Software and Peripherals

Fall 1989

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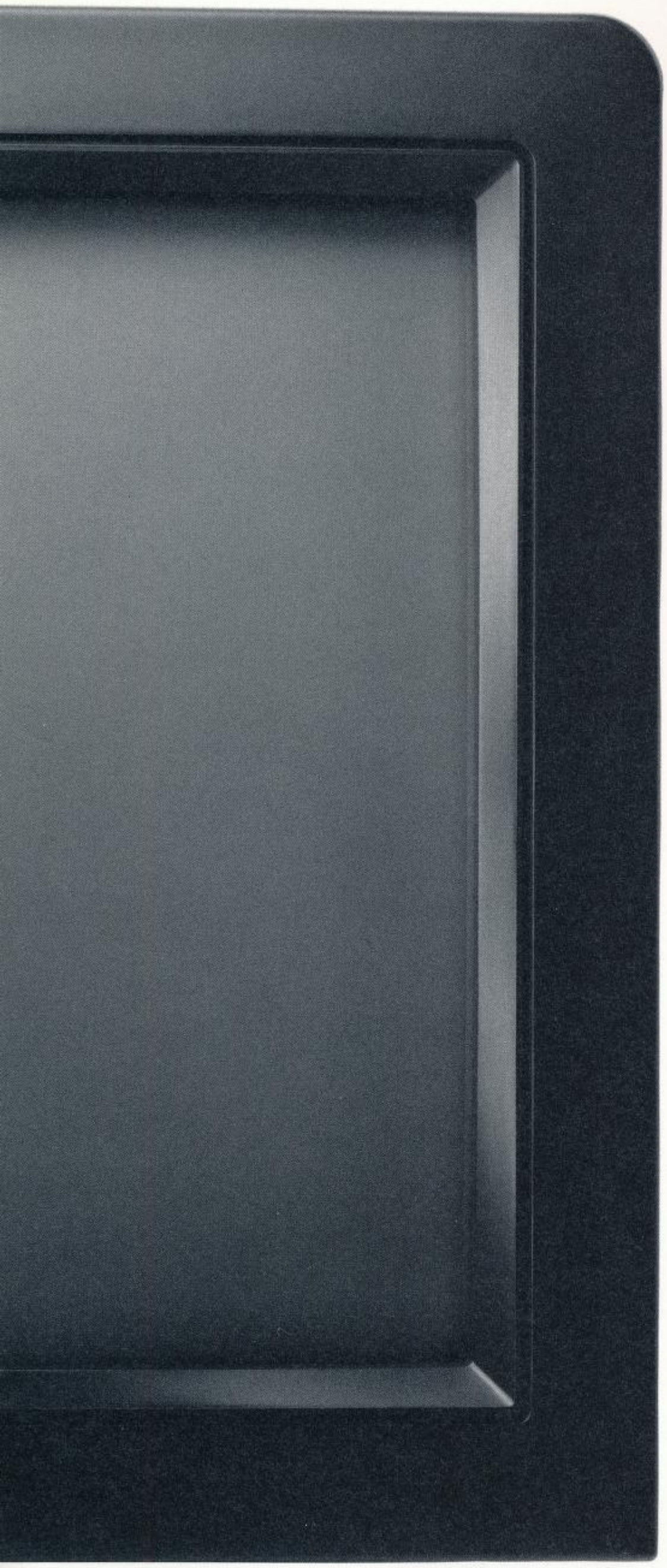
Software and Peripherals for the NeXT™ Computer System

Table of Contents



5 **Raising the Standard to a New Level**

The Hardware and System Software

7 MegaPixel Display
7 Optical Disk
8 Digital Signal Processor
8 Connectivity
8 Mach Operating System
8 Display PostScript

11 **Bundled Software**

Bundled Applications

14 Mail
16 WriteNow
18 Digital Webster
18 Digital Quotations
20 Digital Librarian
22 Radical Eye Software
TEX
24 Wolfram Research, Inc.
Mathematica

Bundled Programming Environment

28 Interface Builder and the Application, Sound, and Music Kits
30 Ariel Corporation
BUG-56
32 Motorola, Inc.
ASM56000
33 NeXT, Inc. and Free Software Foundation NeXT Objective-C Compiler and Debugger
34 Sybase, Inc.
NeXT SQL Database Server
35 Franz Inc.
Allegro Common LISP

37 **Directory of Available and Announced Third-Party Products**

Peripherals

40 Abaton
Scan 300/GS
41 Ariel Corp.
DM-N Digital Microphone
42 Dayna Communications, Inc.
DaynaFILE
43 Extron Electronics
Video Monitor and Projector Interfaces
44 Metaresearch, Inc.
Digital Ears
46 Metaresearch, Inc.
Digital Eye
48 New Vision Technologies, Inc.
NVT High Density Video Drive
49 Personal Computer Peripherals Corp.
JETSTREAM Tape Backup System
50 Singular Solutions
A/D64x Analog/Digital Interface

Business

53 Adamation, Inc.
Who's Calling
54 Ashton-Tate Corp.
55 Data Transforms, Inc.
GEMS
56 Data Transforms, Inc.
InDia
57 Informix Software, Inc.
Wingz
58 KnowledgeSet Corp.
Knowledge Retrieval System
60 Lotus Development Corp.
An Analytical Software product
61 Microstat Development Corp.
OMEN III
62 SouthWind Software, Inc.
TACTICIAN PLUS

Workstation Publishing and Graphics

64 Adobe Systems Incorporated
Adobe Illustrator
66 Adobe Systems Incorporated
Adobe Type Library
68 Emerald City Software, Inc.
Smart Art
70 Frame Technology Corp.
FrameMaker 2.0
72 Media Logic Inc.
Artisan
74 Media Logic Inc.
TopDraw
76 Stone Design Corp.
TextArt
78 T/Maker Company
Encapsulated PostScript ClickArt
80 Flash Graphics
Flash Graphics

Communications

82 Abaton
InterFax 24/96N
83 Cayman Systems, Inc.
GatorBox
84 DataViz Inc.
MacLinkPlus/PC
86 Farallon Computing, Inc.
Ethernet PhoneNET
87 Kinetics Inc.
EtherPort NL
88 Software Ventures Corp.
MicroPhone II
89 White Pine Software, Inc.
DEC terminal emulation

Database

91 Informix Software, Inc.
INFORMIX-TURBO
92 Relational Technology, Inc.
INGRES Relational Database Management System
34 Sybase, Inc.*
NeXT SQL Database Server

Mathematics and Statistics

95 Triakis, Inc.
DAN—The Data Analyzer
96 Triakis, Inc.
Math++
24 Wolfram Research, Inc.*
Mathematica

CAD

99 Innovative Data Design, Inc.
Dreams
100 Lighthouse Design, Ltd.
A Schematic Entry product

Music

103 CODA Music Software
104 Mark of the Unicorn, Inc.
Performer

Multimedia and Hypertext

106 Imagine, Inc.
MediaStation
108 Xanadu Operating Company
Xanadu Hypermedia Information Server

Education

110 Halchin & Fleming
Orbit
112 Halchin & Fleming
Rubik Algebra

Development Tools and System Software

114 Absoft Corporation
Absoft FORTRAN 77
30 Ariel Corp.*
BUG-56
118 Emerald City Software, Inc.
Displaytalk 1.0
35 Franz Inc.*
Allegro Common LISP
120 Highland Software, Inc.
Flexible License Manager
32 Motorola, Inc.*
ASM56000
121 Motorola, Inc.
Macro Cross Assembler, Simulator Programs
122 Neuron Data, Inc.
NEXPERT *OBJECT*
NEXPERT AI Library
123 OASYS
OASYS FORTRAN, C, and Pascal Compilers
124 Pacific Microelectronics, Inc.
COMPU-BRAIN

NeXT Developer Programs and Resources

127 The NeXT Registered Developer Program
127 The NeXT Internet Archive Sites
128 Demo Programs
133 NeXT Registered Developers

135 **Specifications of the NeXT Computer System**

* Bundled with the NeXT Computer

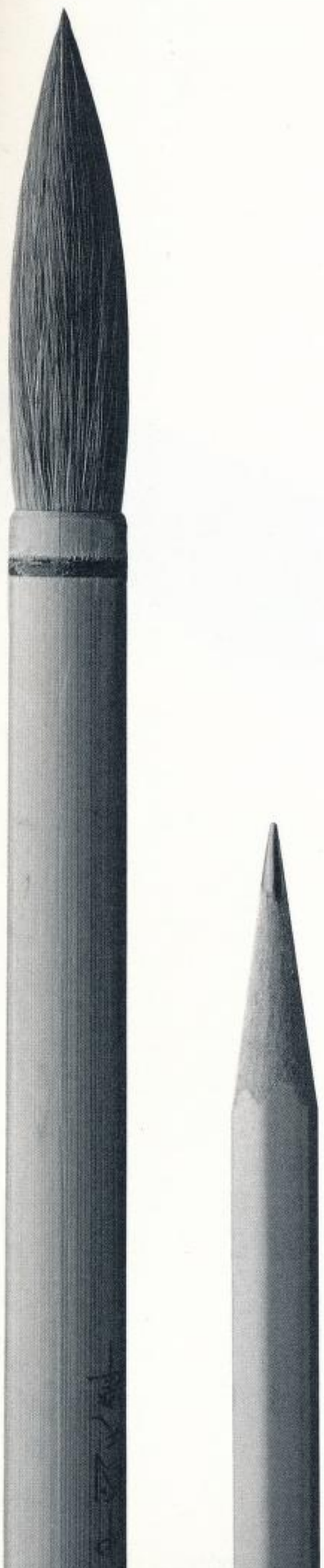
Raising the Standard to a New Level

Welcome to the second catalog of Software and Peripherals for the NeXT™ Computer. Its primary purpose is to present the 51 companies and 69 products listed on pages 14 through 124. The companies responsible for these products are the pioneers, the first settlers in the new computing territory made available for the first time to ordinary computer users by the NeXT Computer System.

As you'll see in the following review of the hardware and software features that come with every machine, the NeXT system represents a significant jump in the level of power and functionality available to buyers in search of individual computing solutions. To software and peripheral developers, this jump means opportunities for better features, more useful applications, and even more productive programming practices than were possible on platforms that preceded NeXT's.

One more thought to keep in mind as you read: The products listed in this directory are only the tip of the iceberg. More than 400 commercial and academic developers have completed their training and begun work on products, and their ranks are swelling at a steady, steep rate. More than 60 new developers are going through our software development course each month. Also, at least two textbooks on NeXT-based object-oriented programming are in development, as are several general trade books on programming and using the system.

Stay tuned; the future is happening here first.



The Hardware and System Software

A computer platform is defined by the set of capabilities built into the standard model—e.g., how much graphic resolution and acoustic fidelity, how much removable storage, how much meaningful speed, how much memory, how capable an operating system, what kind of imaging model, and how much and what kind of bundled software. The NeXT Computer System offers significant leaps forward in each of those categories when compared to the desktop computing platforms that have preceded it. Separately and together, these advances make possible whole new levels of performance for both users and developers. Here's just some of what users and developers can count on in every NeXT Computer System:

MegaPixel Display
The MegaPixel Display has more than three times as many pixels and almost 30% higher pixel density than today's standard personal computing platforms (which have 640-by-480 resolution at 72 dots per inch). Additionally, each pixel on the NeXT screen can display four shades (black, dark gray, light gray, and white) and four levels of transparency (opaque, 2/3 opaque, 1/3 opaque, and transparent). In practical terms, this means enough pixels to display a full 8 1/2 by 11 inch page on the screen with room left over for direct access to tools and other applications. And it means enough pixel density to fill the page with real 12-point Helvetica™ type instead of an approximation of Helvetica designed for 72 dpi resolution. Additionally, the gray scale and transparency give texture and depth to images such as icons, and allow objects such as molecular models to be displayed with transparent shells. (See the demo application called Molecule, included with every system.)

Optical Disk
A single read/write/erasable optical disk holds 256 megabytes of data—more than 180 times as much as the 1.4-megabyte floppies standard at the high end of personal computer platforms. For example, the complete works of William Shakespeare take up less than 1/75th of the optical disk bundled with each NeXT system. Yet NeXT's optical disk is as removable and transportable as those earlier disks, and significantly more secure. It's now possible to carry your entire electronic world with you – literally.

Digital Signal Processor

The built-in Motorola 56001™ Digital Signal Processor (DSP) helps the NeXT system be almost unimaginably better at sound, speech, music, and image processing than any other personal computing or workstation platform. Work is already underway to use the DSP for everything from real-time analysis and control of factory processes to speech recognition and other tasks that conventional processors cannot begin to approach. The DSP can also perform as an extremely powerful music synthesizer, as demonstrated by a bundled demo application called ScorePlayer. Among the individual scores, for instance, are pieces that use the sounds of string instruments. The DSP actually generates these sounds by using a mathematical model of the physical behavior of a plucked string.

Connectivity

The NeXT system was designed for an unprecedented level of connectivity and expandability. Ethernet circuitry is built in (along with full TCP/IP and NFS™ support), and there's a thin-cable Ethernet connector on the system board of every machine. The system has two Macintosh® pin-compatible serial ports, so modems or other serial devices can be attached to the NeXT machine. There's also a Macintosh-compatible SCSI port, which can sustain data transfer up to 4 megabytes per second – more than double what's available on current platforms. The Digital Signal Processor has its own port on the system board as well, a port that can carry power as well as a signal. (For a first look at the kinds of products this port makes possible, see page 44 for a description of Digital Ears™ and Digital Eye™ from Metaresearch.)

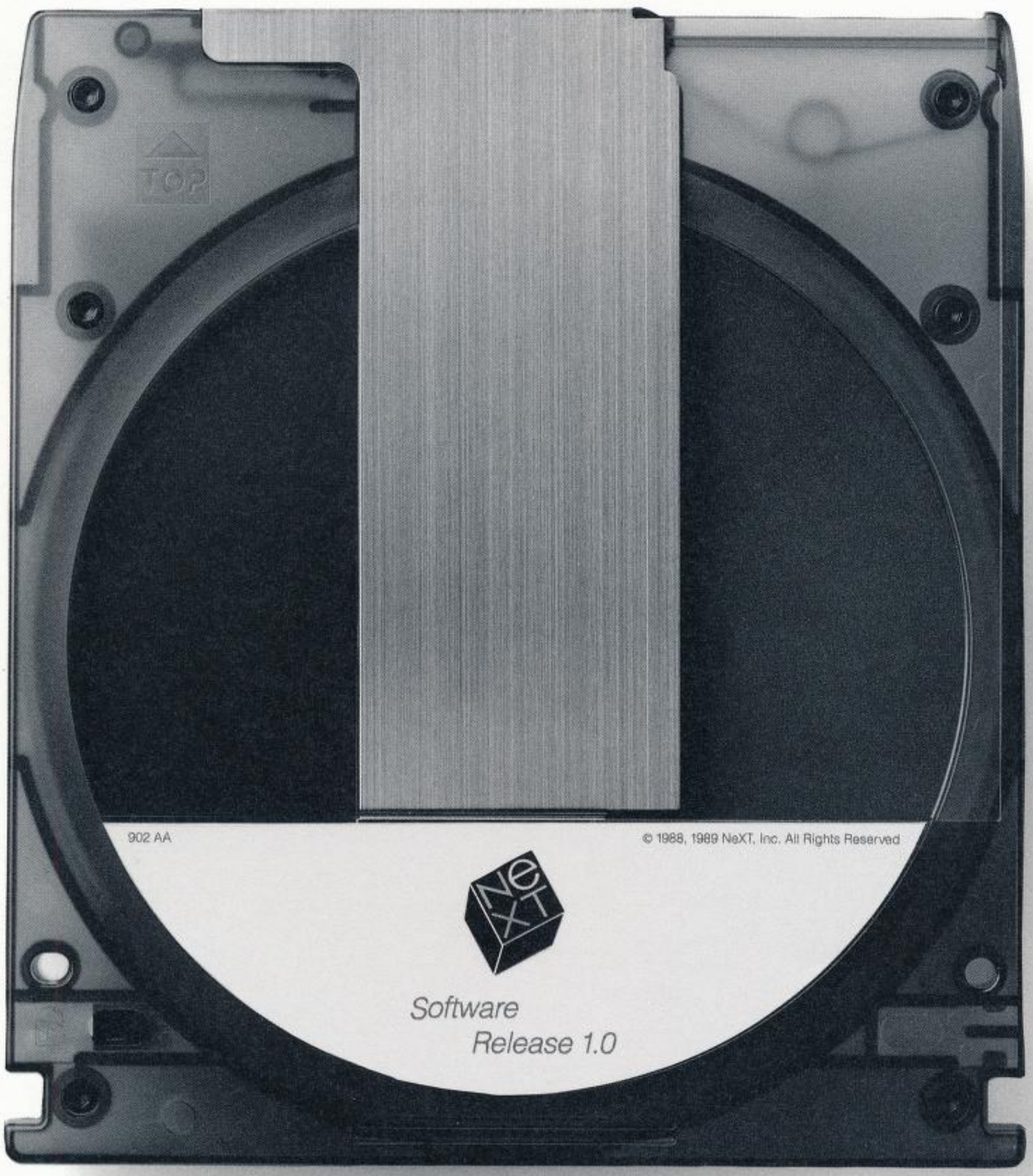
Mach Operating System

The Mach operating system is compatible with Berkeley 4.3 UNIX® and brings true multitasking, virtual memory, and powerful, fast interprocess communication to individual computing. And it delivers these capabilities today, not at some promised point in the future. If, for example, the electronic mail system needs a word processor to display the text attachment to a message, Mach lets it communicate directly with WriteNow™. Similarly, if users need to know the meaning of a word in that text, they can use WriteNow's Define in Webster command to automatically call on Digital Webster for the definition, all without leaving the original program.

Display PostScript

The NeXT Computer uses a version of PostScript®, called Display PostScript®, to talk to both the screen and the printer, as well as to other PostScript-compatible devices. Neither users nor programmers need worry about the low-level mechanics of shrinking, growing, and manipulating images; they get dynamic scaling without loss of screen resolution, automatically. Also, the computer and Display PostScript ensure that what users see on the screen matches what they see when they print. For a practical demonstration of the advantages of this approach, type in some text, select it, and begin increasing its font size. For comparison, and to appreciate fully just how clear the larger font sizes look on the NeXT screen, try this same exercise on any other computer.

Bundled Software



The NeXT Computer comes equipped with an unprecedented amount of user and programmer functionality built in. Included are a UNIX mail-compatible, easy-to-use, multimedia electronic mail application; a complete writing environment consisting of the WriteNow word processor, digital access to *Webster's Ninth New Collegiate Dictionary*™, *Webster's Collegiate® Thesaurus*, and *The Oxford*™ *Dictionary of Quotations*; a powerful Digital Librarian™ text searching tool, plus NeXT documentation and the complete works of William Shakespeare on-line; T_EX™, a technical document preparation system; and *Mathematica*®, a tool destined to revolutionize the teaching, learning, and practice of mathematics.

Because these tools and applications are bundled with every computer, the market for commercial software for the NeXT system simply begins at a higher level. For example, WriteNow is already bundled, so other word processors should add built-in page layout capabilities to join the fray. Similarly, mail packages need to handle code attachments, stylized text, graphics, and voice, for instance. To aid the software developers tackling those challenges, we made programmability one of *the* key design goals from the system's inception.

We are the first desktop computing platform to adopt an object-oriented approach to software development as the standard, and we've included a full set of supporting tools and prewritten code modules designed to make programming the NeXT Computer significantly faster and more efficient than is possible with other existing platforms. Additionally, we include an extensive set of commented source code files (in the Examples directory) that significantly shortens the learning curve for using those tools and objects. Taken together, the bundled tools, objects, and applications will translate into more productivity more quickly, regardless of whether you buy the system to write software, to learn to write software, or to run software others are writing.

Bundled Applications

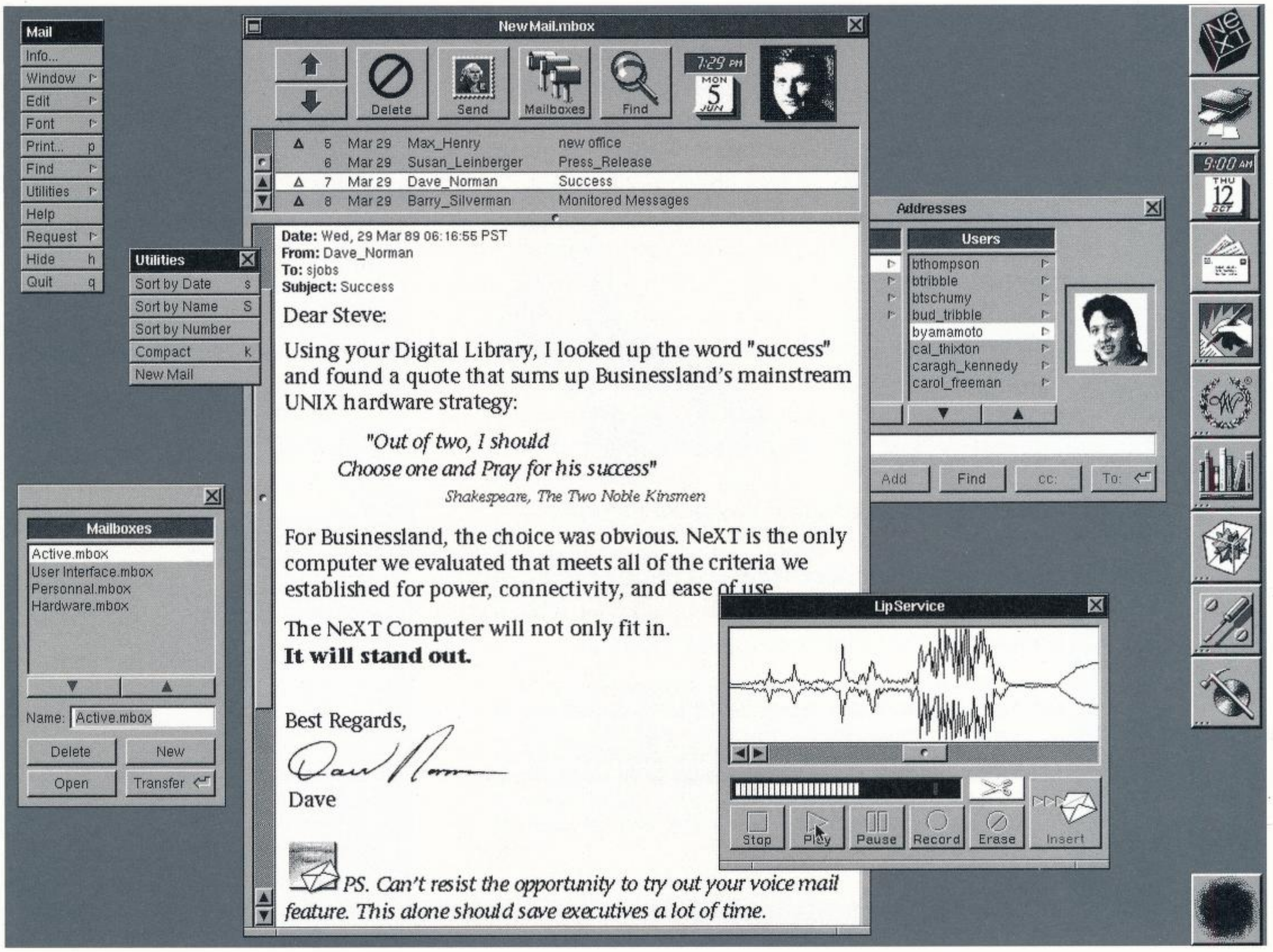
NeXT, Inc.
Mail

Mail, a multimedia electronic mail application, is bundled with every system, because having no mail program in a UNIX-compatible computer with built-in Ethernet support would be like having your telephone handset glued to its base: The equipment would be in place, but you'd be unable to call. Similarly, electronically mailed text without boldface and italics is analogous to substituting a robot voice for a speaker's personality over the telephone. And not being able to send on-screen pictures actually gives traditional paper mail systems an advantage over electronic mail.

To make its multimedia electronic mail application truly the best of both worlds, NeXT built support for the WriteNow and RTF text format standards, and for the Tagged Image File Format (TIFF) standard, directly into the Mail application. Grabbing a graphic file's icon and dropping it in a message feels reassuringly like putting a picture into an envelope. And adding a voice message is like mailing the letter and photo and talking on the phone, all at the same time.

Mail is compatible with standard UNIX mail but is a lot easier to use. Among its many features are:

- The ability to send documents, graphics, and sound files by simply dragging their icons into the message.
- Multiple mailboxes with easy transfer between them.
- Voice messaging through a microphone connected to the built-in microphone jack.
- One-button reply, forwarding, and address book access.
- Graphic display of the sender's picture and the date and time the message was sent.
- Full find and replace capabilities from within Mail.


Mail
Info...
Window
Edit
Font
Print... p
Find
Utilities
Help
Request
Hide h
Quit q
NewMail.mbox
Delete
Send
Mailboxes
Find
7:29 PM
MON 5 JUN
5 Mar 29 Max_Henry new office
6 Mar 29 Susan_Leinberger Press_Release
7 Mar 29 Dave_Norman Success
8 Mar 29 Barry_Silverman Monitored Messages
Date: Wed, 29 Mar 89 06:16:55 PST
From: Dave_Norman
To: sjobs
Subject: Success
Dear Steve:
Using your Digital Library, I looked up the word "success" and found a quote that sums up Businessland's mainstream UNIX hardware strategy:
"Out of two, I should
Choose one and Pray for his success"
Shakespeare, The Two Noble Kinsmen
For Businessland, the choice was obvious. NeXT is the only computer we evaluated that meets all of the criteria we established for power, connectivity, and ease of use.
The NeXT Computer will not only fit in.
It will stand out.
Best Regards,
Dave
PS. Can't resist the opportunity to try out your voice mail feature. This alone should save executives a lot of time.
Utilities
Sort by Date s
Sort by Name S
Sort by Number
Compact k
New Mail
Addresses
Users
bthompson
btribble
btschumy
bud_tribble
byamamoto
cal_thixton
caragh_kennedy
carol_freeman
Add
Find
cc:
To:
Mailboxes
Active.mbox
User Interface.mbox
Personnal.mbox
Hardware.mbox
Name: Active.mbox
Delete
New
Open
Transfer
LipService
Stop
Play
Pause
Record
Erase
Insert
9:00 AM
THU 12 OCT

NeXT, Inc.
WriteNow

WriteNow is a powerful, easy-to-use word processor. Its standard features include everything users have come to think of as indispensable: full cut, copy, and paste editing; full font selection, size, and style control; full direct control over margins with immediate visual feedback; the ability to paste and resize graphics in a document, and much more. It also has a number of not-so-standard features as well, including:

Automatic messaging to the built-in Digital Webster dictionary and thesaurus, the *Oxford Dictionary of Quotations*, and any documents available through Digital Librarian.

On-screen multiple columns. You can write, edit, and print your documents with up to four columns.

Full mail merge, including conditional selections.

