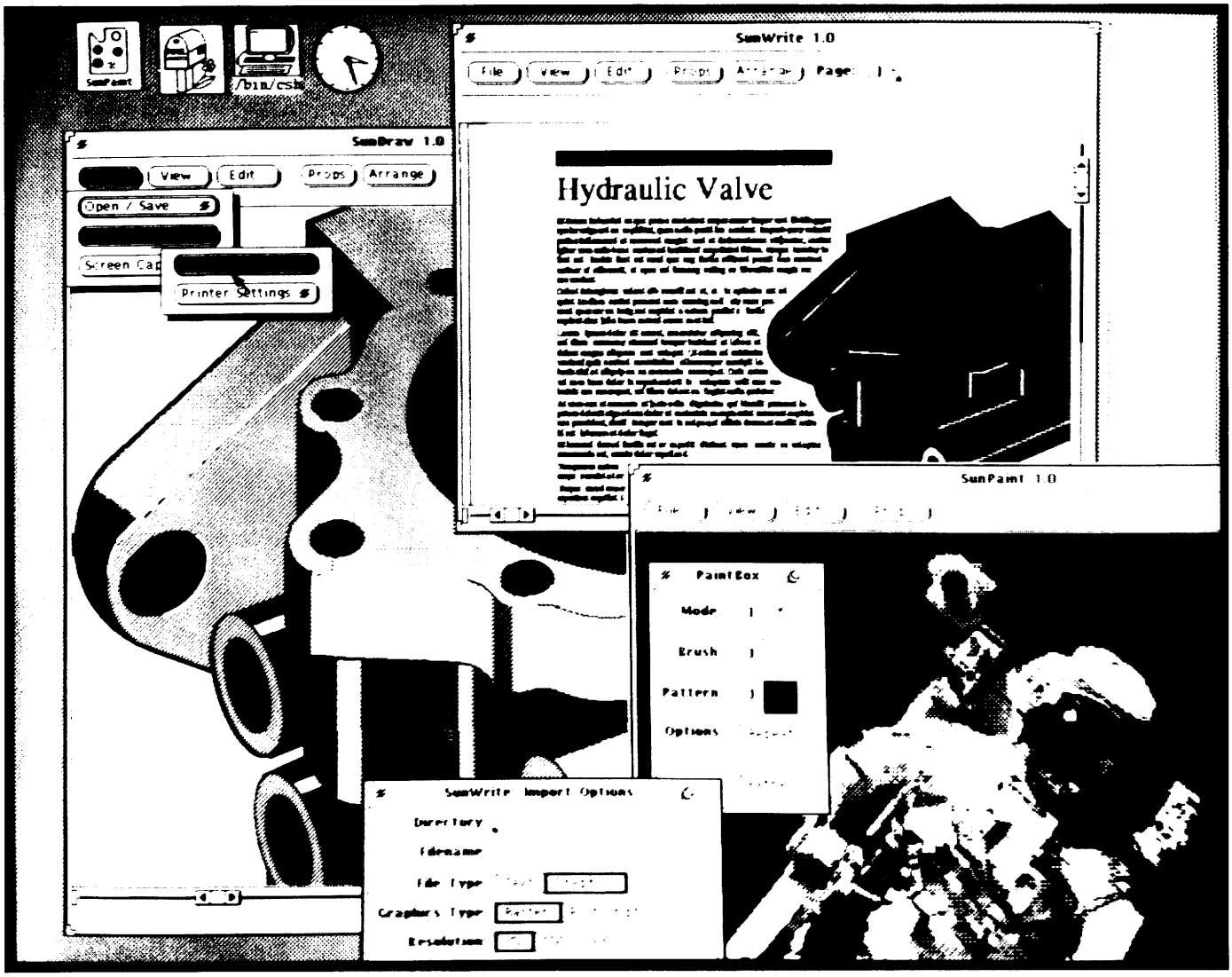
**USER INTERFACE.** We are not as impressed with the interface as we are with the functionality. Oh, the interface, which is basically Open Look, is not bad. Not bad at all. A graphical windowing environment with icons and mouse support is nothing to sneeze at. It just isn't terrific. There is too much reliance on the mouse. This is particularly a problem within SunWrite. But our resident graphic artist spent some time with SunPaint and SunDraw, and she, an avid mouse user, was dismayed at the lack of keystroke alternatives. And the Open Look mouse conventions take a while to get used to. For example, to access the contents of certain menus, you must use the right mouse button. But, if that option opens up a dialog box, you must use the left mouse button to execute the command.