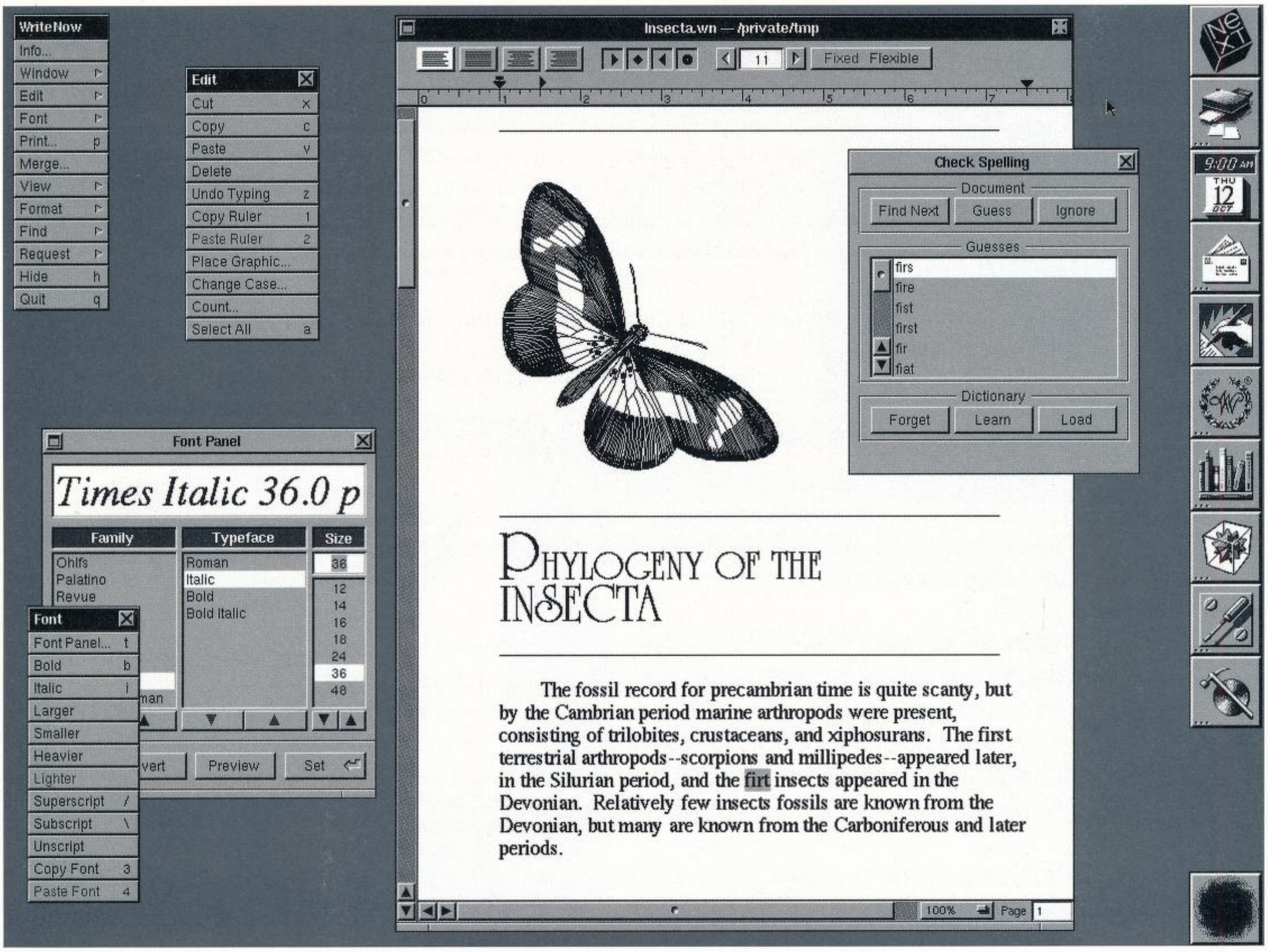
Automatic numbering and display of footnotes.

Updating page number, date, and time markers anywhere in a document.

Built-in fast, comprehensive spell checking.

Immediate character, word, and paragraph count at any time.

Multiple headers and footers assignable to every page, or even, odd, or specific pages.


WriteNow
Info...
Window
Edit
Font
Print... p
Merge...
View
Format
Find
Request
Hide h
Quit q
Edit
Cut x
Copy c
Paste v
Delete
Undo Typing z
Copy Ruler 1
Paste Ruler 2
Place Graphic...
Change Case...
Count...
Select All a
Font Panel
Times Italic 36.0 p
Family
Typeface
Size
Ohlfs
Palatino
Revue
Roman
Italic
Bold
Bold Italic
36
12
14
16
18
24
36
48
Font
Font Panel... t
Bold b
Italic i
Larger
Smaller
Heavier
Lighter
Superscript /
Subscript \
Unscript
Copy Font 3
Paste Font 4
Preview
Set
Insecta.wn — /private/tmp
11
Fixed Flexible
Check Spelling
Document
Find Next
Guess
Ignore
Guesses
firs
fire
fist
first
fir
fiat
Dictionary
Forget
Learn
Load
PHYLOGENY OF THE INSECTA
The fossil record for precambrian time is quite scanty, but by the Cambrian period marine arthropods were present, consisting of trilobites, crustaceans, and xiphosurans. The first terrestrial arthropods--scorpions and millipedes--appeared later, in the Silurian period, and the firt insects appeared in the Devonian. Relatively few insects fossils are known from the Devonian, but many are known from the Carboniferous and later periods.
100%
Page 1
9:00 AM
THU
12
OCT

NeXT, Inc.
Digital Webster and Digital Quotations

The complete writing environment of the NeXT Computer includes, in addition to the WriteNow word processor, digital access to *Webster's Ninth New Collegiate Dictionary*, *Webster's Collegiate Thesaurus*, and *The Oxford Dictionary of Quotations.*

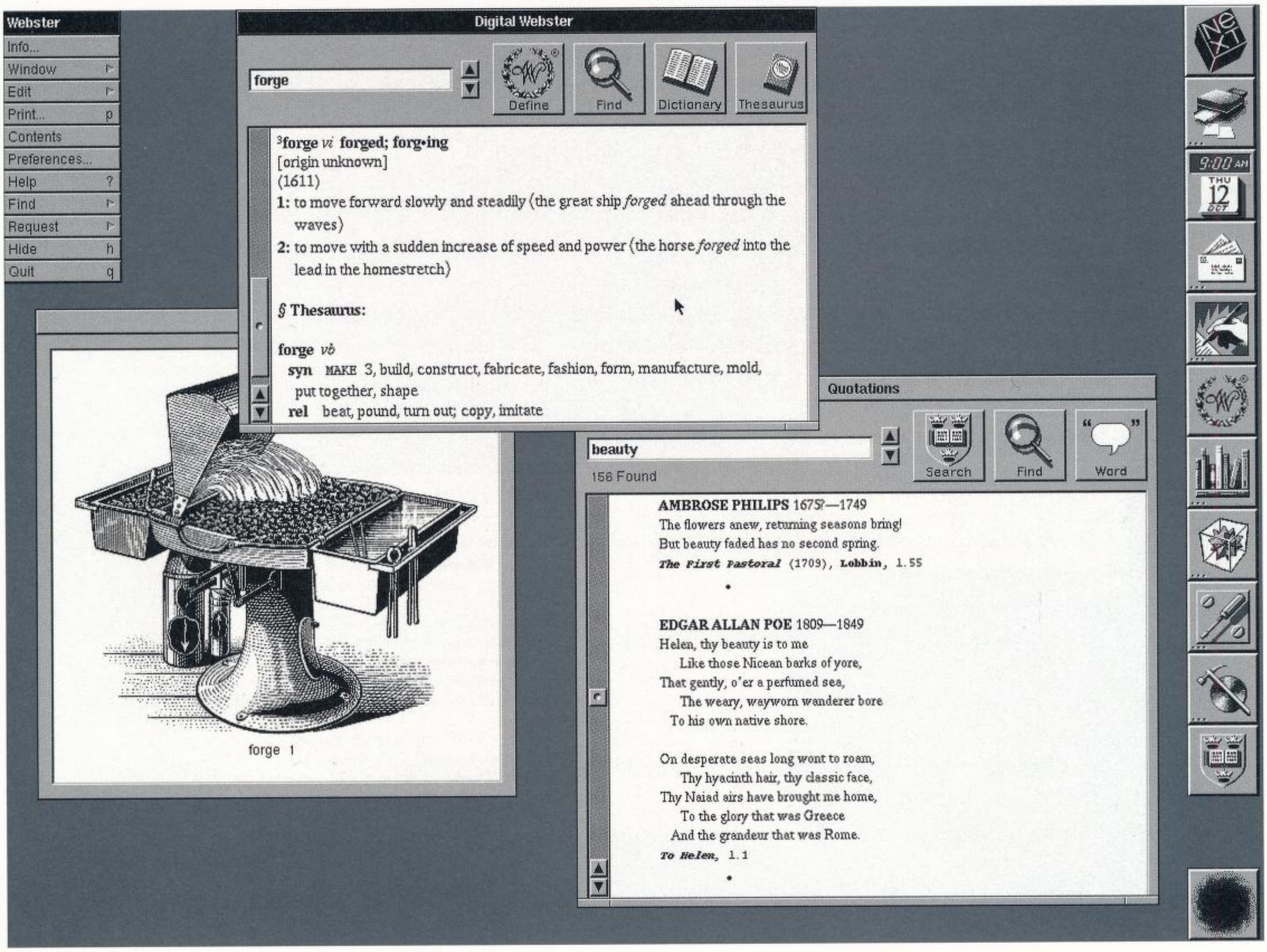
These reference volumes contain all the information available in their printed versions (including pictures); they display it in a cleaner, more readable form; and they add to it all the convenience, power, and efficiency of electronic access. Among their features:

- Complete on-line access to all the dictionary and thesaurus apparatus, including a handbook of style.
- The ability to follow a cross-reference thread by pointing and clicking.
- Full word, bold word, and prefix search capability.
- Full direct communication between WriteNow, Digital Webster, Digital Quotations, and Digital Librarian.

With the dictionary and thesaurus, you can look up word meanings, spellings, synonyms, antonyms, and pronunciations, without exiting from the word processor. Simply select a word in a document in progress, or type in a questionable or interesting word. The quality of the on-screen dictionary – with its original definitions, illustrations, punctuation, and appearance intact – ensures that you sacrifice nothing by abandoning your shelf-bound dictionaries.

Similarly, the on-line book of quotations lets you choose a quotation to spice up a document or speech, or find out who uttered a particular phrase or idea. As with Digital Webster, you can look up quotes by selecting a word in a document and searching all possible matches, or by typing in a word or words.

In the NeXT writing environment, the electronic references plus WriteNow make writing easier, richer, and more fun.


Webster
Info...
Window
Edit
Print... p
Contents
Preferences...
Help ?
Find
Request
Hide h
Quit q
Digital Webster
forge
Define
Find
Dictionary
Thesaurus
3forge vi forged; forg•ing
[origin unknown]
(1611)
1: to move forward slowly and steadily (the great ship forged ahead through the waves)
2: to move with a sudden increase of speed and power (the horse forged into the lead in the homestretch)
§ Thesaurus:
forge vb
syn MAKE 3, build, construct, fabricate, fashion, form, manufacture, mold, put together, shape
rel beat, pound, turn out; copy, imitate
forge 1
Quotations
beauty
156 Found
Search
Find
Word
AMBROSE PHILIPS 1675?—1749
The flowers anew, returning seasons bring!
But beauty faded has no second spring.
The First Pastoral (1709), Lobbin, l.55
EDGAR ALLAN POE 1809—1849
Helen, thy beauty is to me
Like those Nicean barks of yore,
That gently, o'er a perfumed sea,
The weary, wayworn wanderer bore
To his own native shore.
On desperate seas long wont to roam,
Thy hyacinth hair, thy classic face,
Thy Naiad airs have brought me home,
To the glory that was Greece
And the grandeur that was Rome.
To Helen, l.1

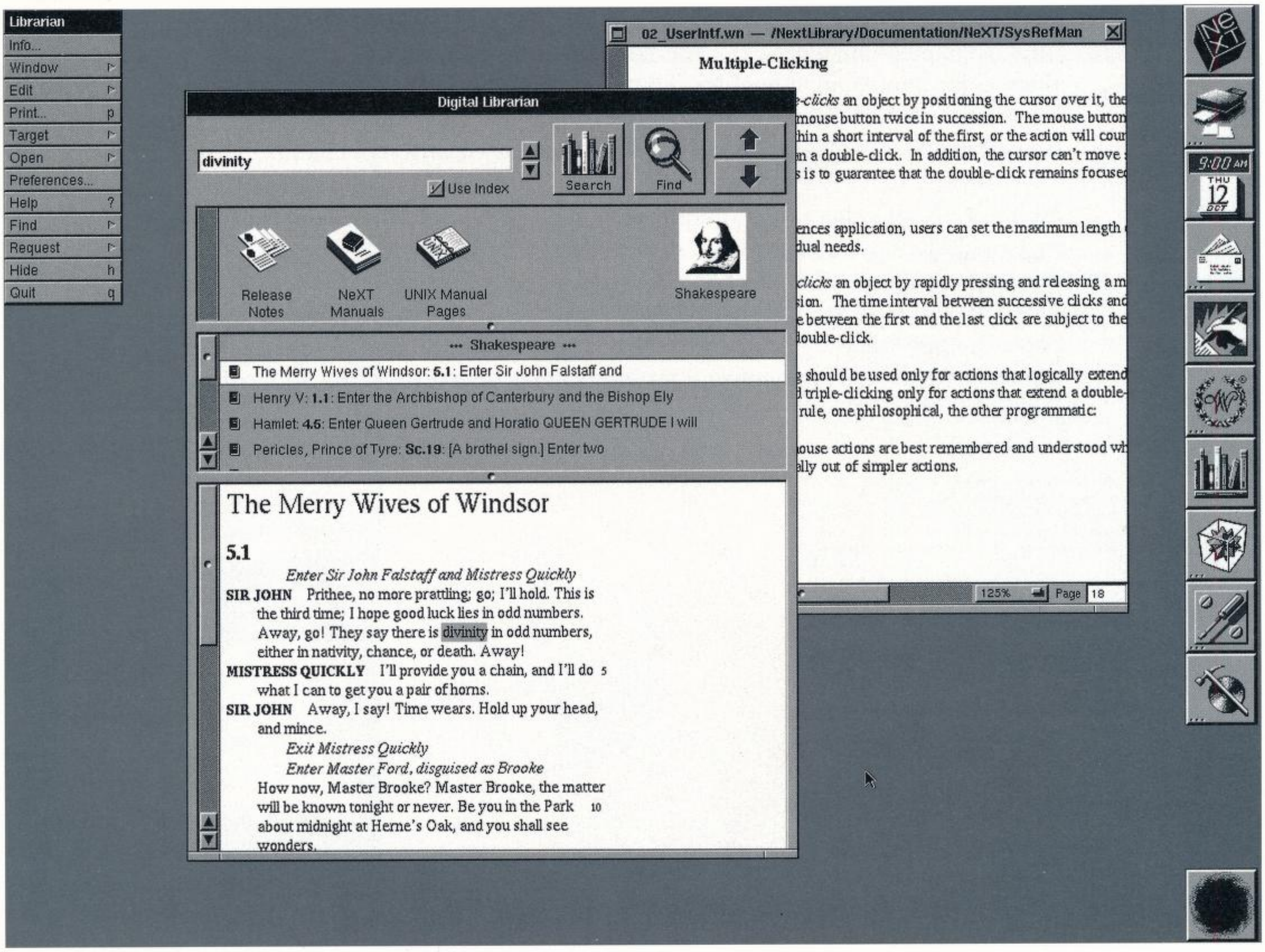
NeXT, Inc.
Digital Librarian

Digital Librarian™, which includes the Oxford University Press™ Edition of *William Shakespeare: The Complete Works*, is a very capable built-in searching and indexing tool, providing the basic capabilities you need to make on-line access to documents efficient and productive. It can build a fast-search index for any book or folder whose icon you drop into the application. It can then look up whatever you ask it to, displaying the relevant part of the document in seconds or less. Digital Librarian comes with the system documentation and the complete works of Shakespeare already indexed.

Its usefulness is not confined to material acquired from others. Correspondence, design notes, business records, contract files, experimental observations, downloaded search results, and even something as simple as a phone list are all useful grist for Digital Librarian's mill.

Its features include:

- Access to information on a local disk or over the network in seconds through a simple, direct interface.
- Customizable settings for adjusting the thoroughness of the index.
- Full word and prefix searching.
- Ability to sort found entries by date, description, or weight.
- Separate font selection and size control over the entry summary and the document display area.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Help ?
Find
Request
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Quit q
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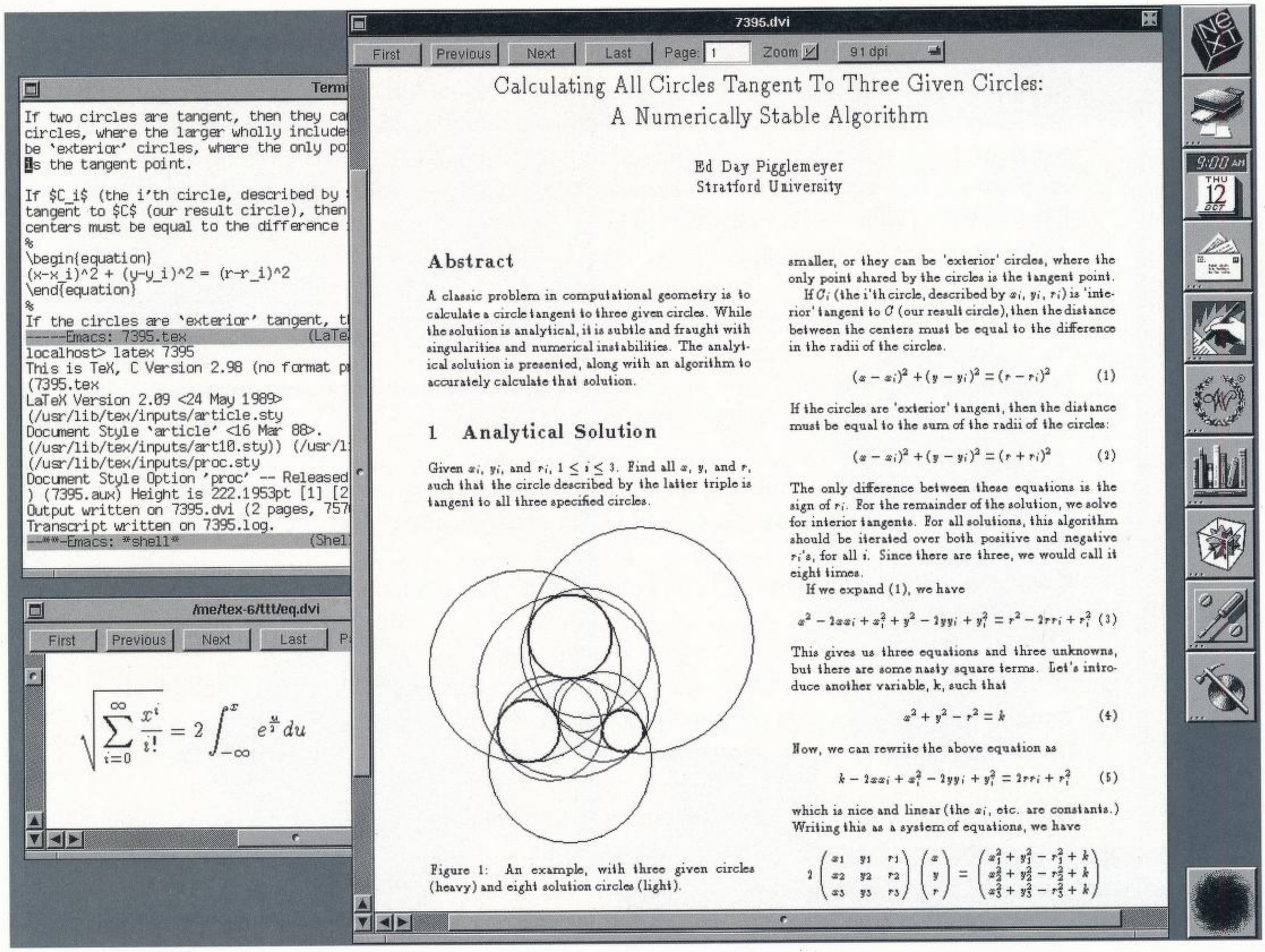
Multiple-Clicking
Digital Librarian
divinity
Use Index
Search
Find
Release Notes
NeXT Manuals
UNIX Manual Pages
Shakespeare
••• Shakespeare •••
The Merry Wives of Windsor: 5.1: Enter Sir John Falstaff and
Henry V: 1.1: Enter the Archbishop of Canterbury and the Bishop Ely
Hamlet: 4.5: Enter Queen Gertrude and Horatio QUEEN GERTRUDE I will
Pericles, Prince of Tyre: Sc.19: [A brothel sign.] Enter two
The Merry Wives of Windsor
5.1
Enter Sir John Falstaff and Mistress Quickly
SIR JOHN Prithee, no more prattling; go; I'll hold. This is the third time; I hope good luck lies in odd numbers. Away, go! They say there is divinity in odd numbers, either in nativity, chance, or death. Away!
MISTRESS QUICKLY I'll provide you a chain, and I'll do what I can to get you a pair of horns.
SIR JOHN Away, I say! Time wears. Hold up your head, and mince.
Exit Mistress Quickly
Enter Master Ford, disguised as Brooke
How now, Master Brooke? Master Brooke, the matter will be known tonight or never. Be you in the Park about midnight at Herne's Oak, and you shall see wonders.
125%
Page 18
9:00 AM
THU
12
OCT

Radical Eye Software
TEX and METAFONT

The TEX typesetting system is a document preparation system designed for technical documents, reports, and books. Written by Donald E. Knuth and ported by Radical Eye Software, it features full support for PostScript fonts and graphics. It typesets complex equations and tables gracefully and beautifully. Powerful macro facilities and full typographic control allow the easy creation of beautiful documents.

NeXT TEX includes a full implementation of TEX, as described in *The TEXbook* by Donald E. Knuth. Also included is METAFONT,™ the font design system described in *The METAFONTBOOK* by the same author, and LaTeX, as described in *LaTeX User's Guide and Reference Manual* by Leslie Lamport. All three of these books are published by Addison-Wesley. The distribution also includes a PostScript printer driver, a TEX previewer, a bibliography database program, and various other utilities.


Terminal
If two circles are tangent, then they ca
circles, where the larger wholly include
be 'exterior' circles, where the only po
is the tangent point.
If C_i (the i'th circle, described by
tangent to C (our result circle), then
centers must be equal to the difference
%
\begin{equation}
(x-x_i)^2 + (y-y_i)^2 = (r-r_i)^2
\end{equation}
%
If the circles are 'exterior' tangent, t
-----Emacs: 7395.tex (LaTe
localhost> latex 7395
This is TeX, C Version 2.98 (no format p
(7395.tex
LaTeX Version 2.09 <24 May 1989>
(/usr/lib/tex/inputs/article.sty
Document Style 'article' <16 Mar 88>.
(/usr/lib/tex/inputs/art10.sty)) (/usr/l
(/usr/lib/tex/inputs/proc.sty
Document Style Option 'proc' -- Released
) (7395.aux) Height is 222.1953pt [1] [2
Output written on 7395.dvi (2 pages, 757
Transcript written on 7395.log.
--***-Emacs: *shell* (Shel
/me/tex-6/ttt/eq.dvi
First
Previous
Next
Last
$$\sqrt{\sum_{i=0}^{\infty} \frac{x^i}{i!}} = 2 \int_{-\infty}^{x} e^{\frac{u}{2}} du$$
7395.dvi
First
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Next
Last
Page: 1
Zoom
91 dpi
Calculating All Circles Tangent To Three Given Circles:
A Numerically Stable Algorithm
Ed Day Pigglemeyer
Stratford University
Abstract
A classic problem in computational geometry is to calculate a circle tangent to three given circles. While the solution is analytical, it is subtle and fraught with singularities and numerical instabilities. The analytical solution is presented, along with an algorithm to accurately calculate that solution.
1 Analytical Solution
Given x_i, y_i, and r_i, $1 \le i \le 3$. Find all x, y, and r, such that the circle described by the latter triple is tangent to all three specified circles.
Figure 1: An example, with three given circles (heavy) and eight solution circles (light).
smaller, or they can be 'exterior' circles, where the only point shared by the circles is the tangent point.
If C_i (the i'th circle, described by x_i, y_i, r_i) is 'interior' tangent to C (our result circle), then the distance between the centers must be equal to the difference in the radii of the circles.
$$(x - x_i)^2 + (y - y_i)^2 = (r - r_i)^2 \quad (1)$$
If the circles are 'exterior' tangent, then the distance must be equal to the sum of the radii of the circles:
$$(x - x_i)^2 + (y - y_i)^2 = (r + r_i)^2 \quad (2)$$
The only difference between these equations is the sign of r_i. For the remainder of the solution, we solve for interior tangents. For all solutions, this algorithm should be iterated over both positive and negative r_i's, for all i. Since there are three, we would call it eight times.
If we expand (1), we have
$$x^2 - 2xx_i + x_i^2 + y^2 - 2yy_i + y_i^2 = r^2 - 2rr_i + r_i^2 \quad (3)$$
This gives us three equations and three unknowns, but there are some nasty square terms. Let's introduce another variable, k, such that
$$x^2 + y^2 - r^2 = k \quad (4)$$
Now, we can rewrite the above equation as
$$k - 2xx_i + x_i^2 - 2yy_i + y_i^2 = 2rr_i + r_i^2 \quad (5)$$
which is nice and linear (the x_i, etc. are constants.) Writing this as a system of equations, we have
$$2\begin{pmatrix} x_1 & y_1 & r_1 \\ x_2 & y_2 & r_2 \\ x_3 & y_3 & r_3 \end{pmatrix}\begin{pmatrix} x \\ y \\ r \end{pmatrix} = \begin{pmatrix} x_1^2 + y_1^2 - r_1^2 + k \\ x_2^2 + y_2^2 - r_2^2 + k \\ x_3^2 + y_3^2 - r_3^2 + k \end{pmatrix}$$

Wolfram Research, Inc.

Mathematica

Mathematica is a comprehensive software system for mathematical computation, widely used by scientists, engineers, analysts, students, and others. Thanks to the inclusion of *Mathematica* with every system, the NeXT Computer can perform nearly any numerical, symbolic, or graphical mathematical manipulation users are likely to ask of it, no matter how sophisticated their mathematical needs. And because the *Mathematica* kernel can be up and running in less than a second when called from another program, its calculating powers are almost instantly available to any program that needs to use them for results.

Mathematica performs several kinds of computations:

Numerical computations, allowing arbitrary precision, including matrix manipulation and evaluation of more than 400 mathematical functions.

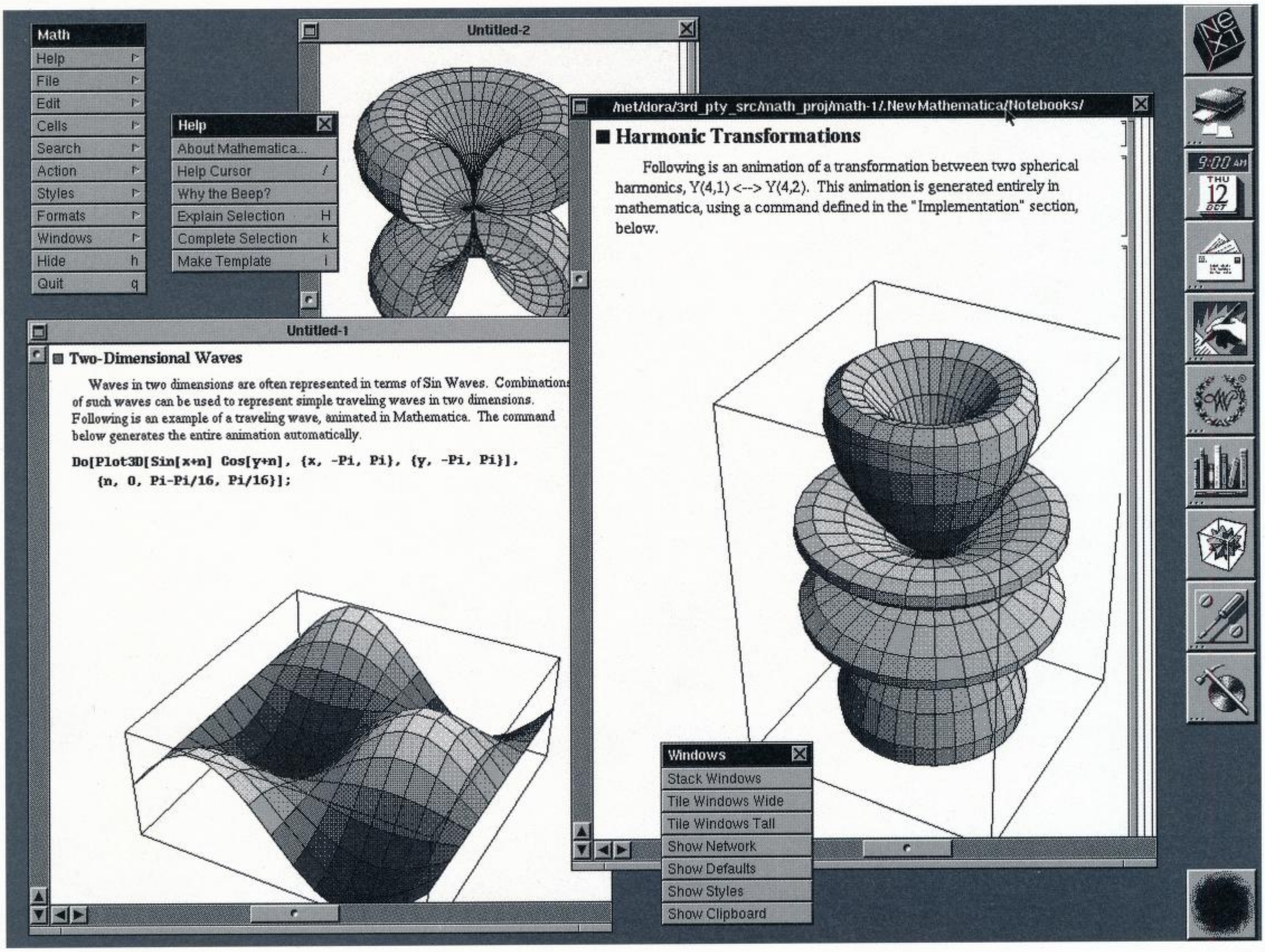
Symbolic computations, including algebraic solution of equations, polynomial factorization, symbolic integration and differentiation, and power series expansion.

Graphics, including 2D and 3D plots of functions and data, 3D object modeling, and animation.

Mathematica can be used both as an interactive calculational tool and as a high-level programming language. It supports procedural and functional programming, as well as transformation rules based on pattern matching.

On the NeXT Computer, *Mathematica* has a front end that supports Notebooks, which are interactive documents that mix text, graphics, and *Mathematica* input and output.

Mathematica can be connected to external programs, and can generate output for PostScript, TEX, C, and other languages. The *Mathematica* kernel on the NeXT Computer is fully compatible with all other versions of *Mathematica*.


Math
Help
File
Edit
Cells
Search
Action
Styles
Formats
Windows
Hide h
Quit q
Untitled-2
Help
About Mathematica...
Help Cursor /
Why the Beep?
Explain Selection H
Complete Selection k
Make Template l
Untitled-1
Two-Dimensional Waves
Waves in two dimensions are often represented in terms of Sin Waves. Combinations of such waves can be used to represent simple traveling waves in two dimensions. Following is an example of a traveling wave, animated in Mathematica. The command below generates the entire animation automatically.
Do[Plot3D[Sin[x+n] Cos[y+n], {x, -Pi, Pi}, {y, -Pi, Pi}],
{n, 0, Pi-Pi/16, Pi/16}];
/net/dora/3rd_pty_src/math_proj/math-1/.NewMathematica/Notebooks/
Harmonic Transformations
Following is an animation of a transformation between two spherical harmonics, Y(4,1) <--> Y(4,2). This animation is generated entirely in mathematica, using a command defined in the "Implementation" section, below.
Windows
Stack Windows
Tile Windows Wide
Tile Windows Tall
Show Network
Show Defaults
Show Styles
Show Clipboard
9:00 AM
THU
12
OCT

Bundled Programming Environment

NeXT, Inc.
Interface Builder and the
Application, Sound, and Music Kits

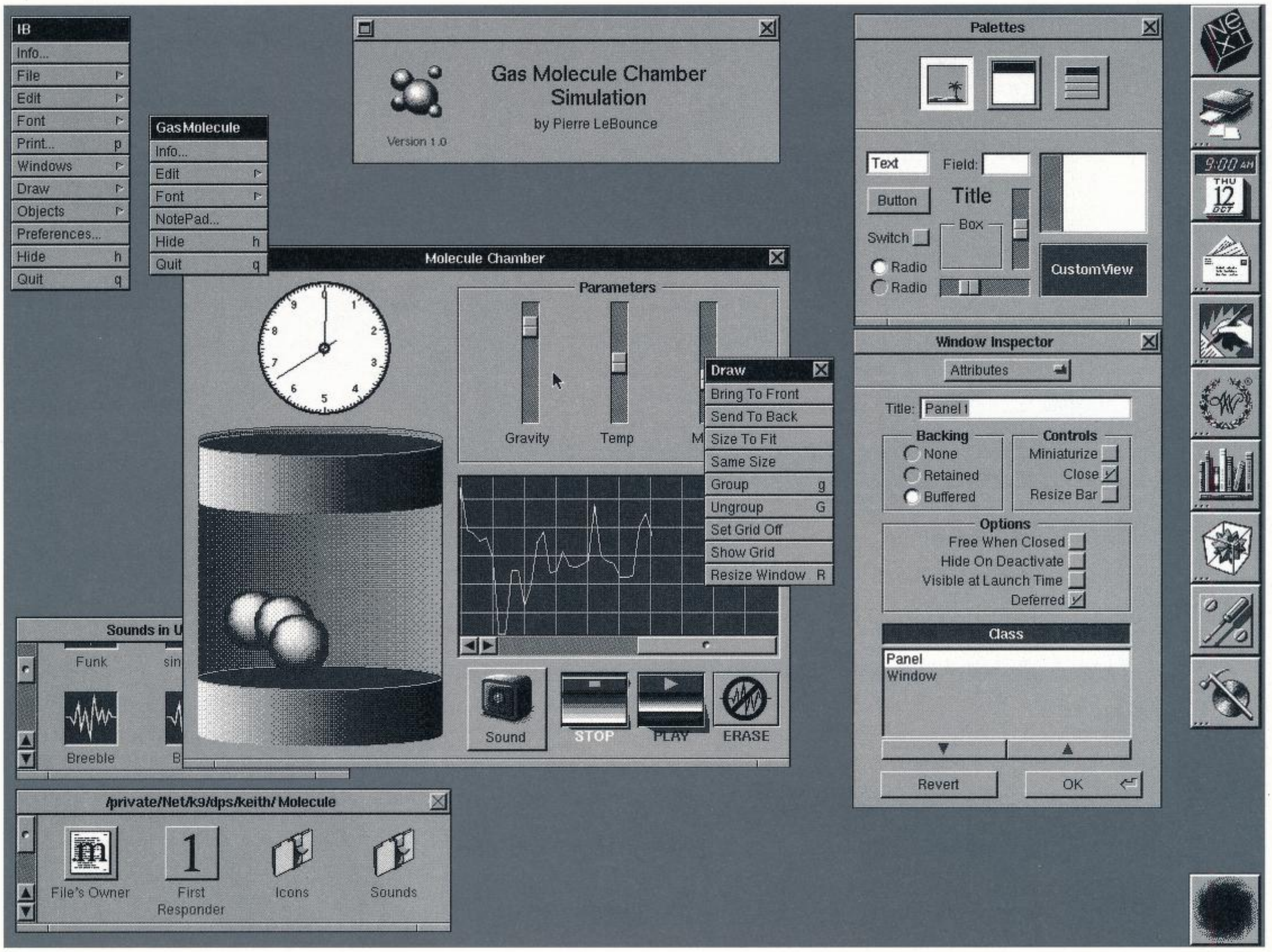
Every NeXT system includes a full object-oriented programming environment and tool set designed to make developing software dramatically easier, more efficient, and more productive. By choosing an object-oriented platform, we alleviated the need for every programmer to reinvent every wheel for each new program.

The centerpiece of the NextStep® development environment is a unique new application program called Interface Builder. Memorizing several hundred program calls just to put the interface on the screen is a waste of developer brain power; Interface Builder makes building an application's interface feel more like shuffling through and choosing toys from a box and less like remembering formulas for a physics test.

Instead of remembering the code incantations to draw the pieces of a slider at a particular location in a particular window, programmers need only point to the picture of a slider and drag a copy of it to the panel or window where they need it. Their energy can go into thinking about how the interface looks and what it's meant to let the user do, instead of into how to create it on the screen. And when the interface is ready, a single command empowers the objects and methods that do the work.

We have built more than 30 objects into the bundled Application Kit to support Interface Builder and to supply developers with prebuilt, fully reusable, extensible code for such basic functionality as displaying editable, scrollable multifont, multistyle text in a window; reading from and writing to disk; printing, and so on.

Similarly, we have built the objects in the bundled Music and Sound Kits to provide prebuilt, fully reusable, extensible code for controlling the built-in Motorola DSP56001 Digital Signal Processor.

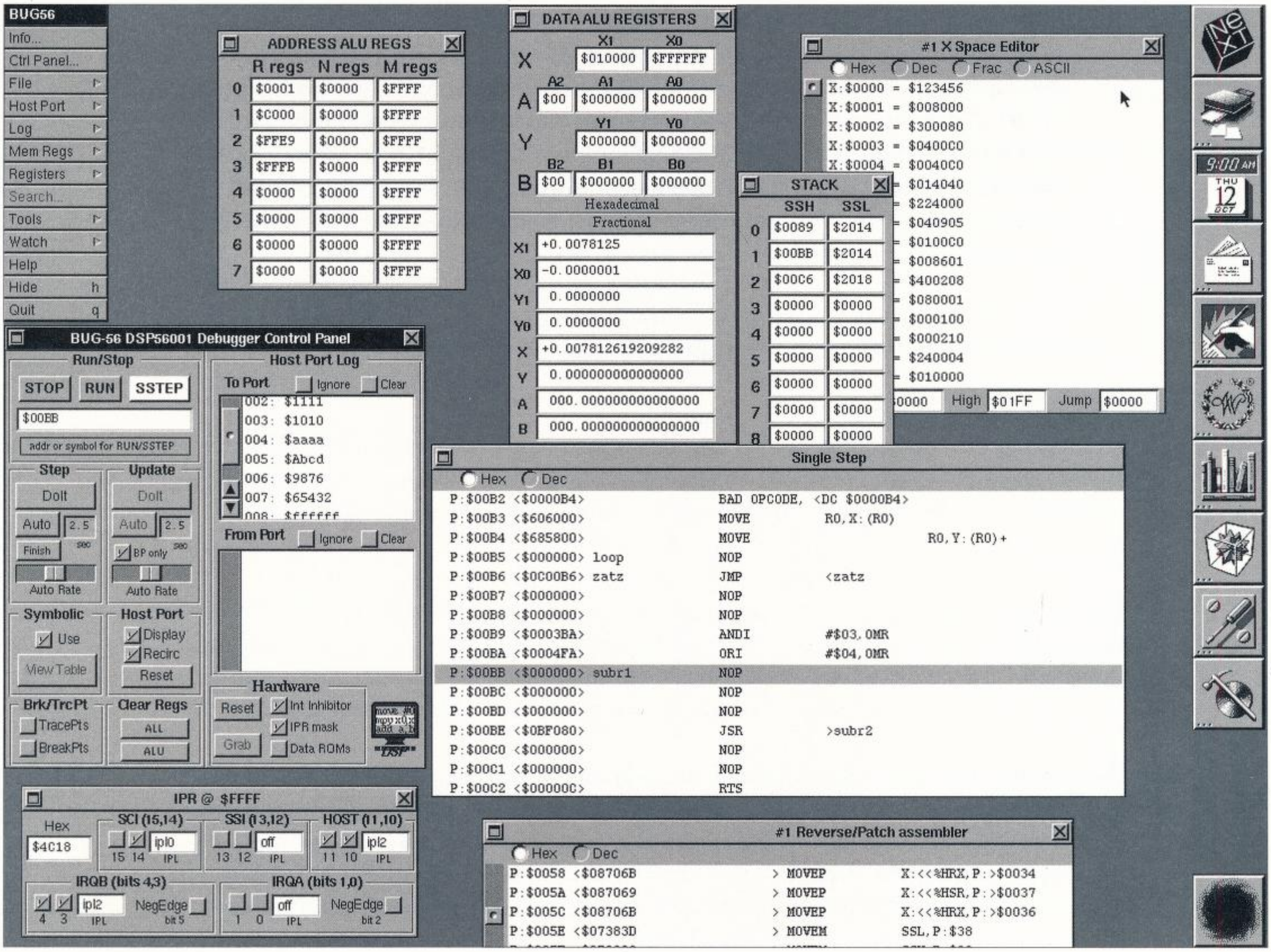

IB
Info...
File
Edit
Font
Print... p
Windows
Draw
Objects
Preferences...
Hide h
Quit q
GasMolecule
Info...
Edit
Font
NotePad...
Hide h
Quit q
Gas Molecule Chamber Simulation
by Pierre LeBounce
Version 1.0
Molecule Chamber
Parameters
Gravity
Temp
Draw
Bring To Front
Send To Back
Size To Fit
Same Size
Group g
Ungroup G
Set Grid Off
Show Grid
Resize Window R
Sounds in U
Funk
Breeble
Sound
STOP
PLAY
ERASE
/private/Net/k9/dps/keith/ Molecule
File's Owner
First Responder
Icons
Sounds
Palettes
Text
Field:
Button
Title
Box
Switch
Radio
Radio
CustomView
Window Inspector
Attributes
Title: Panel 1
Backing
None
Retained
Buffered
Controls
Miniaturize
Close
Resize Bar
Options
Free When Closed
Hide On Deactivate
Visible at Launch Time
Deferred
Class
Panel
Window
Revert
OK
9:00 AM
THU
12
OCT

Ariel Corporation

BUG-56, Digital Signal Processor Debugger

BUG-56™, which comes with every NeXT Computer System, is a symbolic debugger designed to assist in developing applications for the Motorola DSP56001 Digital Signal Processor, which is also standard with each NeXT Computer.

Ariel's BUG-56 is the first symbolic debugger for Motorola's DSP56001. Data and registers can be modified or viewed at any time. BUG-56 supports multiple breakpoints, single stepping, symbolic disassembly, and a patch assembler.


BUG56
Info...
Ctrl Panel...
File
Host Port
Log
Mem Regs
Registers
Search...
Tools
Watch
Help
Hide h
Quit q
ADDRESS ALU REGS
R regs N regs M regs
0 $0001 $0000 $FFFF
1 $C000 $0000 $FFFF
2 $FFE9 $0000 $FFFF
3 $FFFB $0000 $FFFF
4 $0000 $0000 $FFFF
5 $0000 $0000 $FFFF
6 $0000 $0000 $FFFF
7 $0000 $0000 $FFFF
DATA ALU REGISTERS
X1 X0
X $010000 $FFFFFF
A2 A1 A0
A $00 $000000 $000000
Y1 Y0
Y $000000 $000000
B2 B1 B0
B $00 $000000 $000000
Hexadecimal
Fractional
X1 +0.0078125
X0 -0.0000001
Y1 0.0000000
Y0 0.0000000
X +0.007812619209282
Y 0.000000000000000
A 000.000000000000000
B 000.000000000000000
#1 X Space Editor
Hex Dec Frac ASCII
X:$0000 = $123456
X:$0001 = $008000
X:$0002 = $300080
X:$0003 = $040C0
X:$0004 = $0040C0
= $014040
= $224000
= $040905
= $0100C0
= $008601
= $400208
= $080001
= $000100
= $000210
= $240004
= $010000
$0000 High $01FF Jump $0000
STACK
SSH SSL
0 $0089 $2014
1 $00BB $2014
2 $00C6 $2018
3 $0000 $0000
4 $0000 $0000
5 $0000 $0000
6 $0000 $0000
7 $0000 $0000
8 $0000 $0000
BUG-56 DSP56001 Debugger Control Panel
Run/Stop
STOP RUN SSTEP
$00EB
addr or symbol for RUN/SSTEP
Step
Dolt
Auto 2.5 sec
Finish
Auto Rate
Update
Dolt
Auto 2.5 sec
BP only
Auto Rate
Symbolic
Use
View Table
Host Port
Display
Recirc
Reset
Brk/Trc Pt
TracePts
BreakPts
Clear Regs
ALL
ALU
Host Port Log
To Port Ignore Clear
002: $1111
003: $1010
004: $aaaa
005: $Abcd
006: $9876
007: $65432
008: $ffffff
From Port Ignore Clear
Hardware
Reset
Grab
Int Inhibitor
IPR mask
Data ROMs
Single Step
Hex Dec
P:$00B2 <$0000B4> BAD OPCODE, <DC $0000B4>
P:$00B3 <$606000> MOVE R0,X:(R0)
P:$00B4 <$685800> MOVE R0,Y:(R0)+
P:$00B5 <$000000> loop NOP
P:$00B6 <$0C00B6> zatz JMP <zatz
P:$00B7 <$000000> NOP
P:$00B8 <$000000> NOP
P:$00B9 <$0003BA> ANDI #$03,OMR
P:$00BA <$0004FA> ORI #$04,OMR
P:$00BB <$000000> subr1 NOP
P:$00BC <$000000> NOP
P:$00BD <$000000> NOP
P:$00BE <$0BF080> JSR >subr2
P:$00C0 <$000000> NOP
P:$00C1 <$000000> NOP
P:$00C2 <$00000C> RTS
IPR @ $FFFF
Hex $4C18
SCI (15,14) ipl0 15 14 IPL
SSI (13,12) off 13 12 IPL
HOST (11,10) ipl2 11 10 IPL
IRQB (bits 4,3) ipl2 4 3 IPL NegEdge bit 5
IRQA (bits 1,0) off 1 0 IPL NegEdge bit 2
#1 Reverse/Patch assembler
Hex Dec
P:$0058 <$08706B > MOVEP X:<<%HRX,P:>$0034
P:$005A <$087069 > MOVEP X:<<%HSR,P:>$0037
P:$005C <$08706B > MOVEP X:<<%HRX,P:>$0036
P:$005E <$07383D > MOVEM SSL,P:$38

Motorola, Inc.
DSP56000 Family Macro Cross Assembler (ASM56000)

The full-featured ASM56000™ macro cross-assembler program translates one or more source fields containing DSP instruction mnemonics, operands, and assembler directives into relocatable object modules that are relocated and linked by the DSP56000 Linker. In the optional absolute mode, the cross-assembler will generate absolute load files. The ASM56000 recognizes the full instruction set and all addressing modes of the DSP56000, including support for separate X and Y data memory spaces and data transfer macros with support for macro libraries (via the MACLIB directive).

A similar Motorola macro cross-assembler product – the ASM96000™, which operates on the DSP96000 family – is available separately from Motorola.

NeXT, Inc. and Free Software Foundation
NeXT Objective-C Compiler and Debugger

The Objective-C® compiler provided with the NeXT Computer System is a high-performance optimizing C compiler that is fully compliant with the draft proposed standard for ANSI-C. The compiler is an enhanced version of the GNU C Compiler (GCC), developed by the Free Software Foundation, which has been extended by NeXT to directly compile Objective-C programs. The Objective-C language adds object-oriented features to the standard C language. These features allow programmers to:

- Build modular, extensible software systems.
- Achieve a high degree of code sharing by making it easy to reuse and specialize existing Objective-C classes.

Because Objective-C is a small superset of the C language, programmers can integrate existing C programs into the NextStep environment easily. It also virtually eliminates the time normally required to learn a new object-oriented language and environment.

The GNU C Compiler is well known for producing highly optimized object code that provides uncompromised performance. GCC also provides such powerful features as inline function expansion, which can make the Motorola MC68882™ Floating-Point Coprocessor achieve even greater mathematical performance.

The GNU Source-Level Debugger (GDB), created by the Free Software Foundation, has been extended by NeXT to support the special features of the NeXT development environment. These extensions provide complete source-level debugging of Objective-C programs using standard Objective-C syntax. Debugging of programs with multiple Mach threads is also fully supported. In addition, NeXT has added an Emacs-style command line interface to GDB.

Sybase, Inc.
NeXT SQL Server

The NeXT SQL Server is based on Sybase, Inc.'s field-tested, industry-standard relational database management system (version 4.0). The NeXT SQL Server is a powerful and flexible solution for single or multiuser database needs, from simple decision support to large transaction processing systems.

Developers can use the engine as the basis for database applications, without having to start from scratch. Users can count on underlying data compatibility among these applications, and can cut, copy, and paste data as cleanly as they now cut, copy, and paste text and graphics. Support for up to five simultaneous users is built in, and the engine is fully compatible with, and transparently upgradable to, the full-powered network version, which supports an unlimited number of simultaneous users.

NeXT SQL Database Server provides:

Client/Server architecture, separating database management functions into a "front-end" client component, where data is manipulated, and a "back-end" server component, where data is managed.

DBMS-enforced integrity, allowing data integrity and transaction logic to be stored in the database itself, accessed by all database applications. SQL Server evaluates the client's request and rejects unauthorized changes. This intelligence simplifies application design and maintenance.

Transact-SQL™ commands, combining industry-standard SQL with Sybase enhancements (for creating and storing precompiled commands using if-else logic, and so on).

Distributed data management, permitting both distributed access (a central SQL Server supporting applications running on different machines) and distributed databases (an application accessing data from multiple SQL Servers in a single transaction).

High availability, featuring on-line utilities to handle diagnostics, changes, and more, while applications continue to run.

Performance, built in at the design stage.

Franz Inc.
Allegro Common LISP

For 25 years, Common LISP has been the *lingua franca* of artificial intelligence research. Including Franz Allegro Common LISP with every NeXT system acknowledges the importance of giving NeXT developers access to a high-quality LISP programming environment.

The NeXT version of Franz Allegro Common LISP is fully compatible with Objective-C, so it delivers to LISP the best of both worlds in a single environment: the full power of LISP plus the full power and efficiency of Interface Builder and the bundled kits. Application Kit objects are fully available from the LISP environment, enabling users to subclass Application Kit objects from LISP.

Allegro CL is a complete implementation of Common LISP as defined in Guy Steele's *Common LISP: The Language*, and contains extensions for increasing programmer productivity. For example, powerful debugging tools, including a tracer, a stepper, and extensible top level with history, are included for saving time and effort when debugging applications.

Directory of Third-Party Products

What follows is a directory of publicly announced third-party software and hardware products available and/or under development for the NeXT Computer System. The products are grouped into several categories: peripherals, general business applications (such as spreadsheets), workstation publishing and graphics (page layout, graphic tools and art), communications (network and modem), database, mathematics and statistics, computer-assisted design, music, multimedia and hypertext, education, and developer tools (languages, etc.).

Taken together, the products described in this directory bear eloquent testimony to the range of peripheral and software possibilities the platform is inspiring from day one of its availability. For additional information about particular products beyond what's included here, we encourage you to contact the vendors directly via the addresses and phone numbers they have provided for you.

A final note: Because this directory includes only applications that have been publicly announced by third-party developers, it lists only a small subset of the total number of development projects currently underway. For a more extensive (though not complete) listing of developers who have attended the NeXT Developer's training class, refer to page 133.

NeXT, Inc. does not warrant the validity of any claims made in these descriptions of third-party products. These product descriptions were taken from information provided by each vendor.

Peripherals

Abaton
Scan 300/GS

Abaton®'s Scan 300/GS™ is a 300 dpi, 8-bit scanner that offers the superb clarity of 256 levels of true gray-scale scanning. With its scanning capability, the 300/GS produces scanned images that retain much of the richness and detail of the originals.

The flatbed design of the 300/GS lets you accurately align and scan books, magazines, and other documents that sheetfeed scanners cannot handle. The removable lid allows you to easily scan oversized drawings and maps.

The software interface kit for the 300/GS contains software that gives you accurate control of scanning brightness and contrast. Documents can be quickly previewed and portions of the document selected for a full 8-bits-per-pixel scan. Scanned documents can be saved as TIFF files for later use. Using the NeXT Computer's multitasking, other applications can invoke the 300/GS software and directly incorporate the scanned image.

Price: Contact Abaton

Availability: Contact Abaton

For more information:

Abaton
A Division of Everex Systems, Inc.
48431 Milmont Drive
Fremont, CA 94538
415 683-2226

Ariel Corporation
DM-N Digital Microphone

Ariel specializes in supplying high-quality audio domain digital signal processing hardware and software development tools. The DM-N is a digital microphone accessory for the NeXT Computer with lab-quality data acquisition capabilities.

The DM-N is a high-fidelity stereo microphone with integral Analog-to-Digital converters, volume controls, and level indicators. It connects to the NeXT's DSP port and provides software-selectable sample rates from 88.2 kHz to 5.5 kHz per channel, with tracking linear-phase anti-alias filters. DM-N offers true 16-bit performance, which complements the NeXT Computer's compact disc-quality audio outputs.

The DM-N also accepts differential line-level signals from CD players, tape recorders, mixing consoles, or other analog audio equipment.

Ariel Corporation, founded in 1982, also designs and manufactures DSP-based boards for the IBM® PC and compatibles and Hewlett-Packard Series 200/300 engineering workstations. In addition, the company supplies application software for acoustic testing; digital recording, editing, and playback; spectrum analysis; and digital filter design.

Price: $495 (North America)

Availability: Contact Ariel

For more information:
Mark Clayton/
Anthony Agnello
Ariel Corporation
433 River Road
Highland Park, NJ 08904
201 249-2900
201 249-2123 fax

Dayna Communications, Inc.
DaynaFILE

Dayna Communications, Inc., designs and manufactures innovative, high-quality connectivity and networking products, including the first MS-DOS® co-processor product available to Apple® Macintosh users. The company's current offerings include DaynaFILE™, an external disk drive that lets Macintosh computers read from and write to MS-DOS disks.

Dayna is developing an external, SCSI floppy disk drive for the NeXT Computer. This drive will read from and write to standard UNIX-formatted diskettes, as well as all of the MS-DOS formats. Subsequent product enhancements can provide direct access to Macintosh formatted diskettes.

The Dayna drive will facilitate the publishing, distribution, and transfer of applications, databases, and other data on low-cost, floppy diskettes. It will also provide seamless access from NeXT Computers to data generated on computers running non-UNIX operating systems, such as MS-DOS.

In addition to DaynaFILE, the company has also created DaynaTALK™, DaynaNET™, and DaynaMAIL™.

Price: Contact Dayna

Availability: Contact Dayna

For more information:
Deanne Waltz
Dayna Communications, Inc.
50 South Main Street,
Fifth Floor
Salt Lake City, UT 84144
801 531-0600

Extron Electronics
Video Monitor and Projector Interfaces

Extron offers three video monitor and projector interfaces for the NeXT Computer: the RGB 111™ NeXT Computer Interface, the RGB 202™ Universal Analog/ECL/TTL Interface, and the RGB 108™ Universal Analog/ECL Interface.

The RGB 111 interface is designed to isolate and buffer the NeXT Computer's analog signal output to provide simultaneous local monitor viewing and a separate red, green, blue, and composite sync output for displaying the computer video on a compatible data monitor or data projector. The RGB 202 and RGB 108 interfaces allow the black-and-white video of the NeXT Computer's analog signal output to be displayed on compatible large-screen projectors and monitors, while also providing simultaneous local monitor viewing.

With all three products, the result is a black-and-white video display on a large-screen data monitor or data projector. The black-and-white video is created by mixing the red, green, and blue channels within one of the RGB interfaces. A separate monochrome composite video output is also provided for monochrome (green) display of the computer video on a compatible monitor or projector.

Supported monitors and projectors include:

Projectors:
Barco Graphics Series.
Electrohome® Graphics.
ESP ESPRIT™ 1000
Hitachi Graphics Projector.

Monitors:
Contrac 7550 (19").
Mitsubishi 6605 (16").
Mitsubishi 6905 (19").
Monitronix MX-210 (19").

Price: $370 for the RGB 111;
$1,150 for the RGB 202;
$795 for the RGB 108
$125 for the cable required with RGB 202 and 108
Quantity pricing is also available

Availability: Now

For more information:
Extron Electronics
13554 Larwin Circle
Santa Fe Springs, CA 90670
213 802-8804
800 633-9876 (outside CA)
213 802-2741 fax

Metaresearch, Incorporated
Digital Ears

Digital Ears provides the means to enter and record compact disc-quality sounds on the NeXT Computer. Digital Ears, along with the included DERecorder™ software, turns the NeXT Computer into a digital tape recorder for sound and data. Digital Ears (DE-1) converts audio-line level signals into true compact disc-format digital information–16-bit, 44.1 kHz stereo–and sends this information to the NeXT Computer via the NeXT's digital signal processor (DSP) port. Digital Ears is designed to take full advantage of the built-in CD-quality audio playback capabilities of the NeXT Computer.