We ran into some confusion when we had all three applications opened on the desktop. You see, each application has associated subwindows which can be kept open (a wonderful option). But, in too many cases, the windows are not labeled. You don't know which application they belong to. And many of the windows are similar, particularly the SunPaint and SunDraw windows.

**Helpless.** Another problem with the initial release is that no online help is available. Sun plans to remedy this as soon as it can. And the documentation, while adequate, is not top notch. There can be a lot of unanswered questions.

**MARKET VIABILITY.** It is interesting to see Sun providing application software for its own environment. The company has been amazingly successful in getting others to write software for its hardware. The innovative workstation platform has inspired a lot of innovative applications. Sun is going to have to be careful not to jeopardize its relationships with these third-party innovators.

**Low End is Appropriate.** But the low end of the market is an appropriate




*Sun Microsystem's new desktop productivity applications, SunWrite, SunPaint, and SunDraw, are based on the Open Look graphical user interface specification developed by Sun and AT&T.*

arena for Sun-supplied software. And the three new products offer good entry-level capabilities for users who choose Sun for a specific niche application, but who need the word processing and graphics programs to support the industry-specific work. There hasn't been too much competition at the low end. And, as workstation prices go down and Unix-based platforms gain popularity, Sun needs to offer entry-level software to rival that of the Macintosh. SunWrite, SunDraw, and SunPaint could do just that. ◐

*—R. Marshak*

•MIPS•

# A Not So RISCy Business

Hot on the heels of its agreement with Digital for Digital to build its new RISC-based workstations using MIPS architecture, MIPS Computer Systems (Sunnyvale, California) has taken another key step toward its goal of becoming a dominant architecture in the RISC arena. The company recently announced licensing agreements with NEC Corporation and Siemens AG to provide alternative sourcing of the MIPS processors, a move necessary for MIPS to land large contracts such as the Digital relationship.

Under the agreements, NEC and Siemens will independently provide worldwide manufacturing, marketing, and support for the MIPS processors, including the current R2000A and R3000 microprocessors. The agreements also cover future generations of MIPS RISC technology, with both NEC and Siemens committed to work-

ing with MIPS to develop the new technologies.

MIPS chips are currently produced by three U. S.-based companies—Integrated Drive Technology (IDT), LSI Logic, and Performance Semiconductor. MIPS will maintain its current manufacturing and marketing agreements with these companies, providing a total of five independent sources of MIPS processors.

With these agreements, NEC and Siemens will each license from MIPS the RISC architecture and semiconductor design, the compiler, and the MIPS enhanced version of Unix operating system software. The resulting processors will be pin-compatible with each other and all other MIPS implementations.

Siemens is one of the largest semiconductor manufacturers in Europe, and NEC claims to be the worldwide leader in semiconductors and electron devices. The agreements move NEC and Siemens into the hotly contested arena of high-performance processing. They enter riding a very competitive and increasingly popular horse, one which they feel can carry them to the finish line ahead of its competitors. (The agreements preclude either company's semiconductor divisions from pursuing any other RISC implementations.)

From the NEC and Siemens point of view, it is important to note that these agreements relate only to processor manufacturing. Neither NEC's nor Siemens's systems divisions have committed to the MIPS architectures for their future RISC implementations (though future commitments such as these would not be surprising). However, general computer systems are not the only target for the RISC products. Both NEC and Siemens see a great potential for selling the MIPS microprocessors into specific industries, such as specialized processors for automobiles, medical equipment, appliances, and home entertainment.

For MIPS, the agreements provide an exclamation point on its major win with Digital. In addition, second-sourcing of pin-compatible processors provides security for large customers such as Digital, and it makes MIPS's case that much stronger to those potential customers who have not yet committed to a specific RISC architecture.