The Digital Ears comes with software for both audio recording and data acquisition. This software consists of:

DERecorder, a digital tape recorder application that allows you to:

Set input levels using VU meters

Record sounds and data onto SCSI or optical disk at 8 kHz, 22 kHz, or 44.1kHz sampling rates

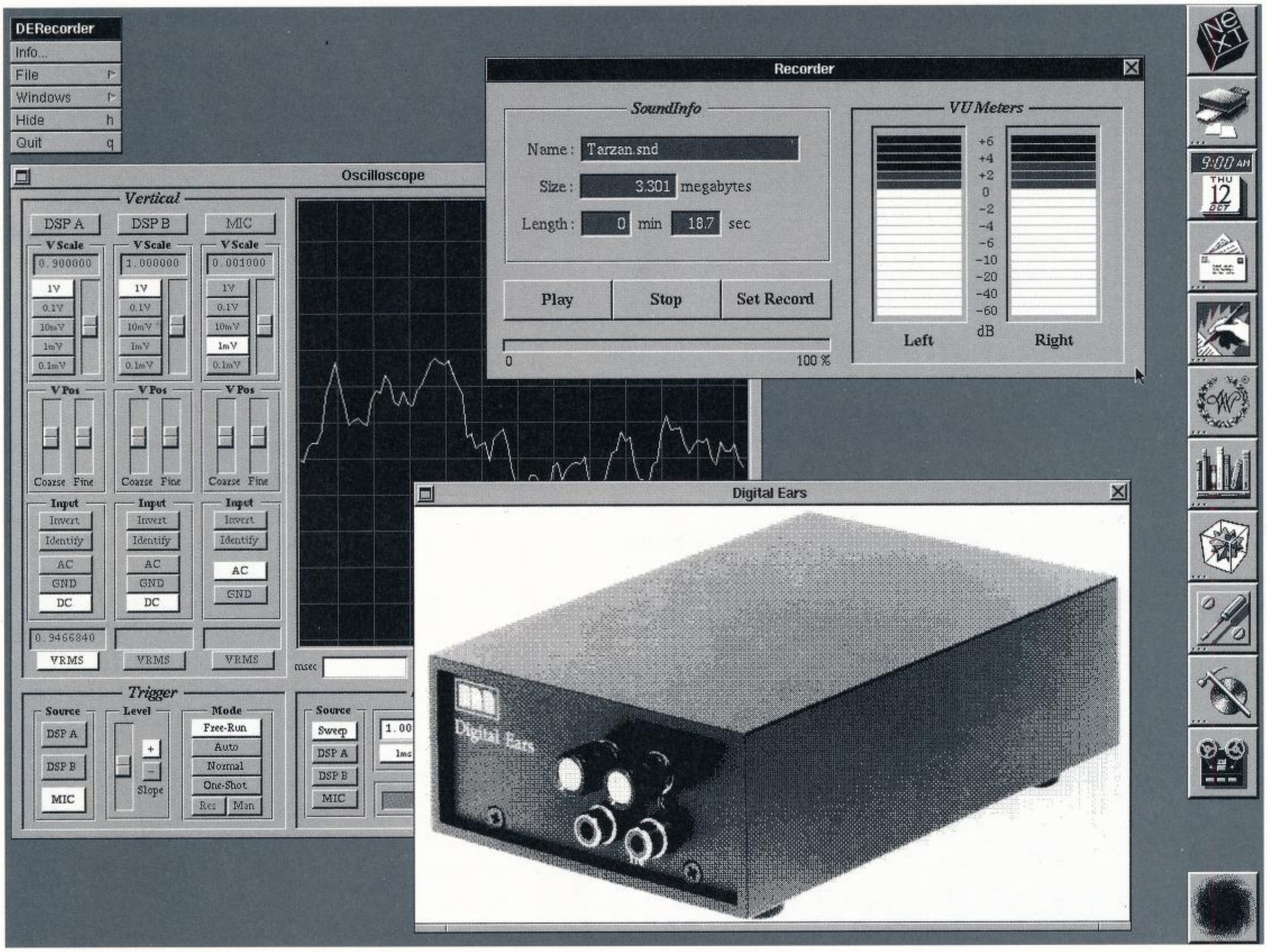
Perform basic sound editing

Queue up soundfiles for playback in the background

MonsterScope, a three-channel oscilloscope/spectrum analyzer that looks at data or sound as it comes into the NeXT Computer from either a Digital Ears or the CODEC input and displays the spectrum of the signal(s).

The Digital Ears has many uses. With Interface Builder and the NeXT operating system, recorded sounds can be incorporated into application interfaces, training/education software, business presentations, and reports. Digital Ears can serve as a platform for digital recording, speech recognition, language/linguistics laboratories, voice therapy and diagnosis, and other voice, speech, and audio applications. As a laboratory A/D converter, Digital Ears can be used in physics and electrical engineering labs, for instrumentation, and for any application that requires the real-time recording and analysis of signals that vary over time. In addition, Metaresearch actively supports developers who want to implement custom applications using the Digital Ears.

The complete Digital Ears package includes a Digital Ears audio input device, DERecorder software, an optical disk with software, and a DSP connector cable.



Price: $795 (Quantity/OEM pricing available)

Availability: Now

For more information:
Kim Orumchian
Metaresearch, Incorporated
516 SE Morrison, Suite M-1
Portland, OR 97214
503 238-5728
503 294-1409 fax

Metaresearch, Incorporated
Digital Eye

Digital Eye provides a means to enter and record NTSC video images on the NeXT Computer. Digital Eye is a frame-grabber that takes advantage of the NeXT's DSP port to bring high-resolution images into the NeXT software environment. Digital Eye can digitize images from a variety of devices, including laserdisc players, Camcorders, CCD cameras, and VCRs. With the DYRecorder™ software that is included with the Digital Eye, video images can be quickly and easily brought into the NeXT Computer, manipulated, and stored to disk.

The Digital Eye features variable image quality ranging from 640 by 480 pixels at 256 shades of gray to 160 by 120 pixels at two shades of gray. The user can set image quality, contrast, and brightness in software. The lower the image quality, the greater the number of frames per second the Digital Eye is able to grab.

The Digital Eye package includes DYRecorder, an application for recording single or multiple successive frames of images. It allows you to:

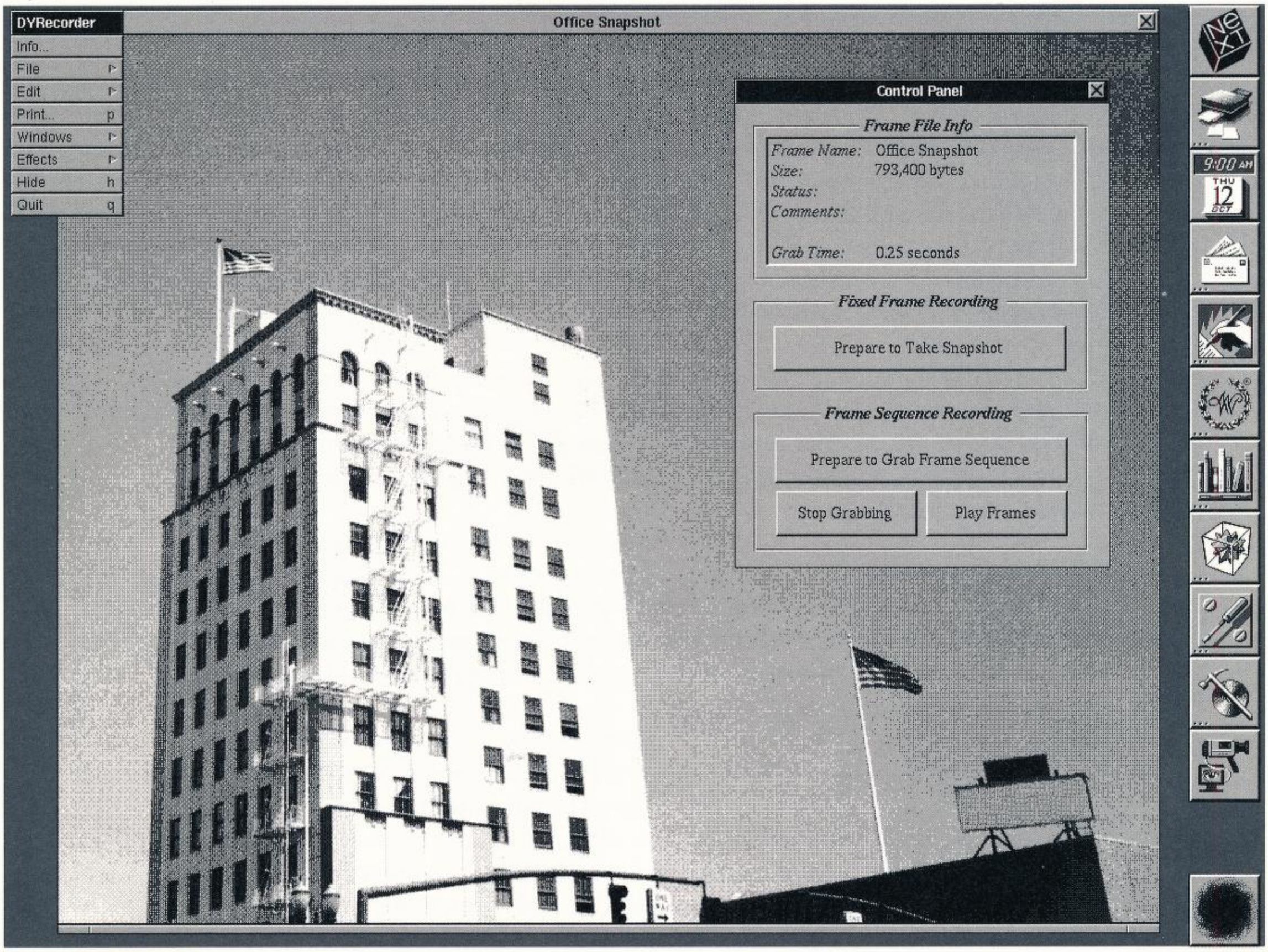
- Specify image characteristics in software.
- Save images to optical or SCSI disk in either TIFF or EPS formats.
- Perform basic manipulation and editing of images.

The Digital Eye has many uses. In conjunction with its audio counterpart, Digital Ears, it can be used to create audiovisual courseware and training materials. It can be used to import images from laserdisc players to aid in the development of laserdisc front end interfaces. Along with a CCD camera, the Digital Eye turns the NeXT Computer into an electronic darkroom. For desktop publishing, the Digital Eye is an indispensable tool for getting images into the NeXT Computer. As with Digital Ears, Metaresearch actively supports developers who want to implement custom applications using the Digital Eye.

The complete package includes a Digital Eye DSP frame-grabber, DYRecorder software, optical disk with software, and a DSP connector cable.

FEB 1, 1990

480 x640 - SONY
900 - 1000



Price: $975

Availability: December 1989

For more information:
Kim Orumchian
Metaresearch, Incorporated
516 SE Morrison, Suite M-1
Portland, OR 97214
503 238-5728
503 294-1409 fax

New Vision Technologies, Inc.
NVT High Density Video Drive

NVT™ High Density Drive is a new video playback device for interactive multimedia applications. Versions are available for the NeXT Computer, along with Macintosh, IBM PC, and other personal computers.

The NVT High Density Video Drive is designed to be used with NTSC TV monitors and emerging HDTV RGB monitors, or in conjunction with third-party video overlay and frame-grabbers for the NeXT Computer. The drive's high-quality, long-playing audio capability is useful for random retrieval and playback of large prerecorded sound libraries or real-time digitization by third-party sound devices that use the DSP port on the NeXT Computer.

The NVT High Density Video Drive can be connected as an external computer peripheral controlled through a serial port, or installed internally as a half-height drive. Interactive multimedia development tools will be included to control, via programming, dynamic playback of high-density video and CD-quality stereo audio from the drive.

NVT High Density Video Drives use prerecorded 5" video floppies that can store 27,000 randomly accessible still frames of analog video or 30 minutes of full-motion video with dual-channel CD-quality sound. The video floppy could be dedicated to audio, providing a capacity of more than four hours of randomly accessible 44.1 kHz stereo sound.

In addition to actual interactive multimedia development, NVT provides audio/video production, pre-mastering, mastering, and duplication services for the video floppy format. The NVT High Density Video Drive and Video Floppy are powerful tools for the development and delivery of the next generation of image retrieval systems, interactive training, simulations, education, and entertainment.

Price: Contact
New Vision Technologies

Availability: Contact
New Vision Technologies

For more information:
Gordon Clarke
New Vision Technologies, Inc.
447 Burnett
San Francisco, CA 94131
415 285-8744
415 821-6471 fax

Personal Computer Peripherals Corporation
JETSTREAM Tape Backup System

The JETSTREAM™ is a high-performance tape backup system for the NeXT Computer System. Capable of archiving up to 2.3 gigabytes of data per tape at speeds up to 14.4 megabytes per minute, the JETSTREAM is the logical complement to the high-capacity magneto-optical and very high-capacity SCSI disk drives used with the NeXT Computer. The JETSTREAM uses low-cost, standard 8mm removable and rewritable video tape cartridges.

The PCPC JETSTREAM provides:

- Effective head-to-tape speed of 150 inches per second and 256 Kb speed matching buffer for data transfer rate up to 14.4 MB per minute.
- A high-density helical scan recording technology that uses three heads (read/write, servo, and error-correction heads) mounted to a spinning drum. The JETSTREAM can archive up to 2.3 gigabytes of data on one standard 8mm tape cartridge.
- Compatibility with standard UNIX tape utilities.
- Data integrity ensured through Error Correction Code (ECC), automatic error recovery procedures implemented by a dedicated read-after-write head, guaranteeing a nonrecoverable error rate of less than one bit in 10^{13} reads.
- A 50-pin SCSI male connector on the JETSTREAM to interface with the NeXT Computer System.

Price: $5,995

Availability: Now

For more information:
Robert G. Leeds
PCPC
4710 Eisenhower Boulevard,
Building A4
Tampa, FL 33634
813 884-3092

Singular Solutions
A/D64x Analog/Digital Interface

The Singular Solutions A/D64x™ Analog/Digital Interface extends the NeXT Computer's exceptional signal processing and reproduction capabilities to provide a high-quality, flexible yet low-cost platform for sound recording, experimentation, and analysis. The A/D64x sets new performance standards for analog and digital signal capture.

The A/D64x features 16-bit delta-sigma conversion with exceptionally low linearity error (0.2 LSB), 64 times oversampling, a three-stage linear phase digital anti-alias filter, and error-cancelling self-calibration. Sampling is supported as 32, 44.1, and 48 kHz-equivalent rates from multiple analog sources, plus direct digital (AES/EBU) data from compact disc (CD) players and digital audio tape (DAT) recorders. The system also includes direct digital output to digital audio recorders or mixers, and allows simultaneous analog/digital input and digital output as well as optional sample rate conversion.

The A/D64x's versatile analog front end supports balanced and unbalanced inputs at both line and microphone levels. The integral high-quality microphone preamp offers switchable +48 volt phantom (simplex) power, a defeatable low-cut input filter, and variable gain. It doubles as a high-gain, low-noise DC or AC differential instrumentation amplifier.

The Singular Solutions A/D64x is the first product in a family of high-performance interface products for the NeXT Computer.

Price: $995

Availability: Now

For more information:
Steve Klein
Singular Solutions
959 East Colorado Boulevard
Pasadena, CA 91106
818 792-9567
818 792-0903 fax

Business

Adamation, Inc.

Who's Calling

Designed specifically for the NeXT platform, Who's Calling™ lets sales and other business professionals keep track of phone calls and other client information. It has four major components—Client Database, Dialer, Reports, and Tickler—which combine to give the user an effective and efficient sales productivity tool.

Client Database. Keeps track of and quickly finds and updates client information. The client database is the basic repository of information that can be used by other parts of the program.

Dialer. Phone numbers can be selected directly from the database or typed in. With a modem, phone numbers can be automatically dialed. The call time, duration, and general comments are stored for reporting.

Reports. A number of reports and other printed matter can be generated (Call History, Mailing Labels, and Form Letters are a few).

Tickler. Reminds the user to call back certain clients on the days specified from the phone call module. The Tickler uses voice feedback to remind the user of outstanding calls.

The program also features voice response, which is used throughout the program to enhance the features and functionality. With its INGRES™ engine, Who's Calling can be multiuser, allowing several users to access information simultaneously. The INGRES core will also enable Who's Calling to be integrated easily into future business applications that are now under development by Adamation.

Price: To be determined

Availability: Fall, 1989

For more information:
Stephan Adams
Adamation, Inc.
1435 Center Street
Oakland, CA 94607
415 452-5252

Ashton-Tate Corporation

Ashton-Tate is actively exploring software development opportunities for the NeXT Computer System. Although it is the company's corporate policy not to discuss details of unannounced products, Edward M. Esber, Jr., Ashton-Tate chairman and CEO, has stated, "The NeXT Computer System is an exciting platform for software development. We expect to support NeXT with future software products."

Ashton-Tate expects to ship several exciting new products in the near future.

Price: To be determined

Availability: To be determined

For more information:
Ashton-Tate Corporation
6411 Guadalupe Mines Road
San Jose, CA 95120
408 268-2300
408 927-5200 fax

Torrance Ca
213-329 8000
Customer support

Data Transforms, Inc.

GEMS (Generalized Equilibrium Modeling System)

GEMS™ provides a flexible way to model economic systems. It is widely used to evaluate markets in manufacturing, minerals, forest products, and energy for corporations, U.S. Government agencies, and foreign governments.

GEMS models are based on the fundamental structures of industries and are composed of a user-defined network of activities, each represented by process models from the GEMS software library. Activities can hierarchically include any number of economic functions occurring within an economic system, such as primary resource extraction, manufacturing and conversion, market transactions, transportation, transmission, distribution, and consumption of goods and services.

GEMS software can capture the effects of interproduct competition, regional differences, changing technology, and government and private supply decisions. The information GEMS supplies has proved invaluable for developing insight and answering "what if" questions required to evaluate strategic planning alternatives and to analyze the impact of market uncertainties and government policy.

Price:
Contact Data Transforms

Availability:
Contact Data Transforms

For more information:
Ralph A. Phraner
Data Transforms, Inc.
616 Washington Street
Denver, CO 80203
303 832-1501

Data Transforms, Inc.

InDia (Influence Diagram Processor)

InDia™ is a graphical application for representing complex decision-making. The conceptual basis underlying InDia is that one or several aspects of a decision may have a bearing or "influence" on other aspects of the decision. Problems are approached through a graphic interface and decomposed into a diagram of nodes that represent various types of events including probability and outcome ranges, pre-determinations, expectations, and known and unknown values.

In a single picture, InDia software can communicate the sequence and uncertainty of event occurrence, how these events depend on (or influence) each other, and how they depend on the actors and decisions in a problem. Behind this picture, an InDia diagram contains complete data on the alternatives available at each decision point, the possible outcomes for each uncertain event, and the likelihood of each.

InDia summarizes and evaluates complex uncertain problems without losing track of the important details needed to truly understand them.

Price:
Contact Data Transforms

Availability:
Contact Data Transforms

For more information:
Ralph A. Phraner
Data Transforms, Inc.
616 Washington Street
Denver, CO 80203
303 832-1501

Informix Software, Inc.
Wingz

Wingz™, the graphic spreadsheet from Informix Software, has already established itself as the largest, fastest, and most versatile spreadsheet for any micro-computer. Wingz features advanced charting, desktop presentation capabilities, and HyperScript®, a powerful event-driven command language.

Size, Speed, Flexibility. Wingz is the largest spreadsheet for personal computers, with a spreadsheet matrix of 32,768 rows by 32,768 columns. Despite its enormous size, Wingz' optimized performance makes it equally fast.

With Wingz, you can combine numbers, words, charts, and graphic images on a single worksheet and then print your work to a single page. Whether you need a dynamic-looking report or a motivating presentation, Wingz makes your ideas more presentable.

Graphs. Wingz features an unmatched array of business, engineering, and scientific graphs and charts, including three-dimensional graphs. The 3-D graphs feature variable rotation, elevation, and perspective. Wingz also includes a slate of freehand drawing tools, and allows users to import graphic elements such as clip-art or scanned images. Wingz' desktop presentation capabilities allow virtually unlimited formatting options for color, pattern, style, and size of worksheet graphics, data, and text.

Text Processing. Wingz' full-function text processor can be used to annotate worksheet data or to create entire reports, featuring adjustable tabs, line spacing, and string search and replace. Wingz' built-in database features allow users to query, sort, and extract on worksheet data. Wingz' "live data" links mean that changes in worksheet data are automatically reflected in both graphics and text references.

HyperScript. The core of Wingz is HyperScript, an event-driven language that goes beyond the macro languages found in other spreadsheets. Its intuitive, English-like command structure makes it easy for users to build custom applications. With HyperScript, you can create menu items, user-defined functions, and style sheets for charts. You can even modify the entire user interface.

Price:
Contact Informix Software

Availability:
Contact Informix Software

For more information:
Wingz Brand Marketing
Informix Software, Inc.
16011 College Boulevard
Lenexa, Kansas 66219
913 599-7100
913 599-7350 fax

KnowledgeSet, Corporation

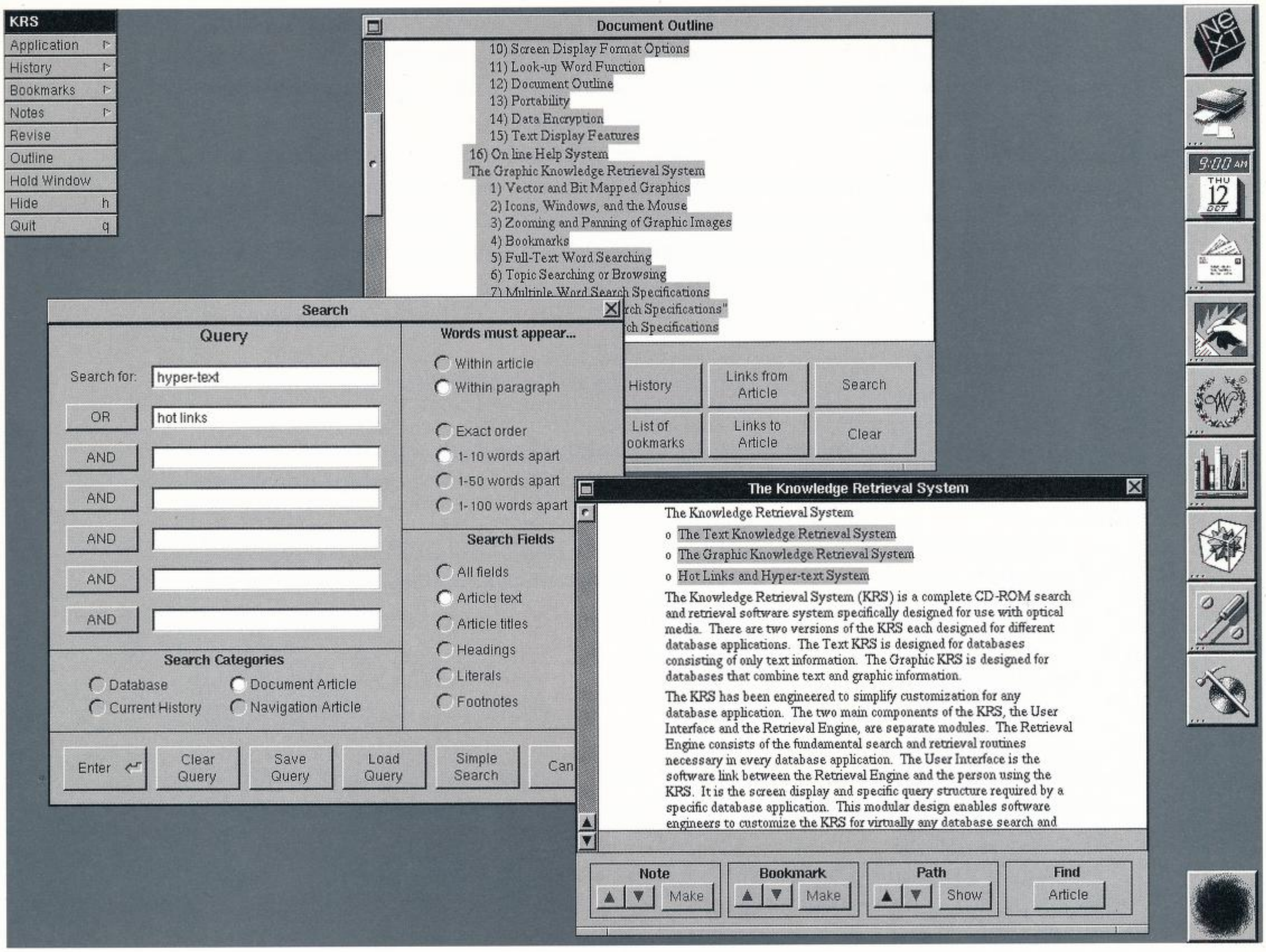
Knowledge Retrieval System (KRS)

KnowledgeSet is developing a version of its Knowledge Retrieval System® (KRS), which rapidly searches and retrieves information from large databases of text and graphics, for the NeXT Computer System.

A pioneer in the development of CD-ROM software, KnowledgeSet created the search engine for Grolier's Electronic Encyclopedia®, one of the first commercially available CD-ROMs.

The Knowledge Retrieval System is targeted primarily at technical documentation applications. KRS provides full-text search, hierarchical browsing, and hypertext links to graphics and cross references.

KRS is currently available for DOS, UNIX, and Macintosh environments.



Price:
Contact KnowledgeSet

Availability:
Fourth Quarter, 1989

For more information:
Chris Bowman
KnowledgeSet, Corporation
888 Villa Street, Suite 500
Mountain View, CA 94041
415 968-9888

Lotus Development Corporation

Lotus™ is actively developing a next-generation analytical software product for the NeXT Computer System. Consistent with Lotus' policy of not discussing unannounced products, details and availability will be announced as the product nears completion.

As stated by Lotus President and CEO Jim Manzi at NeXT's announcement last October, "We expect that the NeXT Computer System will gain immediate acceptance among end users and will be a natural fit for Lotus products."

Price: To be determined

Availability:
To be determined

For more information:
Jeff Anderholm
Lotus Development Corp.
55 Cambridge Parkway
Cambridge, MA 02142
617 577-8500

Microstat Development Corporation
OMEN III

OMEN III is a leading-edge stock quotation and financial system designed to answer all the needs of stockbrokers and serious investors. Receiving its real-time data via satellite, phone lines, or cable TV, OMEN III provides not only up-to-the-minute trade and quote information, but also complete technical analysis, charting, and historical information retrieval for stocks, commodities, etc. The system takes full advantage of the powers of the Sybase RDBMS, which is included with every NeXT system. Advanced data security and fault tolerance have been integrated into OMEN III. The object-oriented design of the system makes it easy to customize the program and to connect to the back-office computers in brokerage houses.

The prominent features of the system are as follows:

- Quotes, summaries, indices, bulletins, and trades updated in real-time.
- Comprehensive report generation, including full relational queries on the history of equities.
- Limit alarms for any security, currency, index, or commodity.
- Historical charting (bar, line, point and figure, semilogarithmic).
- Real-time dynamically updated charts.
- Statistical reports (rankings by volume, trades, % gain/loss, etc.).
- User lists for monitoring portfolio performance (dynamically updated).
- Real-time tickers for all North American exchanges, displayed in horizontal or "waterfall" format.
- News retrieval (e.g., Dow Jones News Service).
- Corporate and capitalization information (dividends, P/E ratio, etc.).
- Automated order entry, client management, international currency converter, reminders, commission calculator, and other broker tools.

OMEN III will be available both as a stock quotation system for the serious investor and as a broker workstation complete with client management, broker tools, and so on.

Price: Contact Microstat

Availability:
First Quarter, 1990

For more information:
Microstat Development Corp.
2150 Western Parkway
Vancouver, BC V6T 1V6
604 228-1612
604 228-9793 fax

SouthWind Software, Inc.
TACTICIAN Plus

TACTICIAN™ Plus, release 2.2, is a multi-user spreadsheet product that supports high-level functions and adds built-in presentation graphics.

TACTICIAN Plus lets users create a spreadsheet with data provided by the user or directly transferred from popular DBMSs. Existing spreadsheets can be linked through the TACTICIAN Plus Macro Command Language to provide spreadsheet-based "programs" that users can customize to their specific needs. TACTICIAN Plus also features a Lotus 1-2-3™ and Multiplan translator.

Once the data is in place, the user can take advantage of the high-level calculation speed, standard features, and wide variety of functions to produce a document that can be used in spreadsheet or chart form.

With TACTICIAN Plus, users can graphically represent their data. By selecting one of the many chart types, the user can create a "model" of data, annotation, and labeling. This model is then used to create a chart that effectively represents the spreadsheet in graphic form.

Standard features of TACTICIAN Plus include full or partial save, extensive formatting characteristics, dual windowing, field/block replication, blanking, application interface, and single/multiple row and column insertion and deletion.

Charts created in TACTICIAN Plus can be output on a variety of printers, plotters, and terminals by using "grafcap," SouthWind's graphics interface.

The product also offers on-line help, range highlighting, a capacity of 255 text characters per cell, 1,024 x 9,999 size, and menu command prompting.

There are more than 60 functions available for use in finance, educational, and technical applications.

Price: Contact SouthWind Software

Availability: October, 1989

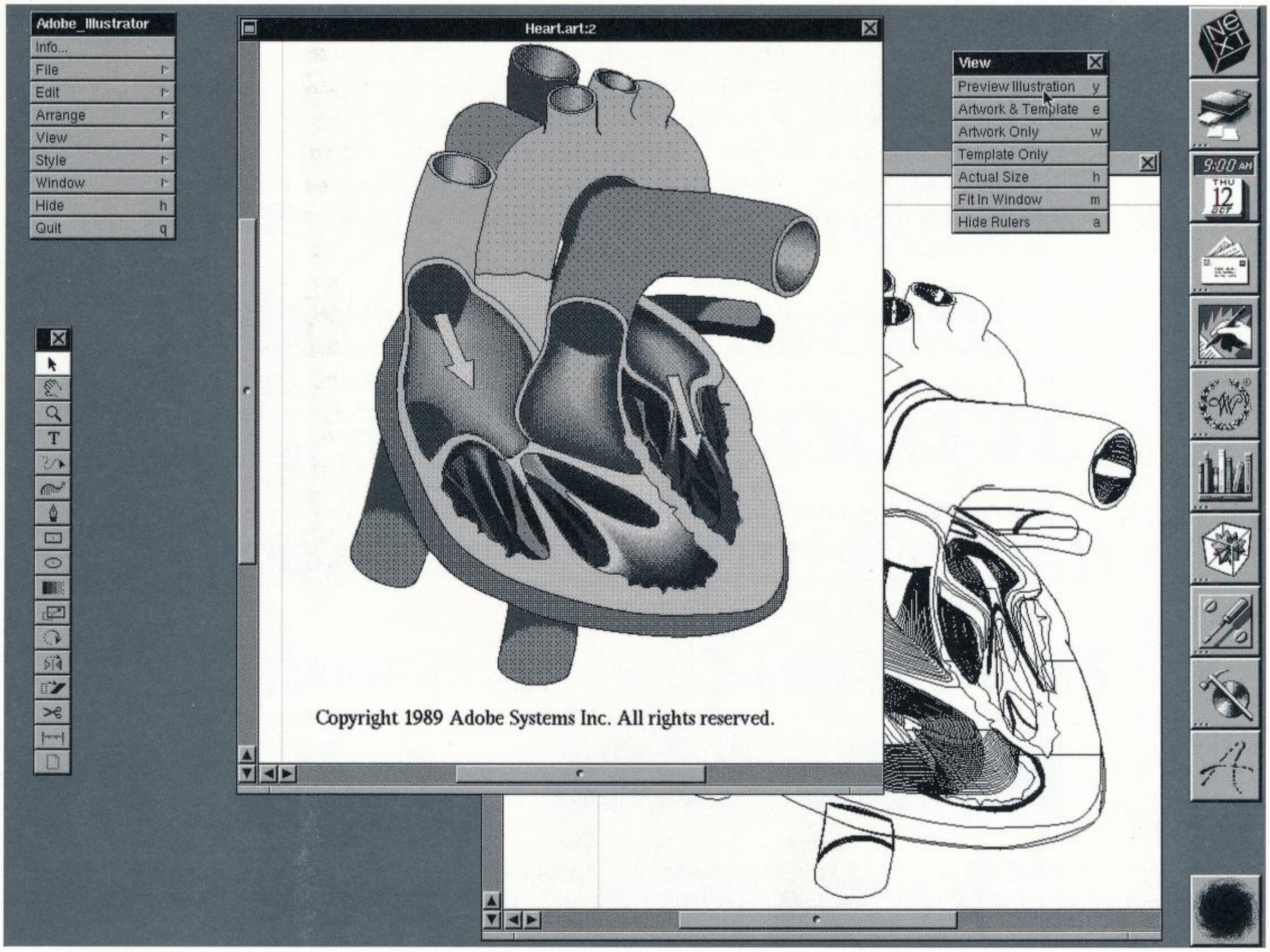
For more information:
SouthWind Software, Inc.
3500 North Rock Road, #200
Wichita, KS 67226
316 636-5100
316 636-5105 fax

Workstation Publishing and Graphics

Adobe Systems Incorporated
Adobe Illustrator

Adobe® Illustrator™ is a graphic design and illustration program for generating high-quality artwork. Because it harnesses the power of Display PostScript, the same high-quality text and graphics created on the NeXT Computer's screen will faithfully reproduce on the NeXT printer.

Adobe Illustrator has a variety of sophisticated features for creating advanced illustrations. You can start from scratch with the freehand and pen tools, drawing with more precision than you ever imagined, or begin with existing artwork by automatically tracing scanned images. From there, text and graphics can be easily transformed for artistic and perspective effects. Adobe Illustrator's multiple zoom levels allows you to examine your illustration from the big picture to the smallest detail.



Pricing: Contact Adobe

Availability: Contact Adobe

For more information:
Adobe Systems Incorporated
1585 Charleston Road
Mountain View, CA 94039
415 961-4400

Adobe Systems Incorporated
Adobe Type Library

When it comes to communicating with electronic type, nothing does a better job than the Adobe Type Library. Adobe offers more than 500 different typefaces, all of which conform to the highest standards of quality. Traditional typefaces are licensed from the original foundries, including ITC, Linotype, Monotype, Agfa-Compugraphic, Varityper, Letraset, and Morisawa, so you get faithful reproductions of classic designs. Adobe also offers original typefaces created at Adobe specifically for electronic desktop publishing, such as the Stone® family and the Adobe Originals™– Garamond™ and Utopia™.

The Adobe Type Library is the most extensive collection of high-quality typefaces that exists for desktop publishing. From sincerity and sensitivity to power and personality, you will find the right type of expression in the Adobe Type Library. Adobe typefaces are compatible with all NeXT applications that use the standard NeXT Font Panel.

The Adobe Plus-Pack Collection
The following typefaces are included on the optical disk as the Plus Pack:

- Palatino™ (includes italic, bold, and bold italic).
- ITC Bookman® (includes light, light italic, demi, and demi italic).
- ITC Zapf Chancery® (includes medium italic).
- ITC Zapf Dingbats®.
- ITC Avant Garde Gothic® (includes book, book oblique, demi, and demi oblique).
- New Century Schoolbook (includes italic, bold, and bold italic).
- Helvetica Narrow.

Adobe Font Folio – NeXT Version
Adobe offers 103 typeface packages on a single optical disk, for professional installations that require the utmost in typeface availability. Adobe also plans to offer typeface packages on an individual basis in the near future. Details will be announced in the fall of 1989.

Pricing: Contact Adobe

Availability:
Fourth Quarter, 1989

For more information:
Adobe Systems Incorporated
1585 Charleston Road
Mountain View, CA 94039
415 961-4400

1-800 344 8335

Emerald City Software, Inc.

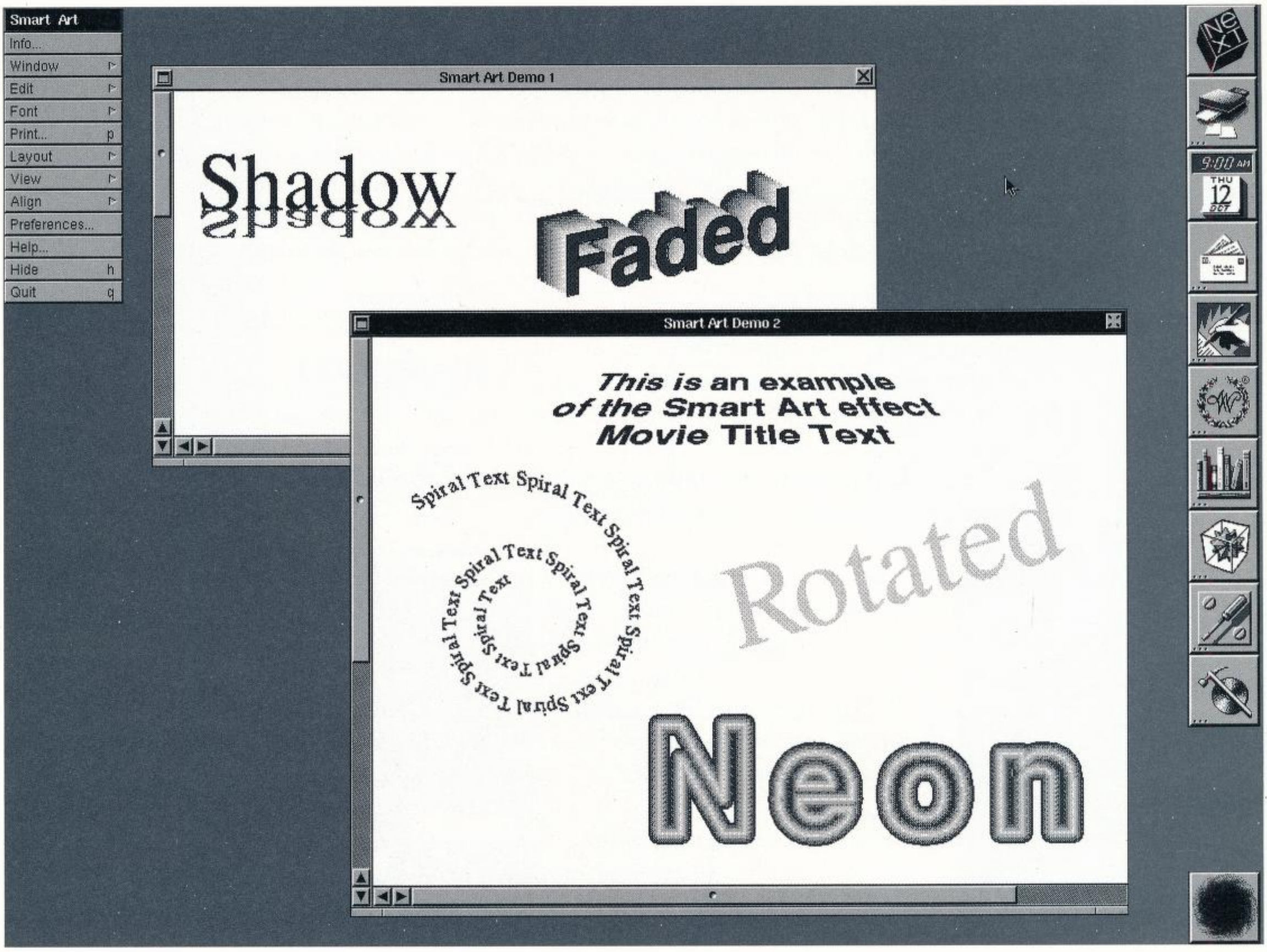
Smart Art

The Smart Art™ package contains 50 text and graphics effects, which can easily be customized and used in any NeXT word processor, desktop presentation, or page layout program. The Smart Art effects include rotated text, text on an angle, text on an arc, perspective text, drop-shadow and other types of shadow text, faded text, fitted text, raised text, neon text, fountain-filled text, shaded spheres, cubes, polygons, and stars.

Each Smart Art effect is a Display PostScript file with customizable controls for modifying text, font, shading, rotation, and much more. Finished effects can be copied and pasted into a document or saved in EPS format, making them readily transportable to all NeXT graphics applications.

The Smart Art effects are compatible with all NeXT and Adobe fonts and can be saved in either EPS or PostScript format, so they are suitable for use with FrameMaker®, WriteNow, Illustrator, and most NeXT graphics application programs.

Smart Art Text and Graphics effects are available on a single optical disk directly from Emerald City Software.



Price: $595

Availability:
December, 1989

For more information:
Emerald City Software, Inc.
1040 Marsh Road, Suite 110
Menlo Park, CA 94025
800 223-0417
415 324-8080 (inside California)
415 324-0316 fax

Frame Technology Corporation
FrameMaker 2.0

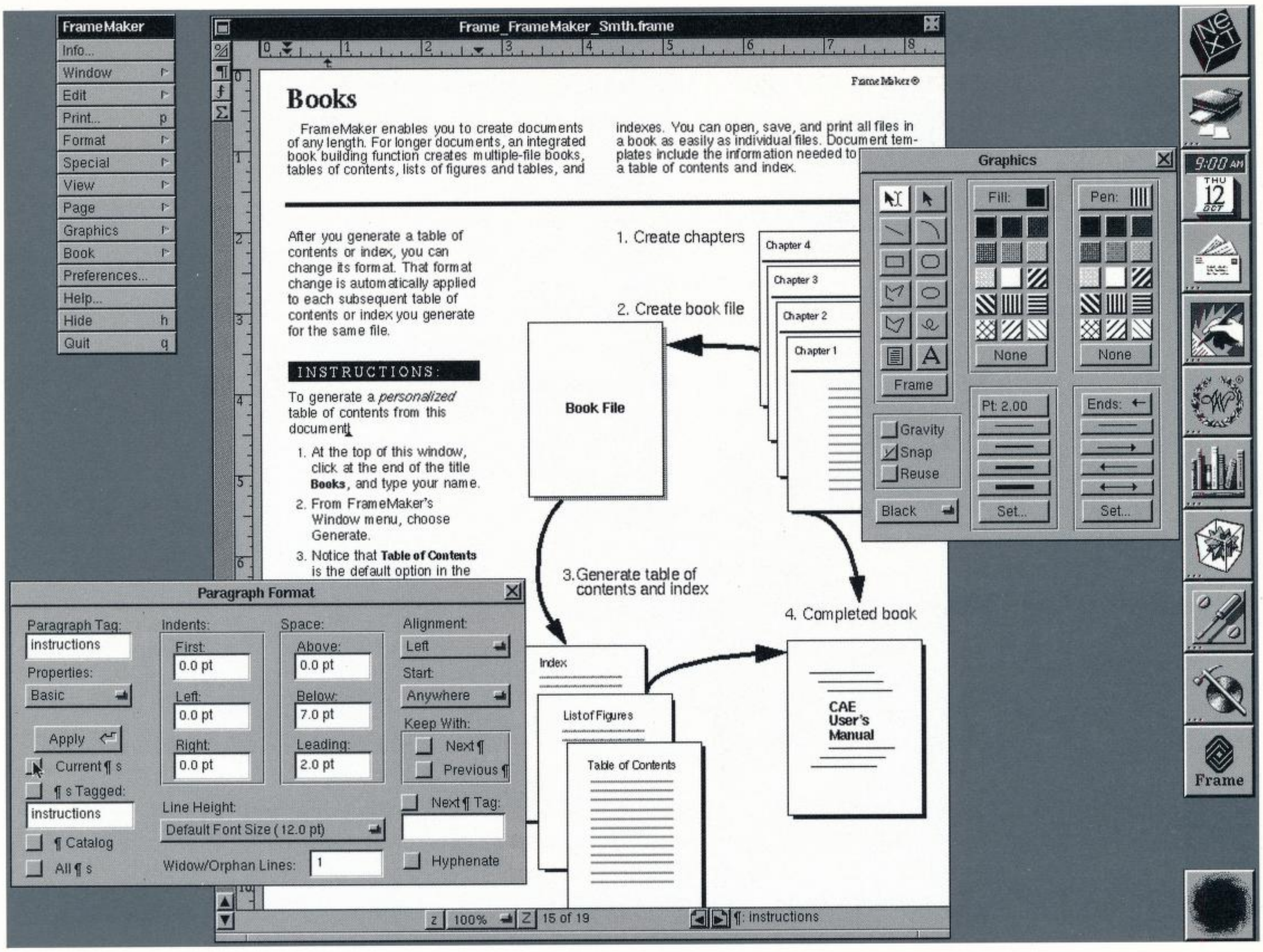
FrameMaker 2.0 is powerful, cost-effective workstation publishing software. FrameMaker combines full-featured word processing, graphics, page layout, and book-building tools into one integrated package. Users have the flexibility to write, design, and produce a wide range of documents, from lengthy technical manuals to reports, newsletters, brochures, and presentations. Its easy-to-use, WYSIWYG interface makes FrameMaker extremely accessible to both novice and expert users. Encapsulated PostScript, Rich Text Format®, and TIFF files in FrameMaker can be exchanged transparently with other NeXT applications.

Key features of FrameMaker 2.0 include:

- Word processing features: spell checker, automatic hyphenation and justification, automatic numbering, tab formatting, and powerful search-and-replace capabilities.
- Flexible graphics creation and editing: a full set of integrated drawing tools for creating, manipulating, and importing graphics.
- Flexible document design and page layout capabilities: multiple and mixed-width columns and text-flows, multiple master pages, anchored text and graphics frames, advanced typographic control, various page sizes and orientations.
- Automatic book-building: tools for managing lengthy documents, including automatic pagination; generation of tables of contents, indexes, and lists; cross-referencing; running headers and footers; footnotes; and change bars.
- FrameMath™ WYSIWYG equation editor.
- RTU (Right-To-Use) License: allows economical sharing of FrameMaker licenses across a network.
- Sound annotation of documents.

International FrameMaker™ supports hyphenation, fonts, and spell-checking for UK English, French, German, Dutch, Portuguese, Spanish, Swedish, Italian, and Norwegian.

FrameViewer™ is an optional product license that allows economical, on-line access to view-only documents created with FrameMaker.



Price: Contact your local Businessland representative

Availability: Contact your local Businessland representative

For more information:
Susan Gordon or Liz Osborne
Frame Technology Corp.
1010 Rincon Circle
San Jose, CA 95131
408 433-3311
408 433-1928 fax

Media Logic Incorporated
Artisan

Artisan™ is a high-resolution paint and image processing system for the NeXT Computer. With Artisan, you can touch-up, crop, resize, enhance, and composite images. Complete TIFF and Encapsulated PostScript support enables the import and export of images with other NeXT applications. Artisan's scanning interface lets you scan flat art directly into the program.

Unlike traditional monochrome-only packages, Artisan provides an 8-bit continuous tone grayscale environment that gives you the power to perform advanced image processing. Sharpen, blur, arbitrary scale and rotate, gradients, variable opacity, multiple cut and paste, and gamma correction are just some of Artisan's features. Image touch-up facilities include a selection of user-definable brushes, a copy brush, custom brush, pencil, plot, sharpen, blur, and an adjustable airbrush. Area fill and flood capabilities and a large selection of editable patterns in sizes up to 64 by 64 pixels are also provided.

Artisan's cut-and-paste feature enables pasting into multiple images, scale-and-rotate while pasting, even variable opacity for cut-and-paste operations using alpha channel and image map functions. The preview mode lets you adjust the scale, orientation, and position of the pasted images before you fix them into the image.

Artisan provides a complete set of objects for area definition and drawing purposes, including rectangles, elliptical arcs, polygons, and Bezier curves. Any brush can be used when drawing objects.

Masking and frisketing are supported for all operations, including brushing, area filling, and image compositing. High-resolution monochrome images can be converted to grayscale to enable image processing functions. Artisan also provides special effects such as embossing, shade inverting, and a completely user-definable gamma map.

Price: Contact Media Logic

Availability:
October, 1989

For more information:
Media Logic Incorporated
2501 Colorado Ave., Suite 350
Santa Monica, CA 90404
213 453-7744
213 453-9565 fax

out in
2-3 mo
(mar. or apr.)

Media Logic Incorporated
TopDraw

TopDraw™ is the most complete and advanced page-based graphics software available today. It is ideal for producing company newsletters, charts and graphs, documentation, reports, advertising layouts, presentation slides or overheads, and much more. In one package, TopDraw provides powerful tools for:

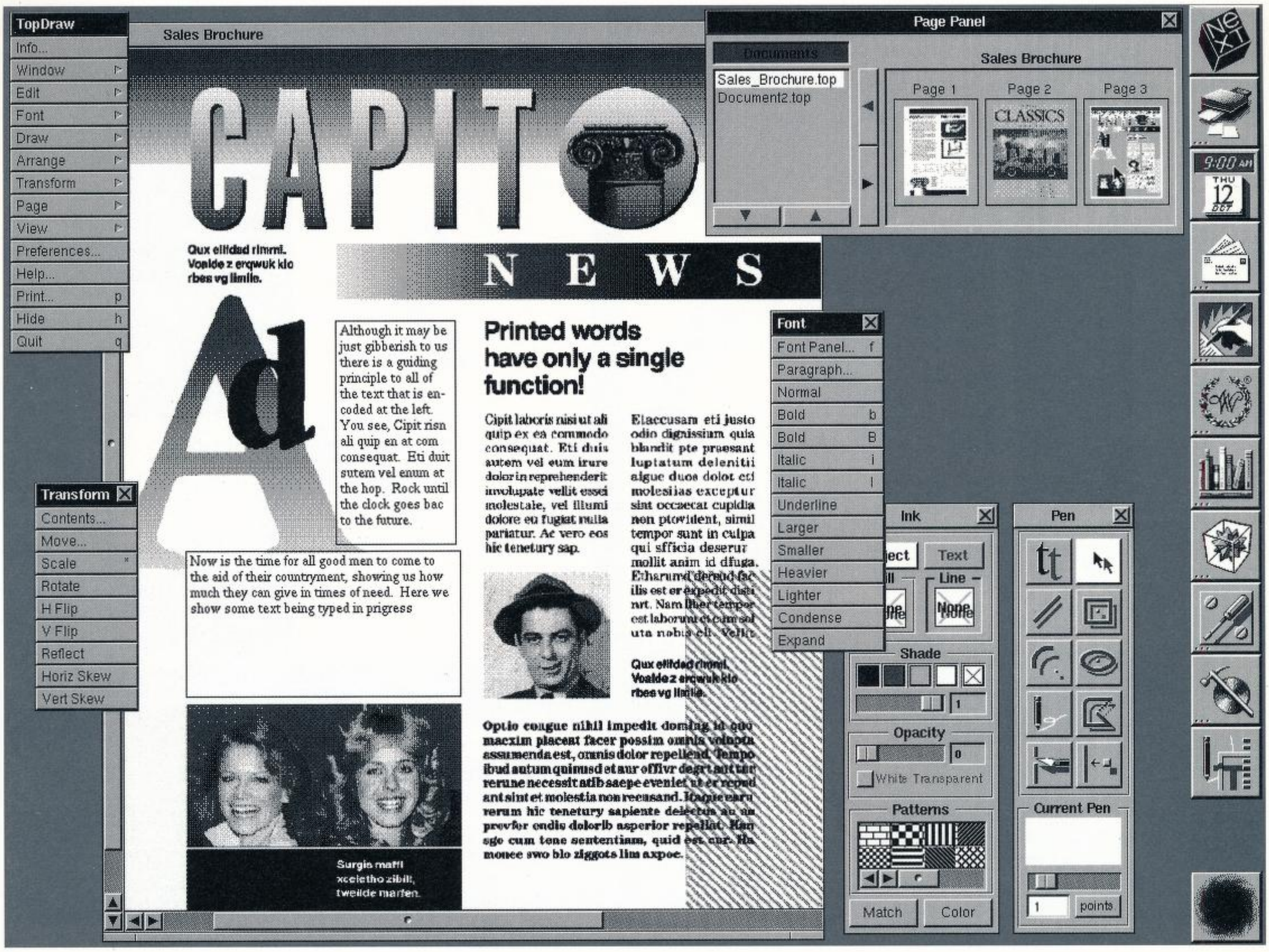
- Object-based graphics.
- Text processing.
- Continuous tone painting.
- Page layout.

TopDraw's graphic objects include rectangles, squares, ellipses, circles, lines, arbitrary polygons, and Bezier splines. All objects can be drawn with any line width, filled with shades of gray or patterns, rotated to any angle, scaled, reflected, and even skewed. TopDraw also includes infinite undo and zooming, grouping, and layering, as well as partial transparency capabilities.

You can draw text at any size (even non-integer), at any angle, or along a path, and you can edit it at any time. Characters can also be treated as splines for a variety of special effects. Standard text capabilities – such as justification with variable word/letter weighting, automatic and manual kerning, text wrap around irregular shapes, and text flow across multiple pages – are also included.

Continuous tone raster images can be not only incorporated into documents you produce with TopDraw, but also edited. You can adjust the contrast and brightness, sharpen or blur, correct gamma, even perform touch-up using TopDraw's assortment of user-definable brushes, including a true anti-aliased airbrush.

For input and output, TopDraw supports PostScript, Encapsulated PostScript, TIFF, and Rich Text Format for integration with flat art scanners, film recorders, the NeXT laser printer, and high-quality image setters.



Price: Contact Media Logic

Availability: October, 1989

For more information:
Media Logic Incorporated
2501 Colorado Ave., Suite 350
Santa Monica, CA 90404
213 453-7744
213 453-9565 fax

Stone Design Corporation
TextArt

TextArt, described as the ultimate graphic design artist's text tool, gives users easy access to an array of tools that allow immediate creation of outstanding PostScript images. Ideal for creating letterheads, icons, logos, or other special text effects, this package includes the following key features:

Complete control over:
Font style and size.
Outline text and fills.
Scaling in both dimensions.
Rotation.
Gray scales of component images.
Multiple copies.

Special effects that include skewing, shadows, radial text, fountains, reflection.

Save and read TIFF, PostScript, Draw, and TextArt formats.

Full kerning support, both pairwise and track.

Unlimited proportional zooming for precision.