For most of us, MIPS's recent successes do little to clear up the confusion over what will become the dominant RISC architecture, or whether there will be one at all. SPARC, which seemed to lose momentum when OSF was formed, is gaining adherents, such as Solbourne Computer (see Vol. 4, No. 1). In an attempt to reassert the SPARC architecture, SPARC International has been formed (mainly from Unix International crowd). Not to be underestimated, proprietary implementations such as those of IBM and Hewlett-Packard are highly competitive. Also, products based on the Motorola 88000, such as the AViiON family introduced by Data General at UniForum, will soon appear on the market. As with some of the other hot industry debates, the answer may be to just wait and see if anyone can assume the dominant role. —*D. Marshak*

•LOCUS•

# PC-Interface: A Closer Look

The Santa Cruz Organization (SCO) has concocted quite a bargain with the release of Open Desktop. The package contains an attractive bundle of products, including SCO's Unix/386, Digital's XUI utilities, OSF's Motif, and the Ingres RDBMS (just to name a few). It's selling for $995. Ingres/386 alone is worth more than that.

Locus is also playing a part in Open Desktop. Both Locus Merge and PC-Interface will be bundled with the package. Last December, we published a short article about Digital's PC integration solution (see Vol. 3, No. 12). One of the products that Digital is using to improve its PC strategy is Locus's PC-Interface. We mentioned that Digital will be using PC-Interface as a VT100 terminal emulation program to link PCs to Ultrix. And, indeed, that is how Digital is implementing it, but that's really only a one-sided view of the product. We thought it a good idea to fill you in on PC-Interface.

Basically, PC-Interface integrates DOS and Unix environments. It allows PC to hook directly to a Unix host for file and print services. More specifically, it has the following features:

- Transparent file access. PC users can store files on a connected Unix system as if they were storing them on a local hard disk. All Unix files can be transparently accessed as though they were DOS files, subject to normal Unix permission controls.
- Printer services. The PC can spool print requests to a connected Unix system via LPT1, 2, and 3.
- VT100 terminal emulation.
- Remote processing. PC-ers can initiate Unix programs from within DOS.
- Utilities. A set of utilities makes it easier to take full advantage of both operating systems. For instance, there is a utility that converts files between DOS and Unix formats.
- Advanced programmers' facility for developing custom interoperating system applications.

**THE WORKINGS.** PC-Interface has two modules: the PC-Interface Bridge, which resides on the PC, and the Server, which resides on the host. The Bridge intercepts BIOS and DOS system calls. If the call can be serviced by DOS, it's passed on to DOS. Otherwise, the Bridge services the call. The Bridge simulates the DOS interface and implements a protocol between the PC and the Unix host that provides both

file service and virtual terminal interface data streams. The Server simply performs functions requested by the Bridge.

PC-Interface uses approximately 140Kb of memory, but it's distributed between client and host. The Bridge uses 35K; the Server uses approximately 100K per client connection (e.g., if you have 5 PCs hooked up, it'll use about 500K). —*L. Brown*

•CCI•

# Bringing (Office) Power to Windows

As the industry moves to windowing environments and graphical user interfaces, applications developers are rushing (even faster than before) to port their applications to new platforms. In general, this is great news for the users. Soon all your favorite software will be available on all your favorite environments.

But there is a danger. Simply porting an application to work in a new environment, without considering the unique paradigms of each environment and the culture of each platform's traditional users, can result in customer dissatisfaction. Recently, we came across just such an example of a product that we have rated very highly in its native environment.

We have long been fans of Computer Consoles Incorporated's (CCI's) OfficePower integrated office system. This well-designed system has been available on CCI's own Unix-based hardware since the early 1980s. Just last year, the company opened up the software to other platforms, establishing VAR and OEM relationships.

(It is interesting to note that, until last spring, the only software VAR for OfficePower was ICL, a major subsidiary of STC, the British telephony giant which recently acquired CCI.)

In an effort to keep up with the times, CCI has written a version of OfficePower to run on a PC front end under Microsoft Windows. Power Windows, as the product is called, supports a client/server relationship between a PC and a Unix host.

CCI has wisely included an option to run the traditional OfficePower character-terminal-based interface within the Windows environments. (This option does negate the windowing options of Power Windows. The character-based interface takes up the full screen.) This is a smart decision for two reasons. First of all, any OfficePower user who migrates to a PC front end will probably choose to stick with the familiar interface. Secondly, the Windows interface is simply not up to snuff.

We understand that it takes a lot of work to rewrite a complex application to an entirely new environment. We know that it takes a lot of man hours and a lot of compromise. But we feel that CCI has put out a product before it was ready.