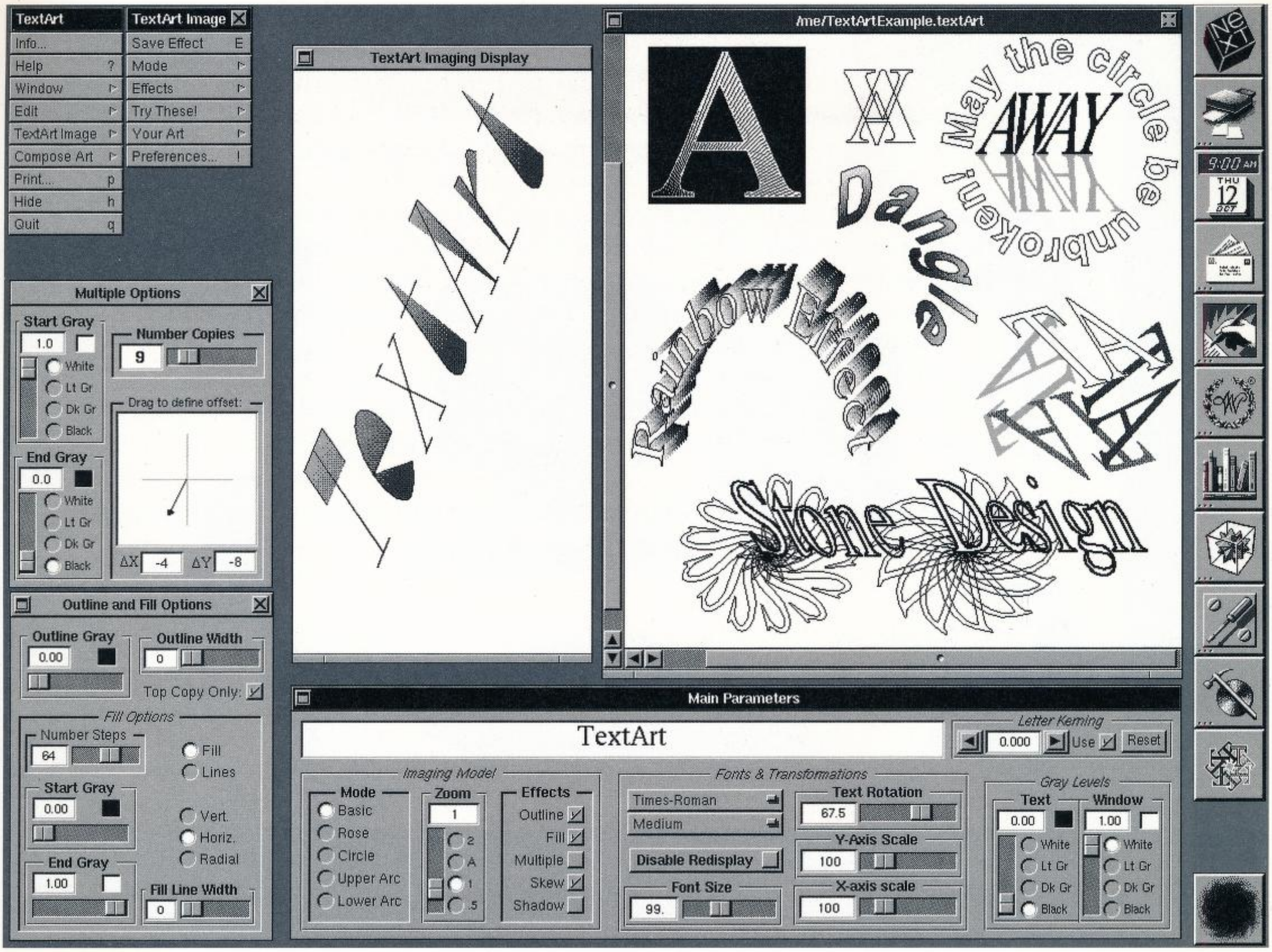
On-line library of "Canned Art" for instant effects.

Customizable with user's plug-in effects and preferences.

Comprehensive on-line help.

The library of "Canned Art" lets users load special effects to display their custom messages. This provides a starting point to produce striking images, as well as a teaching tool for unleashing the power of TextArt. The composition portion of the software allows precise layout and layering of multiple images, including graphics imported from TIFF, PostScript, and Draw formats.

Simple for the first-time user, yet powerful enough for professional graphic designers, TextArt is economically priced and an essential tool for any NeXT owner.



Price: $275

Availability: Now

For more information:
Stone Design Corp.
2425 Teodoro NW
Albuquerque, NM 87107
505 345-4800

Andrew Stone
good contact!

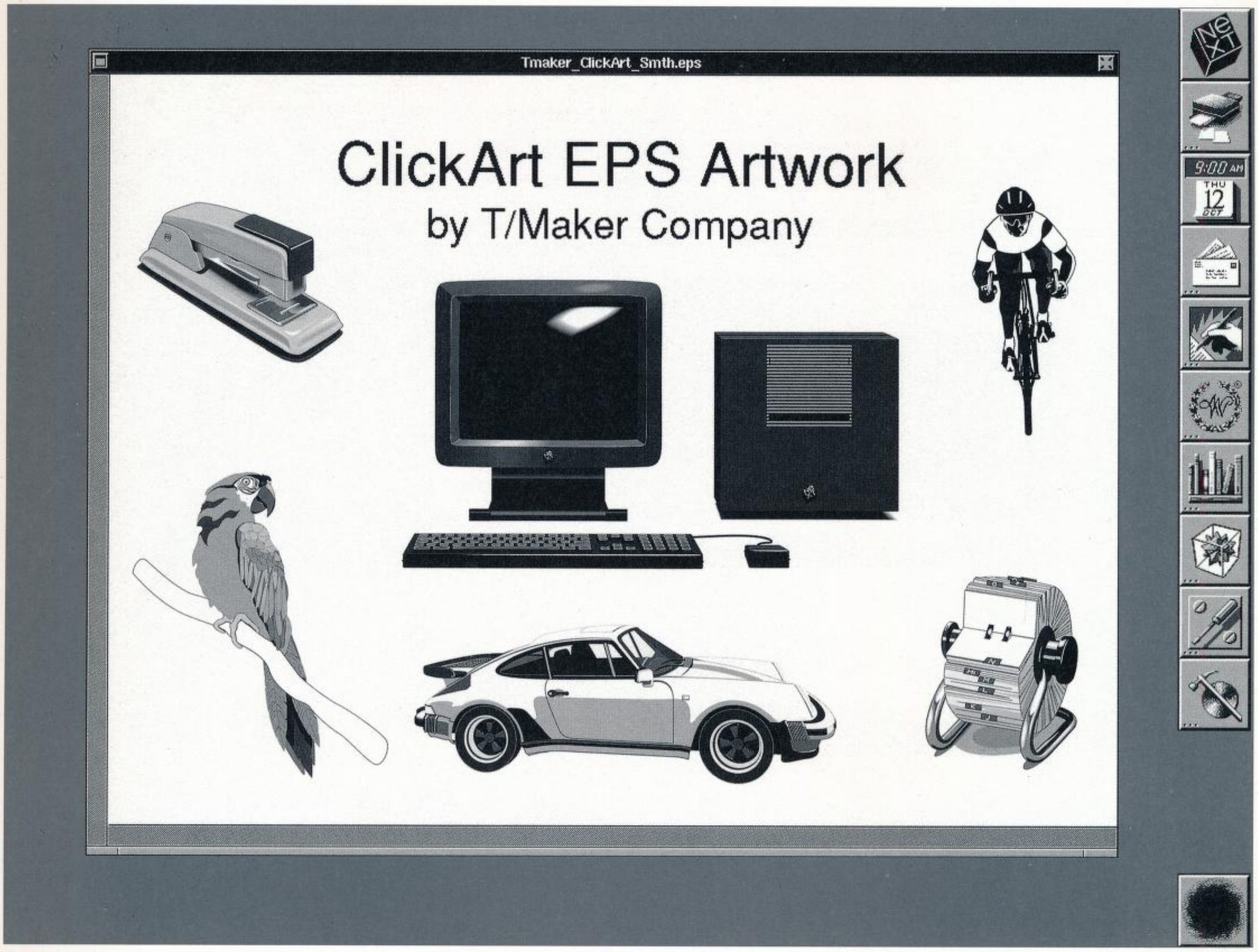
T/Maker Company
Encapsulated PostScript ClickArt

T/Maker's latest ClickArt® offering combines its top-selling ClickArt EPS portfolios – EPS Business Art and EPS Illustrations – into a single collection of high-quality Encapsulated PostScript (EPS) artwork. These professionally drawn images take advantage of the high-resolution NeXT display and laser printer, and are ideal for papers, presentations, newsletters, and documentation.

With nearly 400 illustrations, the collection includes a wide assortment of computers, business equipment, desk items, industrial and occupational symbols, communications, maps, people and lifestyles, presentation helpers (dingbats, borders, and bullets), globes, food and drink, corporate icons, travel and transportation, and much more.

All images are available in the Encapsulated PostScript format so that they can be used with WriteNow, FrameMaker, Adobe's Illustrator, Emerald City Software's Displaytalk™, and many other applications and development tools.

ClickArt EPS Business Art/EPS Illustrations are available together on a single optical disk directly from T/Maker Company.



Price:
$295 (Introductory Price)

Availability:
Third Quarter, 1989

For more information:
T/Maker Company
1390 Villa Street
Mountain View, CA 94041
415 962-0195

Flash Graphics
Flash Graphics

Flash Graphics™ combines extensive charting, illustration, and text functions in a versatile graphics package for producing screen, slide, and paper presentations. It is designed for a broad range of business, scientific, and medical applications.

Images composed of chart, text, and graphic elements can be edited freely and enhanced graphically to produce high-quality compositions and output.

Flash Graphics offers design guides and formats for users who are not primarily graphic artists. In addition, however, its sophisticated design capabilities make it equally useful for professional-quality volume production within dedicated graphics environments. These environments can include institutional settings such as university, medical, and research sites, as well as general corporate, government, and commercial service bureau environments.

Price:
$495 (introductory price)

Availability:
Second Quarter, 1990

For more information:
Marketing Director
Flash Graphics
P.O. Box 1950
Sausalito, CA 94965
415 331-7700

Communications

Abaton
InterFax 24/96N

The InterFax™ 24/96 from Abaton combines a 9600 bps Group 3 fax modem with a 2400 bps MNP 5, Hayes®-compatible data modem. It includes software enabling users to send, receive, view, and print fax documents on the NeXT Computer.

InterFax leverages the power of the NeXT Computer to give the user features found in only the most expensive fax machines:

Fax documents are created using PostScript, resulting in precise images of both type and drawings. Fax documents created in software on the NeXT Computer are far superior to scanned documents originating from a standard fax machine.

Received fax documents are printed on the NeXT 400 dpi Laser Printer – a significant improvement over the thermal printer employed by most standard fax machines.

Complete scheduling features are provided: Unattended transmissions can be scheduled for any time, so you can take advantage of off-peak phone rates. You can create phone directories of frequently called individuals and their fax numbers. For bulk transmission, individual entries can be grouped into distribution lists.

InterFax maintains a complete log of fax transmissions and receptions. Each log entry provides vital information about a particular fax transmission, such as the duration of the call and the fax document(s) involved. The actual fax document can be viewed by clicking the specific log entry.

Pricing: Contact Abaton

Availability: Contact Abaton

For more information:
Abaton
A Division of Everex Systems, Inc.
48431 Milmont Drive
Fremont, CA 94538
415 683-2226

Cayman Systems, Inc.
GatorBox

The GatorBox™ is a LocalTalk™-to-Ethernet gateway that translates the Network File System (NFS) protocol supported by the NeXT Computer into the Apple Filing Protocol (AFP) used by AppleShare™, the file-sharing software that Apple ships with every Macintosh computer. Macintosh users connected to the GatorBox through a LocalTalk or Ethernet network can use AppleShare to share files with any NeXT Computers on the inter-network.

The NeXT Computer can act as a high-performance, large-capacity AppleShare server using the GatorBox's "application-level translation" between the AFP and NFS. Because no Cayman software runs on any Macintosh or NFS server, every node runs only its native protocols. Cayman also provides terminal emulation software that allows any Macintosh user to connect to the NeXT Computer using Telnet and FTP protocols.

Cayman will offer two software additions that will enable the NeXT Computer, which supports the BSD lpr printing protocols, to print to Apple LaserWriter® printers and to transparently share mail with Macintosh computers.

Price: $2,795

Availability: Now

For more information:
Cayman Systems, Inc.
University Park at MIT
26 Landsdowne Street
Cambridge, MA 02139
617 494-1999
617 494-9270 fax

DataViz Inc.
MacLinkPlus/PC

MacLink®Plus/PC is a complete, easy-to-use kit for transferring and translating files between the NeXT and Macintosh environments. Everything is provided: NeXT software, Macintosh software, built-in communications, and a cable.

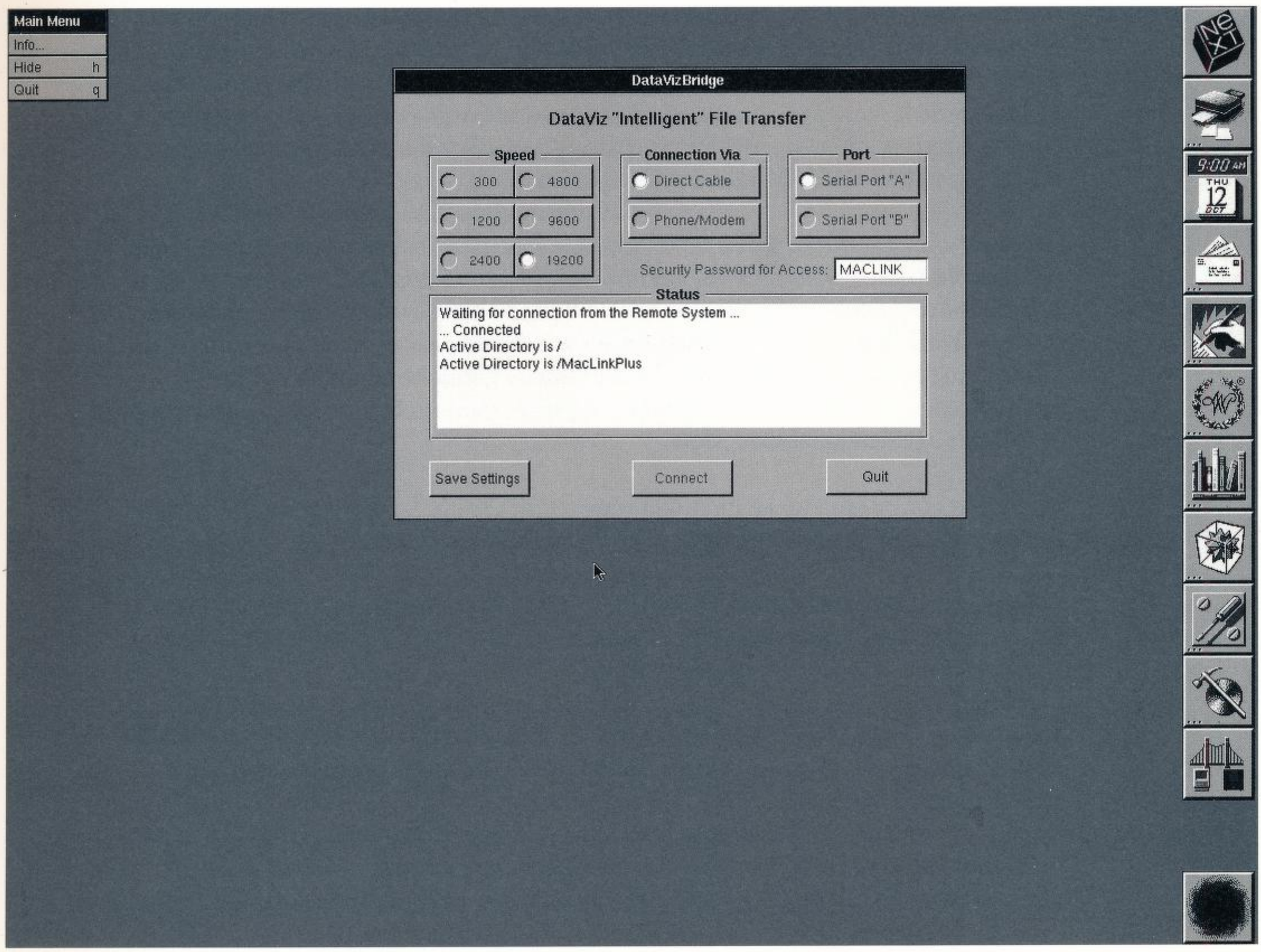
Two Macintosh file windows provide full visibility to files on both the NeXT and Macintosh systems. A file or group of files from one window can be transferred and translated to the other with just a few clicks of the mouse.

The full library of more than 60 MacLinkPlus/Translators is included to translate files as they are being transferred. Some of these translators provide a data-bridge between WriteNow for NeXT and many popular Macintosh word processors (MacWrite™, MS® Word, MS Works, WordPerfect®, WriteNow). Options are also included to exchange files in either direction between Macintosh TIFF and NeXT TIFF, as well as for NeXT EPS and Macintosh EPS.

The connection can be established between your NeXT and a Macintosh phone or printer port using the included cable or your own modems. For users with NeXT and Macintosh systems on a network or shared file server, MacLinkPlus/PC will translate files between the two systems that are visible to the Macintosh desktop.

Users with access to DOS files from their Macintosh desktop, through DOS drives for the Macintosh or shared file servers, can use MacLinkPlus/PC to transfer and translate directly from these devices to or from the NeXT system. Included in the library are translators for most popular DOS formats, such as WordStar®, MultiMate™, DCA/RFT, OfficeWriter®, XyWrite™ III, MS Works, WordPerfect, and more.

All MacLinkPlus/Translators convert format characteristics such as margins, paragraphs, indents, bold, italics, and so on.



Price: $199

Availability: Now

For more information:
Margaret Martin
DataViz Inc.
35 Corporate Drive
Trumbull, CT 06611
203 268-0030
203 268-4345 fax

Farallon Computing, Inc.

Ethernet PhoneNET, Sound, and
Interpersonal Communications

Farallon Computing, Inc., the leader in twisted-pair networking, manufactures the PhoneNET® System, which is used to build LANs over standard telephone cable. The PhoneNET System includes hardware for creating large, reliable networks, and software for managing and using the network. Large PhoneNET networks are installed at the University of California at Berkeley, Stanford, Brown, University of Michigan, Boston College, and Carnegie Mellon.

Other Farallon products designed to enhance interpersonal communications include software for screen sharing, screen recording, group editing, and voice annotation. Among these products, the MacRecorder® Sound System offers highly sophisticated features to content originators who require an easy, natural method for incorporating sound into teaching aids and presentations. Universities have employed the MacRecorder Sound System in foreign language training, ESL, speech pathology, and sound-cued educational modeling.

Farallon is committed to developing products for the NeXT Computer System and has several projects currently underway in the following areas:

Twisted-pair Ethernet Networks. Farallon announced plans in January, 1989 for an Ethernet version of the PhoneNET System, allowing NeXT Computers to be networked with unused telephone wiring.

Sound. Drawing on experience with MacRecorder, Farallon will design products for recording, displaying, and editing sound for use in business presentations and educational materials.

Interpersonal Communications. Farallon is investigating extending its Timbuktu™ screen sharing to the NeXT Computer. In addition, group editing software applications are being considered that will allow textual, graphic, and voice annotation.

Price:
Contact Farallon Computing

Availability:
Contact Farallon Computing

For more information:
Farallon Computing, Inc.
2201 Dwight Way
Berkeley, CA 94704
415 849-2331
415 841-5770 fax

Kinetics
Etherport NL

The Kinetics EtherPort® NL Ethernet controller, developed in conjunction with SynOptics Communications, Inc., allows the NeXT Computer to connect directly to standard and twisted-pair Ethernet networks. Software from Kinetics and third-party developers allows the EtherPort-equipped NeXT Computer to communicate with a diverse range of Ethernet-based computer systems, including Sun computers, other UNIX systems, Digital VAX™ computers, Macintosh computers, IBM PCs, and terminals.

The EtherPort NL controller board supports TCP/IP and other protocols. The board has 32K of on-board memory and a built-in LattisNet® transceiver. It allows connection to both standard (10BASE5) Ethernet and LattisNet, the twisted-pair Ethernet developed by SynOptics Communications, Inc.

Price: Contact Kinetics

Availability:
Fourth Quarter, 1989

For more information:
KC Sue
Kinetics
A Division of Excelan, Inc.
1340 Treat Blvd., Suite 500
Walnut Creek, CA 94596
415 947-0998

Software Ventures Corporation
MicroPhone II

Software Ventures is developing MicroPhone™ II, the leading telecommunications package for microcomputers, for the NeXT Computer System. It will provide the NeXT user with the same intuitive interface, depth of protocols, and scripting that Macintosh users have enjoyed.

Price:
Contact Software Ventures

Availability:
Contact Software Ventures

For more information:
Sylvia Paull
Software Ventures Corp.
2907 Claremont Ave.,
Suite 220
Berkeley, CA 94705
415 644-3232

White Pine Software Inc.

DEC terminal emulation

White Pine Software is a leader in the development of software that provides communications between personal computers and Digital Equipment Corporation systems.

White Pine currently offers a complete line of terminal emulation products for the Apple Macintosh: Mac220™, Mac240™, and Mac241™ provide complete DEC VT200 series terminal emulation. NeXT versions of these products are under development.

As NeXT developers, the company will continue to develop software for the DEC connectivity market.

Price:
Contact White Pine Software

Availability:
Contact White Pine Software

For more information:
Scott Darling
White Pine Software Inc.
94 Route 101A
P.O. Box 1108
Amherst, NH 03031
603 886-9050

Database

Informix Software, Inc.
INFORMIX-TURBO

INFORMIX®-TURBO is a high-performance database engine for on-line transaction processing (OLTP). It includes an extensive array of performance tuning features, so that each application can be tuned to maximum performance. INFORMIX-TURBO is built on the client/server model, an architecture that separates the user interface (application) from the database server (engine). This method gives each user his or her own server process, which allows SQL requests to be processed in parallel for greater throughput, especially on multiprocessor systems. INFORMIX-TURBO also uses performance enhancers such as shared memory and direct (raw) I/O, to exploit the full transaction processing potential of UNIX.

Data integrity is maintained in INFORMIX-TURBO through the most comprehensive locking scheme available today. Developers can specify locking granularity at the database, table, page, or row level. In addition, they can choose four different ways to define the degree of isolation from other users' transactions. In the event of a system failure, INFORMIX-TURBO's Fast Recovery automatically removes incomplete transactions from the databases and restores the system to the state it was in at the end of the last completed transaction.

The Turbo Monitor is a unique administrator's tool that is included with INFORMIX-TURBO to provide a totally integrated operating environment. With the Turbo Monitor, you set up system parameters, observe the performance of your applications, fine-tune shared memory usage, and administer the databases, all from within a full-screen, menu-driven interface.

Price:
Contact Informix Software

Availability:
Contact Informix Software

For more information:
Informix Software, Inc.
4100 Bohannon Drive
Menlo Park, CA 94025
415 926-6300
415 926-6593 fax

Relational Technology, Inc.

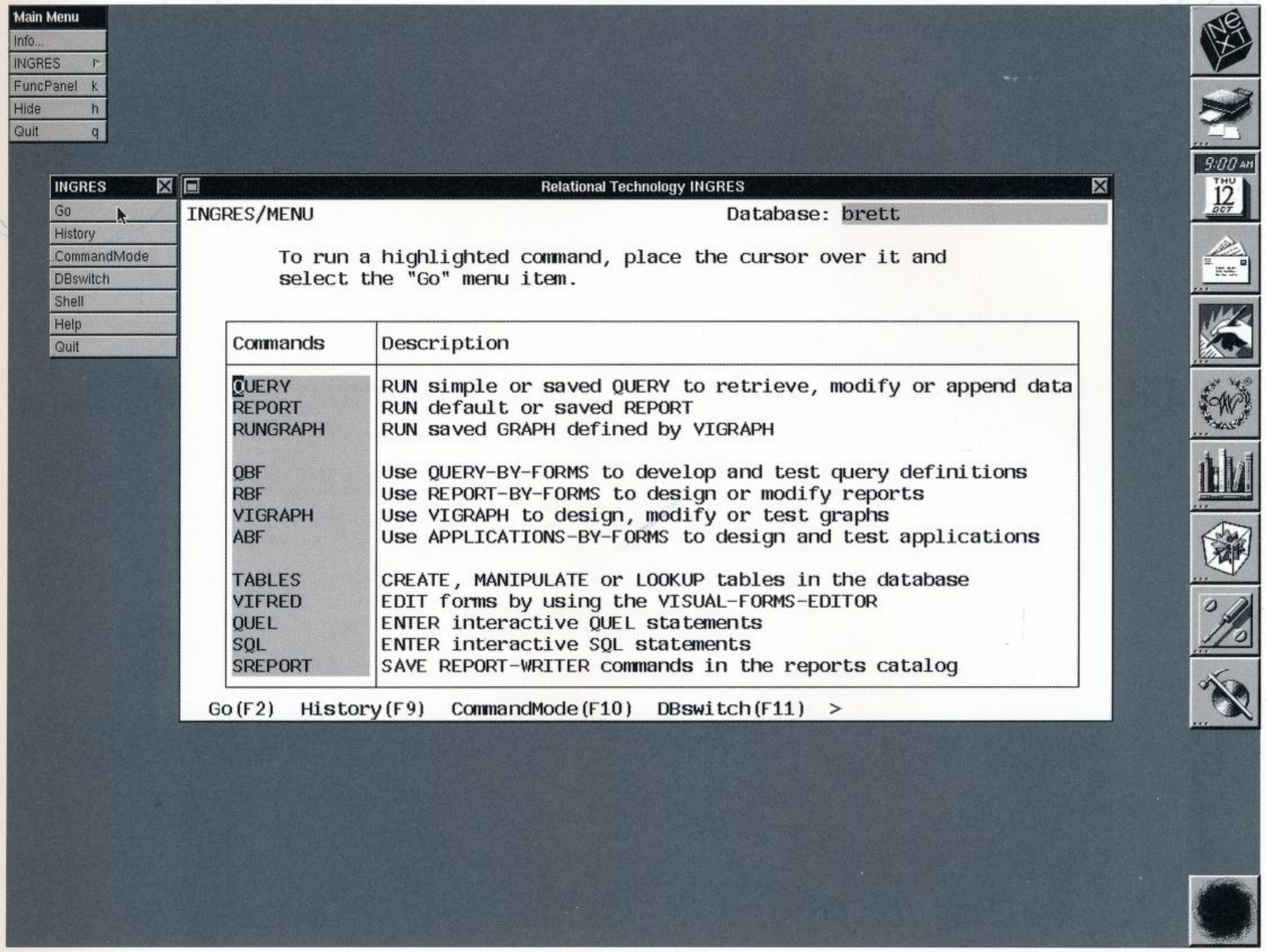
INGRES Relational Database Management System

Relational Technology is making the INGRES Relational Database Management System available on the NeXT Computer System. INGRES is designed around three concepts: tools to develop applications, power to handle transaction processing, and access to data across an entire organization.

Tools. INGRES offers an unmatched integrated application development environment providing 4GL, SQL, and visual programming methods. These aid the prototyping and deployment of complex applications, while providing independent end-user query and reporting capabilities. Applications are instantly portable across multiple hardware platforms.

Power. The INGRES high-performance SQL database engine provides OLTP power to support production applications in single- or multi-CPU and distributed environments. A unique AI-based query optimizer maximizes processing efficiency.

Access. INGRES integrates existing data into your applications through flexible access tools: gateways to existing data, networks to tie systems together, and advanced distributed technology to integrate islands of information.



Price:
Contact Relational Technology

Availability:
October, 1989

For more information:
Relational Technology, Inc.
1080 Marina Village Parkway
Alameda, CA 94501-1041
800 4-INGRES
415 748-3434 fax

Relational Technology
International Limited
99 Kings Road
London, 5W34PA, UK
44(1) 351 77 33

Mathematics and Statistics

Triakis, Inc.

DAN–The Data Analyzer

DAN is a data analysis package for reducing scientific and engineering data and generating presentation-quality two-dimensional plots. It combines powerful analysis capabilities with a user interface developed specifically to make the use of DAN straightforward and intuitive.

Some of the major features of DAN include:

Easy to use.
Up to 100 simultaneous data tables of any size in memory.
Interactive plot scaling and re-sizing.
Multiple overlaid graphs.
Numerous curve fits for data function modeling.
Integration.
Fast Fourier transforms.
Data sorting and merging of tables or files.
Calculator-type operations on data tables.
Numerous file input and output formats.

DAN provides the user with complete control of the appearance of every aspect of the output plot, including tick marks, axis labels, title, Greek alphabet, symbols, subscripts and superscripts, grid lines, text annotation, and legend. DAN can generate numerous plot types including scatter and line plots in normal, semi-log, and log-log formats. Multiple plots with distinguishing line styles and plot markers can be overlaid on the same graphical display.

DAN can be used to sort and merge input data tables and manipulate data with calculator-type functions, which can be chained together (add, subtract, multiply, trig, and so on). The user can also enter functions for plotting or for comparison with data. Several internal functions are available, including statistical distributions and black-body spectra.

Price: $795

Availability: October, 1989

For more information:
Dwight Barrus
Triakis, Inc.
560 Bryce Avenue
Los Alamos, NM 87544
505 672-3180

Triakis, Inc.

Math++

Math++ is a C-language math library of C-callable functions designed to make significant mathematical power available for the popular and widespread C language. The library comes with complete source code for both the math routines and the examples. The library is designed as a toolkit to support the development of numerical analysis applications. Math++ contains approximately 100 mathematical functions designed specifically for scientific and engineering applications.

The library functions include:

Curve fitting and interpolation.
Roots of equations.
Complex mathematics.
Optimization.
Integration.
Linear algebra, matrices.
Ordinary differential equations.
Eigenanalysis.
Statistics.
Splines.
Fourier analysis.
Data smoothing.

It also includes special functions: gamma, beta, error, and bessel, including modified bessel functions for synchrotron radiation calculation.

The library comes with documentation to explain the usage of each function, optimal applications, and numerous complete program examples. The source code is commented and written in a structured modular format to enhance understandability. Because it is written in the highly portable C language, there are almost no machine-specific dependencies in the library. All Math++ routines have been rigorously tested. Complete references for each function are given to provide whatever level of follow-up detail a user desires.

Price: $295

Availability: Now

For more information:
Dwight Barrus
Triakis, Inc.
560 Bryce Avenue
Los Alamos, NM 87544
505 672-3180

CAD

Innovative Data Design, Inc. (IDD)

Dreams

Dreams®, from the makers of MacDraft®, presents a powerful set of precision drawing and drafting tools through an elegant, free-flowing human interface. The program offers an enormous array of features that are accessible and usable.

Most tools are active at all times for free access while drawing, which maximizes creativity and productivity while minimizing complexity. The transition from the drawing board to the computer is extremely easy.

Once the drawing environment is set, all measurements, dimensions, area calculations, and coordinates are presented in real-world units to the scale of the drawing. With a full range of graphics features, Dreams enables even the casual user to create conceptual and preliminary designs, illustrations, and precise working drawings.

Key Features

A rich set of geometrical drawing tools: lines (single and parallel), rectangles (squared or rounded corners), arcs (by radius, 3-points, or elliptical), circles (radius, diameter, or 3-points), polygons, ellipses, curves (Bezier or spline), and freehand shapes.

Zoom in to create fine detail, or zoom out to see a large portion of the drawing. Save a series of views to be instantly recalled while drawing or for presentations.

For CAD and other graphics users: scaled drawings in real-world units, automatic area calculation, true associative dimensioning with or without witness lines, and a variety of end marks, custom line styles, and drawing layers. Rotate objects and text in fractional degrees.

Full control over text. Change font, size and style of individual characters.

Advanced object-editing capabilities such as line extend, trim and fillets. Glue edges together to create objects, unglue objects into their component edges, also add or subtract objects to or from each other.

Save commonly used elements in on-line symbol libraries.

High-resolution output using PostScript-compatible devices or popular pen plotters.

Price: Contact
Innovative Data Design

Availability: Contact
Innovative Data Design

For more information:
Innovative Data Design, Inc.
2280 Bates Avenue
Concord, CA 94520
415 680-6818

Lighthouse Design
A Schematic Entry product

Lighthouse Design's schematic entry application is a CAD tool for designing electrical circuit schematics. It is the first of a series of electronics design tools being developed by Lighthouse Design for the NeXT Computer. Future products will include tools for simulation, printed circuit board design, automatic placement and routing, protoboard design, and wire wrap board design.

The schematic tool will include the following features:

Support for hierarchical and modular design techniques, design reuse, group work, and concept exploration.

Support for a variety of standards, including Spice, EDIF, FutureNet, *Mathematica*, and the NeXT graphics standards.

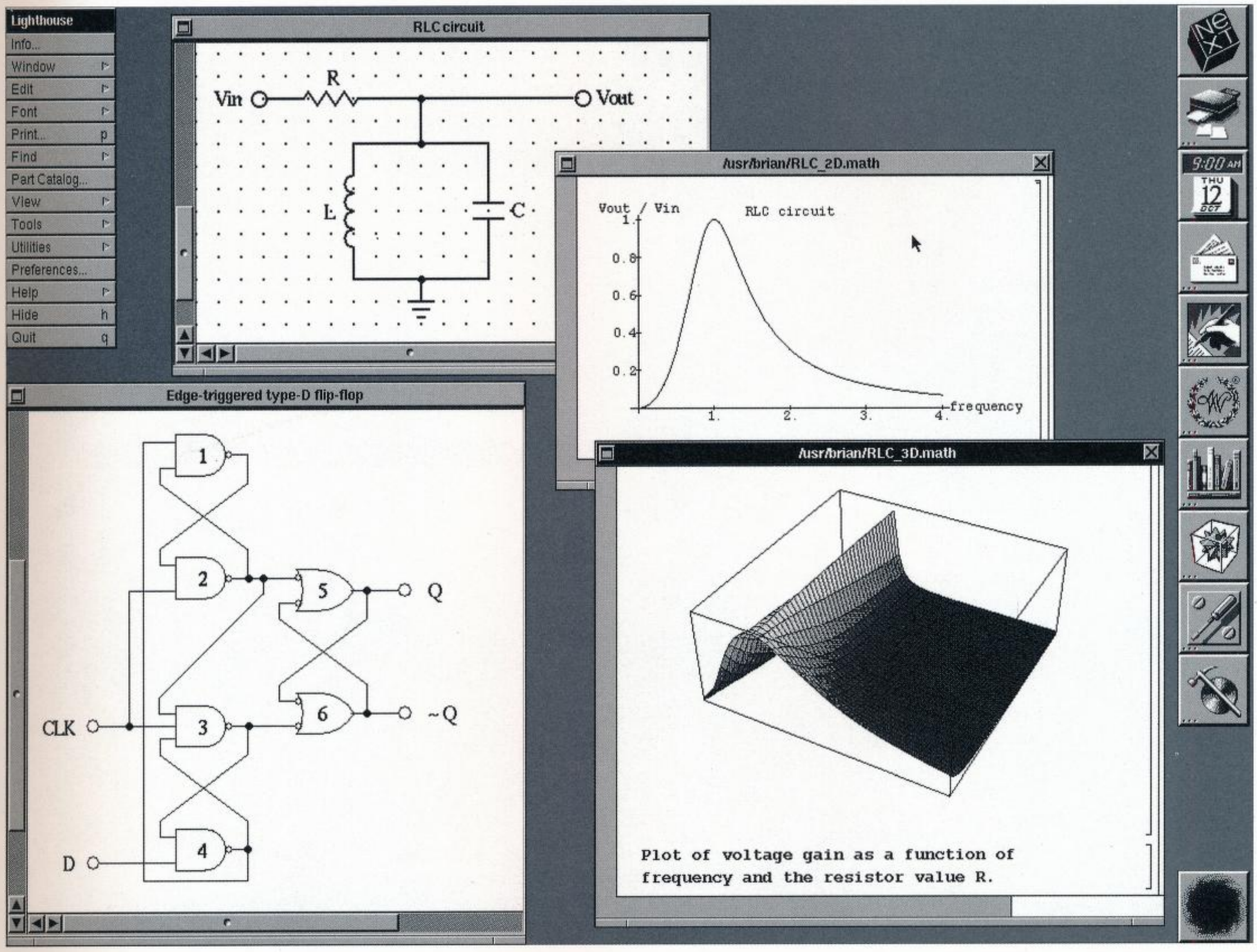
Very tight integration with our future tools, with instantaneous back annotation (propagation of changes to all tool views).

An easily and rapidly extensible library.

A truly helpful help system, designed for the student as well as the professional.

And, of course, a skillfully executed user interface.

All Lighthouse Design products have unconditional money-back guarantees.



Price: $500

Availability:
Contact Lighthouse Design

For more information:
Lighthouse Design
7100 Edgevale Street
Chevy Chase, MD
20815-5906
301 907-4621

Music

CODA Music Software

CODA Music Software is actively developing a music notation software product for the NeXT Computer, based on ENIGMA (Environment for Notation utilizing Intelligent Graphic Music Notation), the company's core technology. Finale™ and MusicProse™ are two CODA music notation products currently built on ENIGMA. All ENIGMA products will be file-compatible.

Price: Contact
CODA Music Software

Availability: Contact
CODA Music Software

For more information:
Gary Brunotte
CODA Music Software
1401 E. 79th St., Suite 2
Minneapolis, MN 55425
612 854-1288
612 854-4631 fax

Mark of the Unicorn, Inc.
Performer

Mark of the Unicorn, Inc. is developing a version of its Performer® MIDI Sequencer software for the NeXT Computer System.

Performer is a music software program that enables recording and editing of music compositions using electronic instruments that adhere to the MIDI specifications. The program is the preeminent music sequencer among professional recording artists and music educators.

Features of Performer include multi-track recording, precise editing of all musical events, and total control of your MIDI keyboards. A high-resolution recording clock of 480 parts per quarter note assures accuracy. Performer supports SMPTE synchronization, frame-time display, and a markers feature that functions as a cue sheet for film and video production. Advanced features include "drum machine style" record while looping, support of 32 In and Out MIDI channels, multiple meters within a sequence, and programmable tempo changes.

Founded in 1980, Mark of the Unicorn is the developer of Performer MIDI Sequencer software and its companion score notation program, Professional Composer®. Performer has been the leading software sequencer software application since its introduction in November 1985.

Price: Contact
Mark of the Unicorn

Availability: Contact
Mark of the Unicorn

For more information:
Robert Nathaniel
Mark of the Unicorn, Inc.
222 Third Street
Cambridge, MA 02142
617 576-2760
617 576-3609 fax

Multimedia and Hypertext

Imagine, Inc.
MediaStation

MediaStation™ is an application for archival, retrieval, and processing of multimedia information. MediaStation takes advantage of the NeXT Computer's high-capacity optical disk drive and unique sound and graphic capabilities, allowing users to create, edit, search, and browse information files containing any combination of images, sounds, music, and text.

Anyone who works with images and sound will find MediaStation useful. Doctors can archive images of a fracture, or voice samples measuring the progress of a speech disorder. Educators can create databases containing images, sounds, and music relevant to a particular topic. Those in the art and entertainment industries can do electronic storyboarding, review animation, or catalogue and archive artistic works.

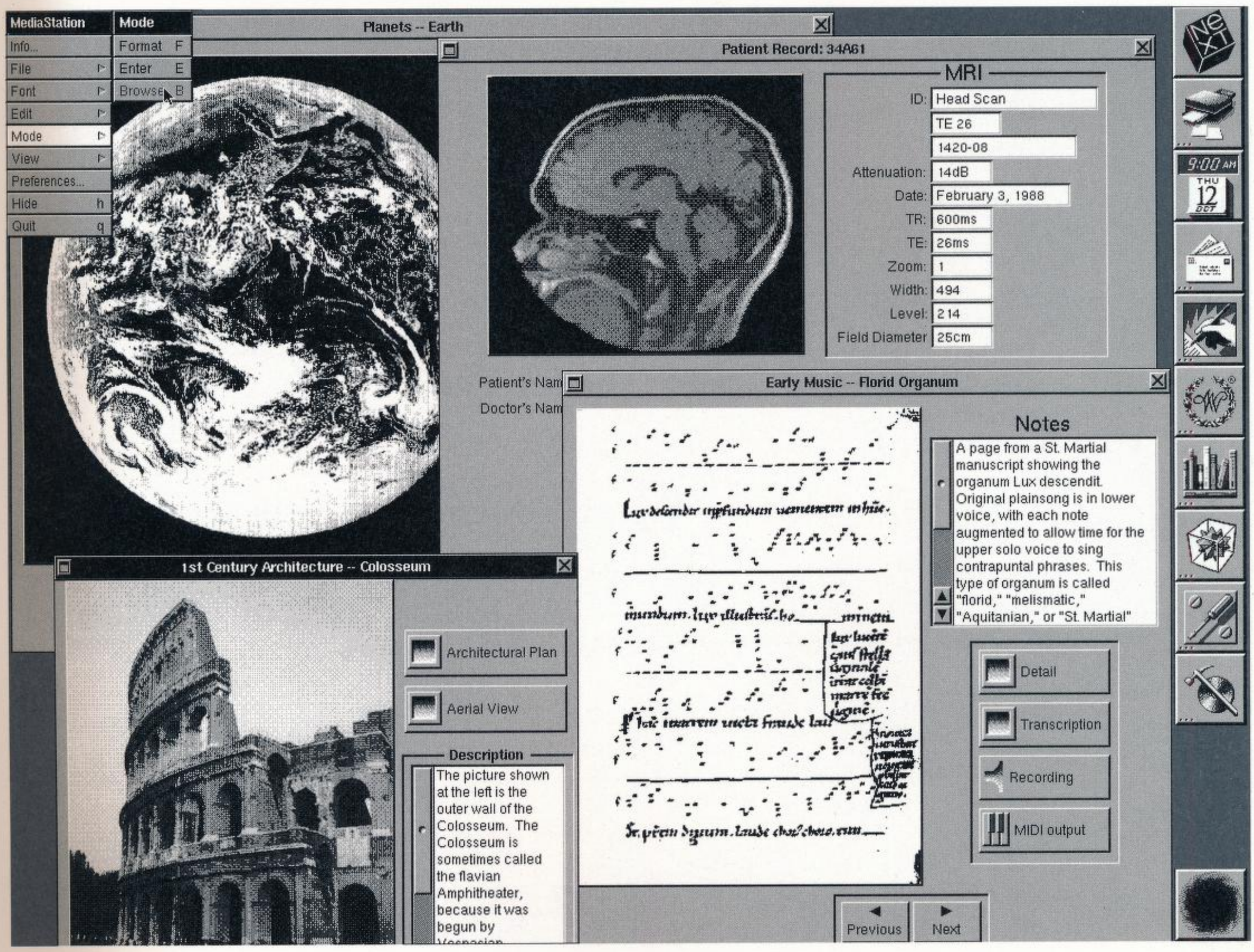
MediaStation supports the following types of media:

- Grayscale or color images, up to 32 bits per sample.
- Monochrome and color PostScript images.
- 44.1 kHz (or 22.05 kHz) stereo and mono sampled sound.
- 8 kHz CODEC encoded sampled sound.
- 56001 DSP algorithmic sound.
- MIDI encoded music.
- Text.

Tools to manipulate and process stored data will include:

- Image processing tools, to manipulate scanned or created images.
- Sound editing tools, to digitally edit, filter, and alter sampled sounds.
- Basic text editing tools.
- Cataloging tools, for storage of large data files on multiple optical disks.
- Desktop tools, to create audio-visual presentations or shows.

MediaStation includes graphic interface controls for audio digitizers and image scanners, and it fully supports the NextStep environment, allowing transfer of many types of data to and from other applications.



6MB

Price: Contact Imagine, Inc.

Availability:
Fourth Quarter, 1989

For more information:
Imagine, Inc.
~~3370 Oak St.~~
Ypsilanti, MI 48197
313 ~~434-1970~~
487-7117

DAVID GREGORY - PRESIDENT
32 N. Washington Suite 14

End of Jan

1st upgrade is free

$ 2500

$ 1995

automated presentations on line documentation

before Jan 15

$ 950 to developers OK'd for me to demo the software

Xanadu Operating Company
Xanadu Hypermedia Information Server

The Xanadu Hypermedia Information Server™ is a powerful tool designed to organize and manipulate unstructured, multimedia information (such as documents with text, graphics, digitized video, audio, and so on). Xanadu manages documents through selectable "Links" between documents and version comparison of documents, instead of structured queries on data files. With Xanadu you can easily answer the questions, "What happened to Document A to change it into Document B?" or "Show me all the comments on the original draft and how they were addressed in the final version."

Key features of the Xanadu system include:

- Support for all forms of digital data (text, graphics, video, audio).
- Flexible "Linking" of related information, including automatic bi-directional links to any size of information (from a byte to a library) and selectable link typing, permitting users to filter a particular subset of links (and connected documents) for viewing.
- Active Sensors that can be attached to documents, which send alerts to individuals or to external processes when specified events occur to a document (such as a new link being attached or a new version being made).
- Document Version Control and Comparison. This allows users to see the changes required to transform any version of a document into another version.
- Full support for multiple concurrent users with security access privileges.

The Xanadu Server will be released along with a general-purpose application, which will give users broad capabilities to create, share, and manage Hypermedia information. The NeXT Computer can also act as a server for Xanadu-based applications running on Macintosh computers or IBM PCs over the network.

Xanadu will vigorously support qualified third parties interested in building specific applications for vertical or horizontal markets based on the Xanadu Server.

Price:
Contact Xanadu

Availability:
Contact Xanadu

For more information:
Joel Voelz
Xanadu Operating Company
550 California Ave. Suite 101
Palo Alto, CA 94306
415 856-4112
415 856-2251 fax

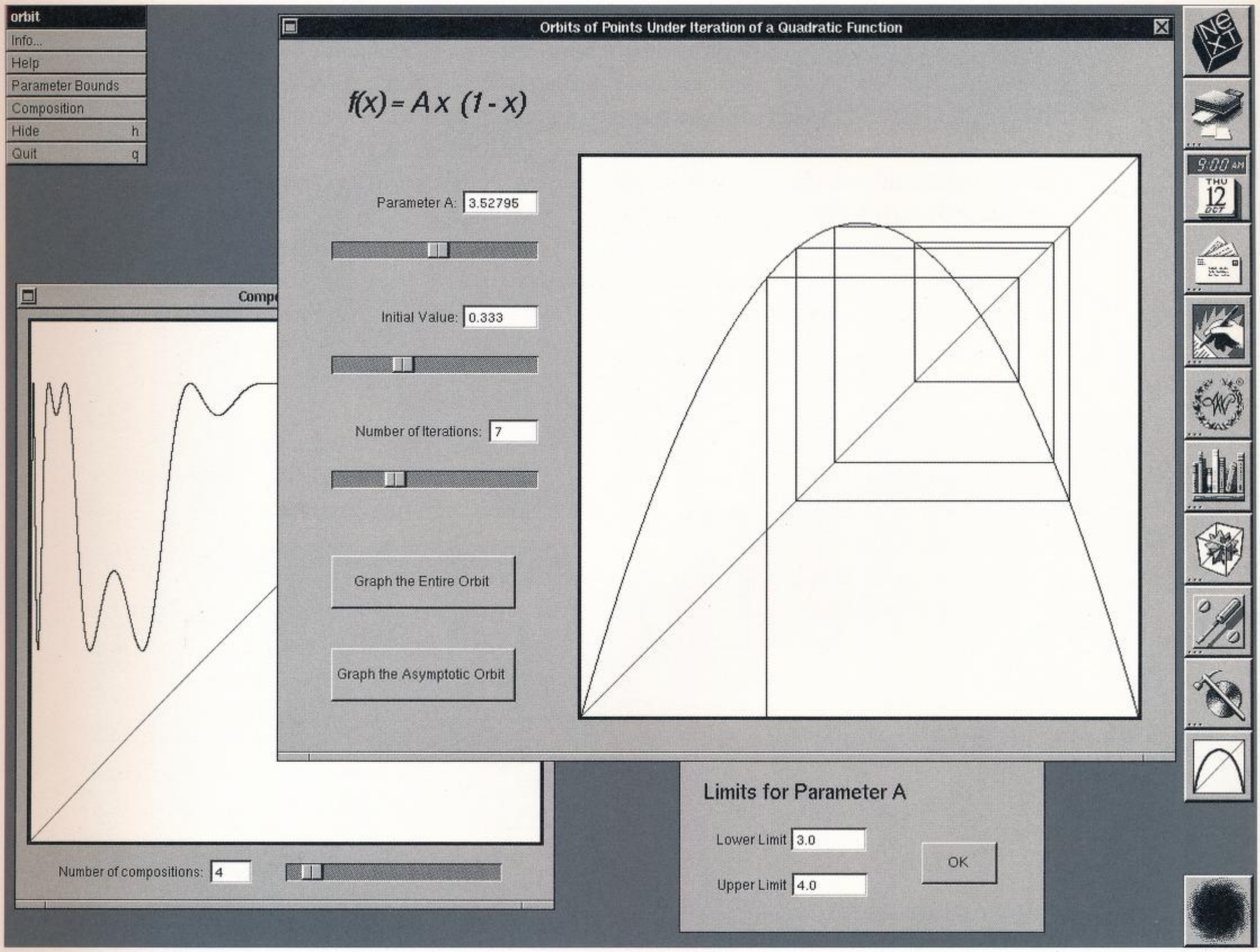
Education

Halchin and Fleming
Orbit

Orbit is a tool for exploring the dynamical system of periodic orbits by solving a specific quadratic function, of the form $f(x) = Ax(1-x)$, $0 \leq A \leq 4$. By changing the value of the variable A, the system can exhibit attractive periodic orbits or chaotic behavior.

Users can view orbits, attractors, and compositions of the function and can easily set the values for the initial point of the orbit and the number of iterations to be graphed. They can also examine in detail the onset of chaos.

Halchin and Fleming specialize in mathematical software for higher education. Current projects provide tools for use in mathematics and physics.



Price: Free with purchase of Rubik Algebra

Availability: Now (purchasers should send an optical disk onto which both Rubik Algebra and Orbit will be installed)

For more information:
Halchin and Fleming
2122 Reynolds Drive
Charleston, IL 61920
217 348-0917

Halchin and Fleming
Rubik Algebra

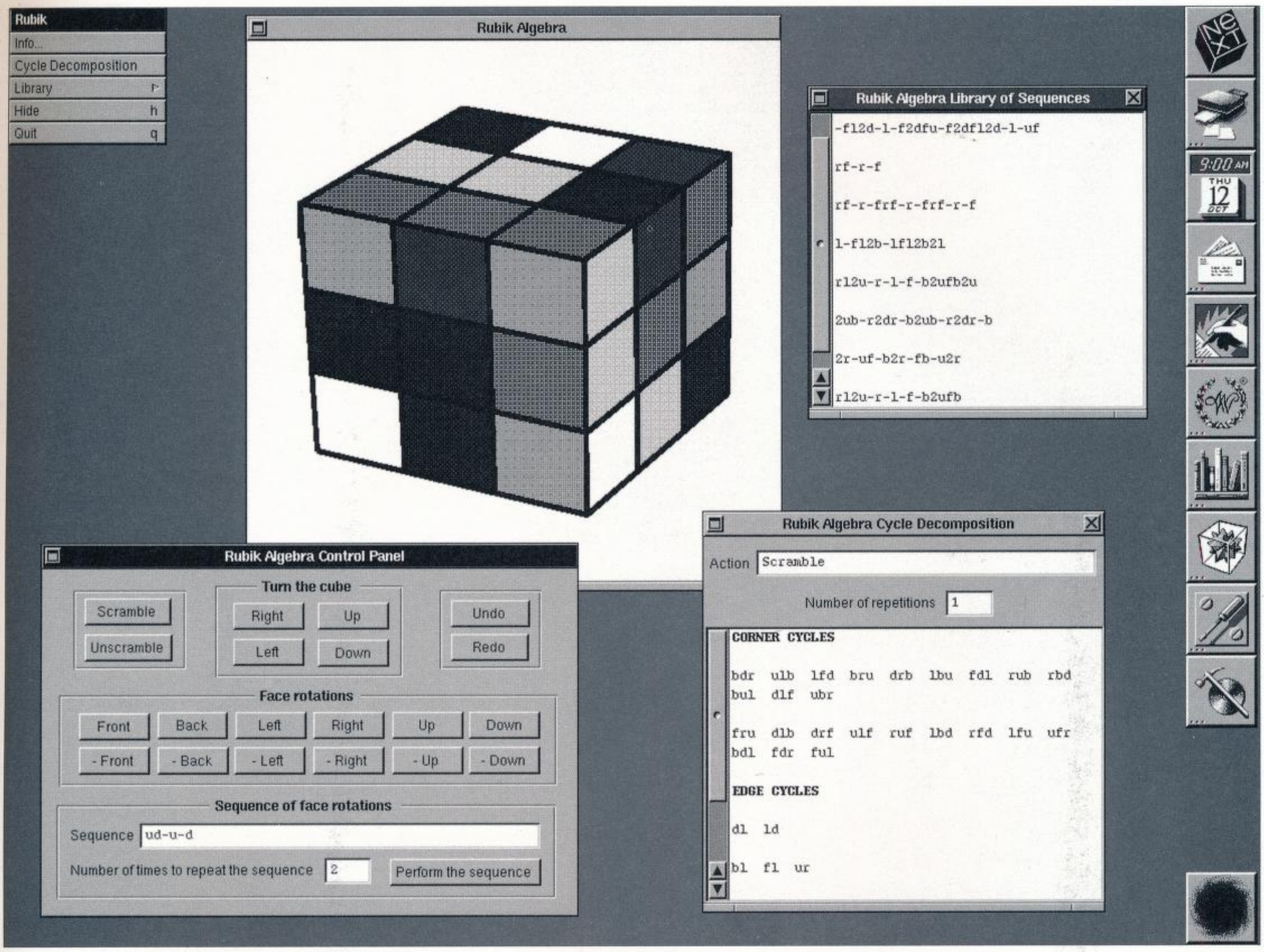
Rubik Algebra uses Rubik's cube as a tool for illustrating, motivating, and exploring a variety of ideas and basic theorems from elementary group theory. Designed primarily for individual student exploration and for classroom demonstrations, it is also very useful for anyone interested in learning to solve the cube.

The program allows users to see the results of applying arbitrary sequences of face rotations to Rubik's cube. More important, however, is the ability to decompose an arbitrary sequence of face rotations into disjoint cycles. By using the visual image of Rubik's cube along with cycle decompositions, users can illustrate ideas such as: (a) the order of an element in a finite group, (b) how to calculate the order of an element from its cycle decomposition, (c) the effect of conjugation on cycle structure, and (d) even and odd permutations.

Sequences of face rotations useful for actually solving Rubik's cube can be built using the notions of commutators and conjugates. The impossibility of certain operations on Rubik's cube, such as a single transposition, can be illustrated.

Other features of Rubik Algebra include the ability to store on disk sequences of face rotations for later use, the ability to "undo" rotations already performed, a random scrambler, an unscrambler, and a help window.

Halchin and Fleming specialize in mathematical software for higher education. Current projects provide tools for use in mathematics and physics.



Price: $20.00 plus $5.00 shipping

Availability: Now (purchasers should send an optical disk onto which both Rubik Algebra and Orbit will be installed)

For more information:
Halchin and Fleming
2122 Reynolds Drive
Charleston, IL 61920
217 348-0917

Development Tools and System Software

Absoft Corporation
Absoft FORTRAN 77

Absoft FORTRAN 77 is a globally optimizing FORTRAN compiler designed for scientific, engineering, and educational users developing and porting mainframe applications (especially VAX/VMS) to and from the NeXT Computer. The compiler's features include:

Full ANSI X3.9-1978 validatable.

Includes Department of Defense 1753 extensions.

IEEE P754 math.

Most VAX/VMS and several FORTRAN 8X extensions.

VAX/VMS Tab and Wide input format.

IBM/VS Fixed and Free input format.

Direct support for the Application, Sound, and Music Kits.

Object-Oriented FORTRAN™ provides object-oriented syntax extensions that allow complete communications with the NeXT software kits.

Optimizations include:

Common subexpression elimination	Peephole optimization
Statement function inline expansion	Automatic data alignment
Loop invariant movement	Constant value propagation
Static address elimination	Strength reduction
Subprogram folding	Register content scoreboard
Mathematical identity substitution	Pipeline and coprocessor scheduling

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Includes natural C interface for inter-language calling.

Extended Data Types.

COMPLEX* 16 and NAMELIST.