Power Windows loads just like any Windows application. And there are certain things you can do with the mouse (window manipulation, general system maintenance, etc.), but the product isn't really mapped to either the environment or to mouse usage. Instead of using the mouse to access pull-down menus, Power Windows brings up an on-screen template of OfficePower-specific functions (including, for example, the "open" key which is intrinsic to the appeal of the character-based system—a three-dimensional feel is created by "opening" up records of information. Unfortunately, this paradigm is one that doesn't translate well in a graphical windowing environment.).

But the template is totally out of place in the Windows environment. And, though the template is manipulated with the mouse, you cannot position the cursor, select text, nor scroll with the mouse.

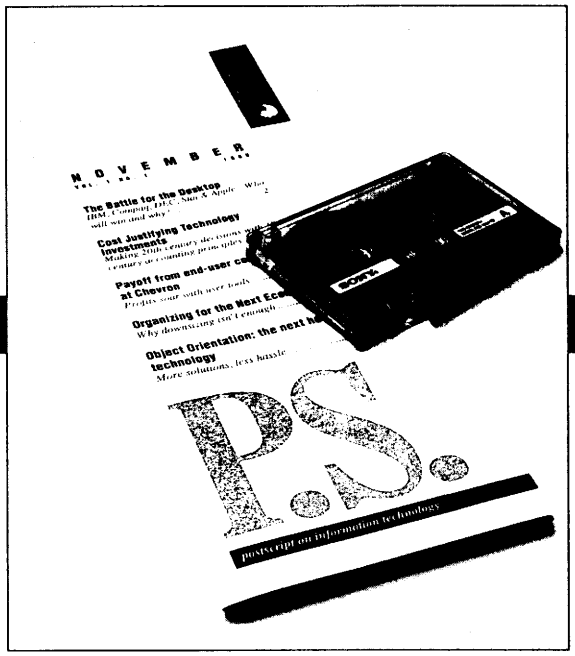
Basically, Power Windows is an attempt to satisfy the checklist item, "PC front end." But this isn't enough. Allowing something to run in a new environment won't cut it. Products need to be optimized for each environment. CCI has not done this.

To its credit, the company realizes that the current version of Power Windows is just a first step in a migration plan that includes a variety of platforms (Unix, PC LANs, Macintosh, etc.). And CCI has done some impressive things with the Unix-based product. (The newest version, OfficePower 5.0. is said to really be something.) In fact, rumor has it that a VAR is planning to bring integrated office functionality to the Macintosh environment using OfficePower as the basis.

But CCI jumped the gun. There are a lot of basic flaws in the design of Power Windows. We hope to see an improved version very soon which takes advantage of the Windows environment while maintaining the excellent functionality of the product. —*R. Marshak*

# P.S.

*postscript on information technology*

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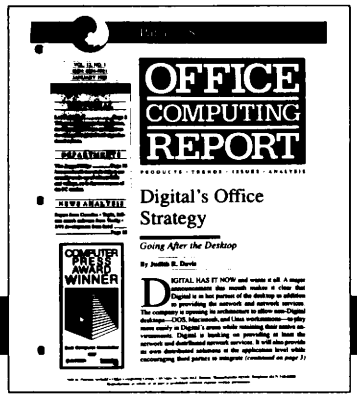


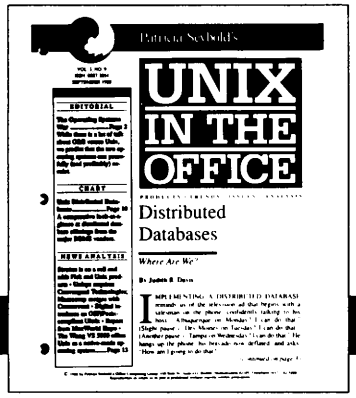


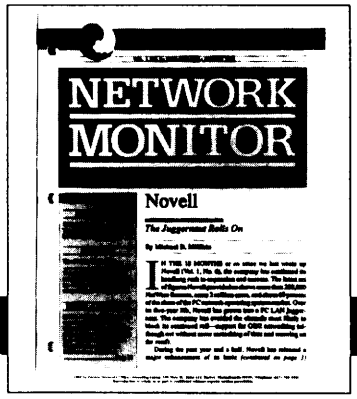


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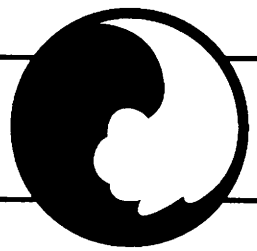

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