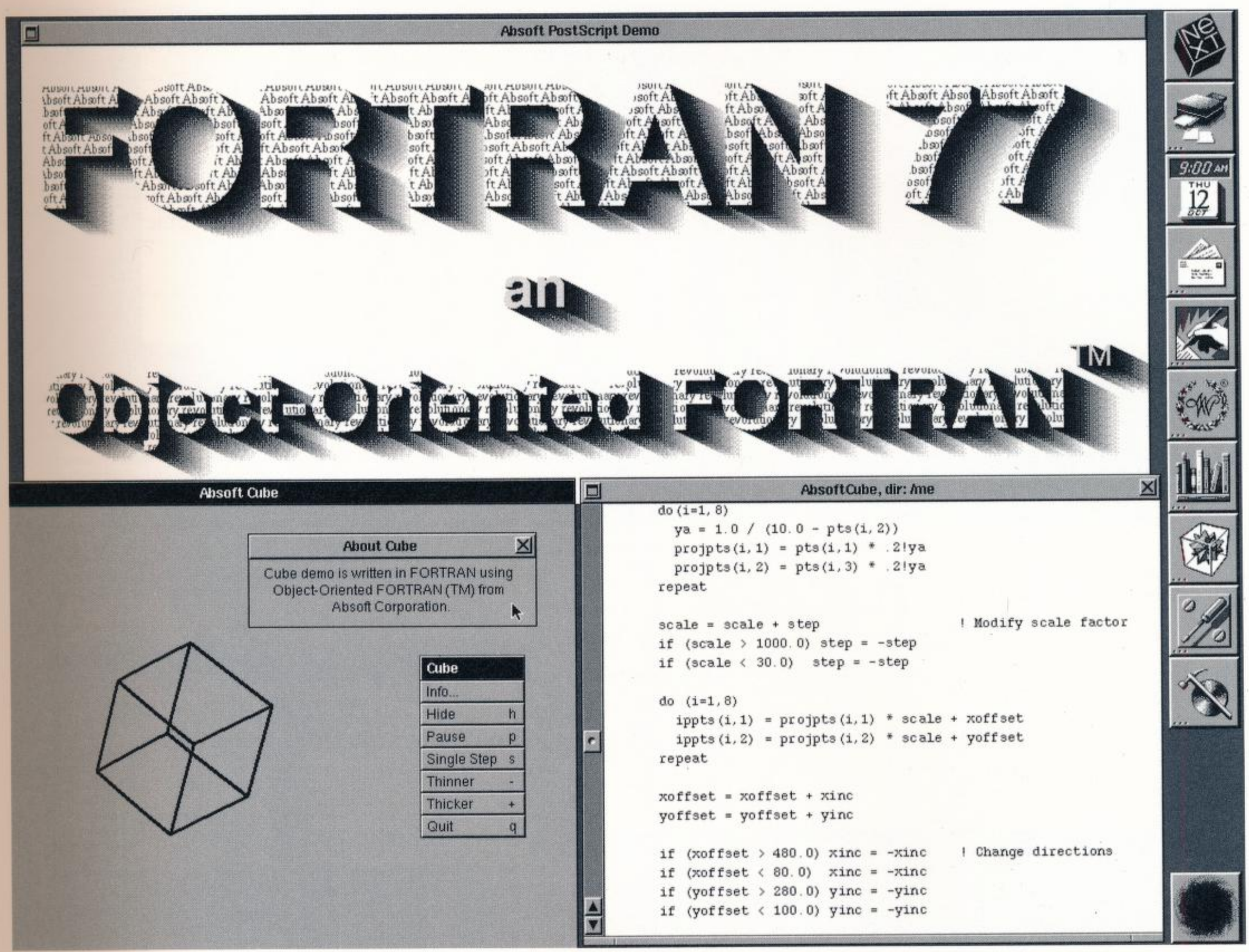
Supports Hollerith constants for FORTRAN 66 compatibility.

Generates 68030/68882 assembler source code.

Creates stand-alone applications with full windowing, menus, panels, etc.

Limited technical support via hotline, BBS, BIX, telefax.

Update services available.



Price: $995
$750 per CPU for universities
(volume pricing also available)

Availability: Now

For more information:
Wood Lotz
Absoft Corporation
2781 Bond Street
Rochester Hills, MI 48309
313 853-0050
313 853-0108 fax

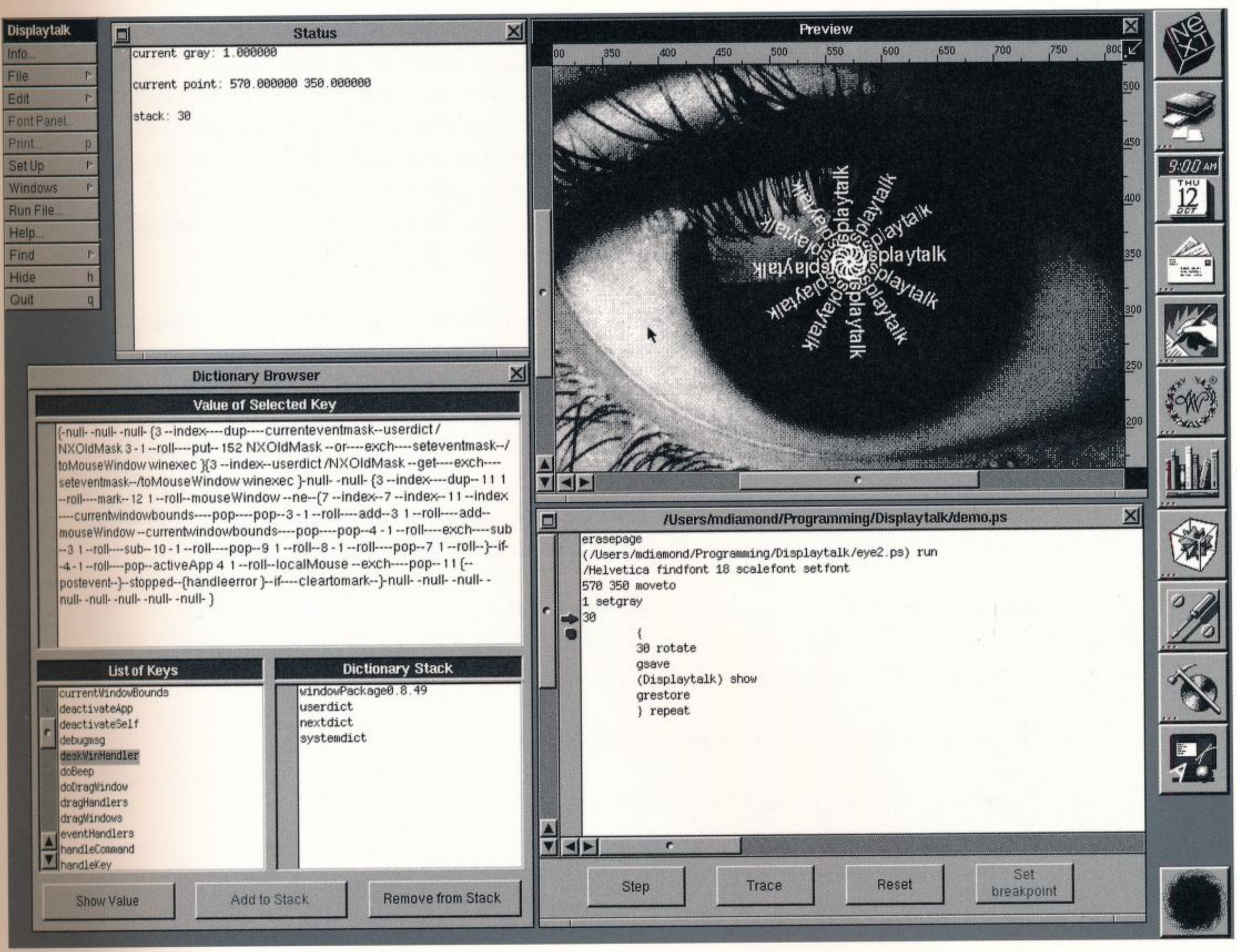
Emerald City Software, Inc.

Displaytalk 1.0

Displaytalk is a complete development environment for Display PostScript programming on the NeXT Computer System.

Displaytalk provides all of the tools necessary to learn the Display PostScript language, including:

- Direct interactive (line by line) access to the PostScript interpreter in an Interactive Window.
- The capability to edit and execute Display PostScript programs.
- Real-time display of PostScript language stacks and variables in a Status Window.
- On-screen, scalable preview of the PostScript image in a Preview Window.
- Complete on-line documentation for the Display PostScript language, accessible by topic or keyword search.
- A complete PostScript tutorial.
- A source-level debugger (with tracing, stepping, and breakpointing).
- A full-featured, multi-window programmer's editor for writing, editing, and debugging code.
- A code converter that simplifies conversions between C calls, pswrap, and pure PostScript.
- A powerful Dictionary Browser that provides rapid access to all Display PostScript dictionaries and their contents.



Price: $995

Availability:
October, 1989

For more information:
Emerald City Software
1040 Marsh Road, Suite 110
Menlo Park, CA 94025
800 223-0417
415 324-8080 (inside CA)
415 324-0316 fax

Highland Software, Inc.
Flexible License Manager

The Flexible License Manager® (FLEX*lm*) is a network-wide multi-access package that allows a software application to be licensed on a concurrent-usage, rather than a per-computer, basis. Using FLEX*lm* software, developers can license their applications to maximize both performance and ease-of-use. This product is easy to integrate and offers simplified network administration, excellent application usage reporting, increased application availability, and significant improvement in end-user productivity, and provides access to applications from multiple vendors, over both homogeneous and heterogeneous network environments.

Licensing can be extended to baseline products, as well as to individual product capabilities or features. FLEX*lm* will allow the developer to restrict application access to: 1) a single specified computer; 2) a specified number of users on a single computer; or 3) a specified number of users in a network containing one or more specified computer systems. Demonstration software can be shipped to customers with only demo functionality enabled. Once the purchase has been made, the full or purchased functionality can be enabled via a fax or phone message, eliminating the need to ship additional media.

Key features and benefits of FLEX*lm* on the NeXT Computer System:

Enforces software expiration dates.
Simplifies software distribution and network administration. .
Supports request queuing for "busy" applications.
Available today on a variety of UNIX platforms.

Price: $12,000 one-time binary license fee	Availability: Contact Highland Software, Inc.	For more information: Bob Laughlin Highland Software, Inc. 840 East Meadow Drive Palo Alto, CA 94303 415 493-8550 415 493-4506 fax

Motorola, Inc.

Simulator Programs (SIM56000 and SIM96000)
Macro Cross Assembler (ASM9600)

Simulator Programs.

The SIM56000™ and SIM96000™ software programs are useful in the development of programs and algorithms to run on the Motorola DSP56000 and DSP96000 Digital Signal Processors (DSP), respectively. The SIM56000 program exactly emulates all of the functions of the DSP56000/1 on a clock cycle basis, including all on-chip peripheral operations, the entire internal and external memory space, all memory and register updates associated with program code execution, and all exception processing activity. The SIM96000 provides identical functions for the DSP96002.

Macro Cross Assembler.

The full-featured ASM96000 macro cross-assembler program translates one or more source fields containing DSP instruction mnemonics, operands, and assembler directives into relocatable object modules that are relocated and linked by the DSP96000 Linker. In the optional absolute mode, the Cross Assembler will generate absolute load files. The ASM96000 recognizes the full instruction set and all addressing modes of the DSP96002, including support for separate X and Y data memory spaces and data transfer operations in parallel with the data ALU operations.

A similar Motorola macro cross-assembler product – the ASM56000, which operates on the DSP56000 family – is part of the software bundled with every NeXT Computer.

Price: Contact Motorola

Availability: Now

For more information:
Motorola, Inc.
Digital Signal Processors
6501 William Cannon Drive
West Austin,
TX 78735-8598
512 891-2030

Neuron Data, Inc.
NEXPERT *OBJECT*
NEXPERT AI Library

NEXPERT *OBJECT*™, the standard in expert systems technology, is a hybrid rule- and object-based expert system for commercial and industrial application integration.

NEXPERT is written in C, thereby ensuring a very high level of performance and integration. Its features include integrated forward and backward chaining using the same symmetric rule format; automatic goal generation; pattern-matching; dynamic creation of objects, classes, properties, methods, and demons; multiple and user-defined inheritance; and non-monotonic reasoning.

NEXPERT is being used for a range of applications, including diagnostics, finance, troubleshooting, simulation, decision support, planning, and process control.

NEXPERT's comprehensive graphic interface allows developers and domain experts to edit rules and objects as well as build control structures. Views of the rule and object relationships are available at all times through a dynamic graphic browsing mechanism.

The NEXPERT AI Library™ provides the capability to fully embed expert systems within applications developed in the NeXT environment. These applications can be written in any conventional programming language (Objective-C, FORTRAN, C, Pascal, Cobol, Ada, Assembly, and so on). This open, event-driven architecture permits the development of real-time, on-line applications that can directly access standard spreadsheets, relational databases, and any other conventional software. In addition, bridges to a number of third-party software packages are supported.

The NEXPERT *OBJECT* Development System and Runtime System are available for NeXT machines with a minimum of 5 MB of free disk space. The NEXPERT Development System requires an X11 server. Knowledge bases are completely cross-compatible and portable between all supported platforms, operating systems, and windowing environments, allowing for completely machine-independent development and delivery of applications.

Price:
Development System $8,000
Runtime Server $1,500
Special university discount programs available

Availability: Now

For more information:
Nick Halsey
Neuron Data, Inc.
444 High Street
Palo Alto, CA 94301
415 321-4488

OASYS

OASYS FORTRAN Compiler
OASYS C Compiler
OASYS Pascal Compiler

The family of OASYS™ compilers is based on the Green Hills Software compilers. They offer unsurpassed functionality and optimization as native compilers for the NeXT Computer System. Green Hills is recognized as the industry leader in compilers for UNIX-based systems. Each compiler is a combination of a language-specific front end with target-specific code emitters (88000, 680x0, 80x86, etc.), and is inter-language callable with the other two OASYS compilers.

OASYS FORTRAN is a complete implementation of the ANSI FORTRAN 77 compiler with VAX VMS extensions. Full 68881 floating-point support is provided, as is support for DEC and IEEE floating-point formats. Optimizations include numerous global optimizations and register allocation techniques.

The OASYS C compiler is a full implementation of Kernighan and Ritchie C and ANSI standard C, with many of the Berkeley 4.2 pcc (portable C compiler) extensions. Optimizations include numerous global optimizations and register allocation techniques. The compiler features the most extensive optimization available in a Motorola-compatible compiler. Full 68881 floating-point support is provided, as is support for DEC and IEEE floating-point formats.

The OASYS Pascal compiler is a complete implementation of BSI/ISO (level 0) and adheres to the ANSI Pascal standard. It features the most extensive optimization available in a Motorola-compatible compiler. Full 68881 floating-point support is provided, as is support for DEC and IEEE floating-point formats. Optimizations include numerous global optimizations and register allocation techniques.

The same OASYS FORTRAN, C, and Pascal compilers available for the NeXT Computer System also are available with emitters for the Motorola 680x0 and 88000 and Intel 80x86 and i860 microprocessor families on more than 15 hosts, including DEC VAX, Sun, Apollo, HP, and IBM systems. Applications developed using standard F77, industry-standard C, industry-standard Pascal, or any of the OASYS/Green Hills compilers on other hosts can easily be ported to the NeXT environment.

Price: Contact OASYS

Availability: Now

For more information:
Ann M. Bischoff
OASYS
230 Second Avenue
P.O. Box 8990
Waltham, MA 02254-8900
617 890-7889
617 890-4644 fax

Pacific Microelectronics, Inc.

COMPU-BRAIN

COMPU-BRAIN is the first software development program combining a knowledge-based expert system and a neural network. It allows users to customize neural inter-connects to simulate biological functions and behavior. You can define input values, select a suitable weighting function, and let COMPU-BRAIN do the rest. You can also perform various tasks in a production rule-based expert system. COMPU-BRAIN gives you control over three important aspects of the behavior in a typical neural network simulation:

- Provide a threshold value that controls the output of a cell.
- Control communication over a link between two cells by providing a weight that is applied to signals travelling over the link.
- Create or delete links between cells.

COMPU-BRAIN provides visualization of the simulated interconnects in various neural network models. A conventional production rule-based expert system is fused into the COMPU-BRAIN simulation functions, giving users the flexibility to perform neural network simulation and expert system functions separately.

Price: Contact
Pacific Microelectronics

Availability: Contact
Pacific Microelectronics

For more information:
Wun C. Chiou, Sr., Ph.D.
Pacific Microelectronics, Inc.
201 San Antonio Circle, C250
Mountain View, CA 94040
415 948-6200
415 948-9296 fax

NeXT Developer Program and Resources

NeXT Registered Developer Program

The NeXT Registered Developer Program is designed to encourage and support the development of software and hardware products for the NeXT Computer System.

Registered Developers are entitled to:

Training.
The cornerstone of the Developer Program is the four-day training course, *Programming the NeXT Computer*. More than 400 developers have already taken the course, which is taught on both the East and West coasts. In addition to teaching developers how to write NeXT applications, it covers basic development strategies.

Equipment.
Registered Developers can purchase NeXT products directly from NeXT at the same preferred prices as higher education customers.

Technical support.
Technical support, both by phone and electronic mail, is provided to Registered Developers who have attended *Programming the NeXT Computer*.

Co-marketing programs.
NeXT publishes a quarterly catalog of products for the NeXT Computer System, and Registered Developers are encouraged to submit entries. In addition, NeXT includes Registered Developers in many of its own marketing and sales activities, as appropriate.

Public Relations.
Registered Developers can receive assistance with press relations.

To qualify for the NeXT Registered Developer Program, developers must fill out a detailed application outlining their background and proposed products.

Interested developers should contact:
NeXT TeleBusiness
900 Chesapeake Drive
Redwood City, CA 94063
800 848-NeXT

The NeXT Internet Archive Sites.

Three universities – Purdue, Oregon State, and the University of Maryland – have set up Internet archive sites for NeXT-related software, images, sounds, and documentation. These sites are accessible on the Internet via FTP. The net addresses and archive administrators are as follows:

Purdue University
j.cc.purdue.edu
Gerrit Huizenga

Oregon State University
cs.orst.edu
Bryce Jasmer

University of Maryland
umd5.umd.edu
Mark Feldman

Demo Programs

The demos listed here are shipped with every computer. Most of them were written at NeXT while the computer was under development, to explore programming on the system.

Balancer
A neural network programming example in which a seal learns how to balance a pole on its nose. A good demonstration of how to use graphics and animation to make abstract ideas more comprehensible.

Billiards
A certain realism is obtained via the PostScript composite operator, sound effects, and floating-point dynamical loops.

BreakApp
A game program with resizable playing field, clean sound, and efficient animation. Source code is provided in the Examples directory.

Chess
A front-end to gnuchess, in the NeXT style. You can set many preferences (including computer basal strength), bring up time clocks, and so on. The requisite GNU sources are included.

CircuitBuilder
An analog circuit design system. The idea is to build an analog circuit, get the complete equations for same, and paste them into *Mathematica*. You get (for linear circuits) a solvable system that yields symbolic complex solutions.

Draw
A draw utility that exhibits expert use of the Application Kit and PostScript. Source code and additional information are provided in the Examples directory.

Icon
A Pixel Manipulation Device written by a professional artist that lets you create and edit icons, or load and save them in Tag Image File Format (TIFF) or Encapsulated PostScript (EPS) format. Includes alpha painting, detail blow-up view, and special effects.

Mandelbrot
The obligatory graphical complex plane calculation for Mandelbrot sets, but with a nice surprise: DSP mode, in which the Mandelbrot iteration is done on the DSP. Especially when the iteration limit is very deep, the DSP comes out way ahead.

Molecule
A three-dimensional visualizer for simple organic molecules. This demo makes interesting use of alpha – the technique whereby atoms in back can be seen through their partially transparent counterparts in front.

MonsterScope
A laboratory oscilloscope application. Using the built-in CODEC, you can observe sounds captured by the microphone. If you have a proper A/D converter external to and driving your DSP port, it gives you an additional pair of 16-bit high-fidelity channels. A surprise: There's also a spectrum analyzer that covers the full audio range, with good resolution, db scale option, frequency markers, and so on.

Poker
This fiercely cybernetic bluffing algorithm has a relaxing casino interface.

Ray
This program uses .nff (Neutral File Format) ray-trace databases to create dazzling pictures in an output window. It's a good example of interfacing a NeXT application to sophisticated programs, such as the actual ray-tracing module.

Saturn
This dynamical model of a Saturn-like planet was written by a physicist to test a gravitational-diffusive theory of planetary rings. A menu mode lets you watch as the author's model of ring perturbations actually gives rise to gaps, like the ones seen in Saturn's ring system.

Scene
By the artist who developed Icon, Scene is a utility for putting up full or partial monitor screens. This application also has an indispensable feature: a Grabber window that lets you grab anything you see on the screen and save it as a TIFF file.

ScorePlayer
A player of scorefiles. DSP-generated sounds are computed in real time, directed by the instructions in a scorefile.

SoundPlayer
A simple program that lets you play standard NeXT .snd soundfiles and record CODEC microphone files. An excellent example of a very small application that's nevertheless quite useful.

StatLab
The idea behind StatLab is to provide virtually all of the most elementary statistics functions on one instrument panel.

Stealth
The plane is actually being governed by correct laws of aerodynamics. Many tricks of rapid PostScript depth graphics went into this simulator. Notice the special effects of wind, visibility, and other environmental options, and especially the various selectable views out the sides and back of the aircraft.

Synthesizer
A simple demonstration of how a voiced instrument can be played smoothly and precisely in standard interface modes. You'll hear the pure, high-fidelity voice of the DSP.

Topology Lab
A visualizer for parametric, two-dimensional shapes. The surfaces are drawn with PostScript fill (in surface mode) or lineto (in wireframe mode) operators. Mathematical descriptions are on-line for each shape.

Yap
Useful for learning PostScript. ("Yet Another Previewer" is the source for the mnemonic.) Just sit down with official PostScript language documents and watch this demo translate the code into the graphics the code describes. Graphics copied from Draw can be pasted into Yap as PostScript code.

NeXT Registered Developers

Representatives from the following organizations attended our four-day seminar, *Programming the NeXT Computer.*

Abaton
Absoft Corp.
Adamation
Addison-Wesley Publishing
Adobe Systems Inc.
Aldus Corp.
Ariel Corp.
Ashton-Tate Corp.
Authorware
Autodesk
Bacchus Software
Canon
Cayman Systems, Inc.
Claris Corp.
CODA Music Software
Cricket Software
Data Transforms, Inc.
DataViz Inc.
Dayna Communications, Inc.
DayStar Digital, Inc.
Deep Thought Group
Deutsch Research
Dow Jones & Company
Dupont
Eastman Kodak
Emerald City Software, Inc.
Encore Systems
Epitome
ESL
Extron Electronics
Farallon Computing, Inc.
Flash Graphics
Foundation Publishing, Inc.
Frame Technology Corp.
Franz Inc.
Fusion Technologies
Gemini Software
Halchin and Fleming
Hayes Microcomputer Products, Inc.
Highland Software, Inc.
ICOM Simulations
ICSI
IDD
Imagine, Inc.
InfoProcessing
Informix Software, Inc.
Innovative Data Design, Inc. (IDD)
Intellipath
Jadawin
Kenneth Faw
Kinetics
KnowledgeSet Corp.
Lifetree Software, Inc.
Lighthouse Design
Lotus Development Corp.
Mark of the Unicorn, Inc.
Mathworks
Media Logic Inc.
Metaphor Computer
Metaresearch, Inc.
Metier
MicroMed
Micron
Microstat Development Corp.
ModernSoft
Momentum
Motorola, Inc.
Neuron Data, Inc.
New Vision Technologies, Inc.
Northern Software Ltd.
Novell, Inc.
Nth Graphics, Ltd.
OASYS
OCLC
ON Technology
Onset Computer
Oracle
Oxxi
Pacer Software
Pacific Microelectronics, Inc.
Panamax
Parcplace Systems
PCPC
Perot Systems
Peter Norton Computing
Pixar
Prism
Progress Software Group
Quantex Corp.
Radius
RasterOps Corp.
Relational Technology, Inc.
Res Nova Software
SAS Institute, Inc.
Segue Software
Singular Solutions
Software Ventures Corp.
SouthWind Software, Inc.
Stone Design Corp.
StyleBook
SuperMac Technology
Sybase, Inc.
Symantec Corp.
Systems Concepts
T/Maker Company
Thinking Machines
Triakis, Inc.
TRW
Ultre Corp.
Visix Software
VPL Research, Inc.
WebWare
White Pine Software Inc.
Wolfram Research, Inc.
Xanadu Operating Company

Specifications of the NeXT Computer System

Computer

Processors
Motorola 68030 25 MHz CPU
Motorola 68882 25 MHz floating-point unit
Motorola 56001 25 MHz Digital Signal Processor
Integrated Channel Processor
- 12 DMA channels
- 32 MB/sec bandwidth

Optical Storage Processor

Random Access Memory
8 MB to 16 MB of memory
User-expandable in 4-MB increments

Communications and Interfaces
Thin-wire Ethernet, IEEE 802.3a-compatible
Two RS422 serial ports
SCSI interface with transfer rate of 4.8 MB/sec (burst rate)
Three NextBus expansion slots
Printer port (for NeXT 400 dpi Laser Printer only)
Digital Signal Processor port

Dimensions
One-foot (305 mm) die cast magnesium cube
Space for two full-height 5.25-inch mass storage devices
29 lbs. to 37 lbs. (13 kg to 17 kg)

Power
Powers up to four slots with 20 W each
90 V to 270 V, 47 Hz to 63 Hz
5 A, 300 W maximum (including MegaPixel Display)

Operating Environment
Ambient temperature: 32° F to 104° F (0° C to 40° C)
Relative humidity: 10% to 90%
Altitude: 0 to 15,000 ft. (0 to 4,572 m)

Regulations
UL Listed and CSA Certified
Complies with FCC Part 15 Class A requirements

MegaPixel Display

Monitor
17-inch monochrome, flat screen
1120 x 832 x 2 resolution (92 dpi)
Four colors (black and white and two levels of gray)
Refresh rate of 68 Hz noninterlaced
Integrated tilt and roll

Interfaces
Keyboard jack
8-bit, 8012.8 Hz analog-to-digital converter input via microphone miniphone jack (mono)
16-bit, 44.1 kHz stereo digital-to-analog converter output via:
- Headphone miniphone jack (stereo)
- Gold-plated RCA line-out jacks (stereo)
- Integrated speaker (mono)

Keyboard
85 keys including:
- Cursor keys, Numeric pad
- Monitor brightness, Sound volume
- Power on/off

Two-button opto-mechanical mouse

Dimensions
16 in. (w) x 17.3 (h) x 14 (d)
408 mm (w) x 440 (h) x 354 (d)
50 lbs. (23 kg)

Mass Storage

256 MB Optical Drive (formatted)
NeXT interface using Optical Storage Processor
92 ms average seek time
18 ms average seek time within 3 MB range
4.6 MB/sec raw burst transfer rate
800 KB/sec raw sustained transfer rate
Magneto-optical technology
Read/write/erasable and removable media
Primary disk and/or backup

Internal 330 MB Hard Disk (formatted)
SCSI interface
14.8 ms average seek time
45 kB dual-ported FIFO buffer
4.8 MB/sec raw burst transfer rate
1.4 MB/sec raw sustained transfer rate

Internal 660 MB Hard Disk (formatted)
SCSI interface
16.5 ms average seek time
45 kB dual-ported FIFO buffer
4.8 MB/sec raw burst transfer rate
1.4 MB/sec raw sustained transfer rate

400 dpi Laser Printer

Resolution and Speed
300/400 dots per inch (software selectable)
8 pages per minute
Minimum top, bottom, and side margins of 0.2 in.
High-speed serial interface

Duty Cycle
No monthly page limit
300,000-page life expectancy
Uses standard EP-S toner cartridge

Paper
150-sheet paper cassette
Adjustable width for A4, letter-size, and envelopes
Auto and manual feed
Straight paper path
50-sheet output tray

Dimensions
14.3 in. (w) x 7 (h) x 16.7 (d)
32.3 in. (w) with paper trays
363 mm (w) x 180 (h) x 423 (d)
820 mm (w) with paper trays
38 lbs. (17 kg)

Power
115/220 V switchable power supply
110 W at 115 V in standby mode
5 A, 640 W at 115 V peak power while printing

Environment
Ambient temperature: 50 °F to 90 °F (10°C to 32°C)
Relative humidity: 10% to 80%
Altitude: 0 to 8,000 ft. (0 to 2,438 m)

Regulations
UL Listed and CSA Certified
Complies with FCC Part 15 Class A requirements
Conforms with CDRH radiation performance standard, 21 CFR Chapter 1, Subchapter J

NeXT, Inc.
900 Chesapeake Drive
Redwood City, CA 94063
800 848 NeXT

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