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X-Height

See

Typesetting Terms

Xanadu

Xanadu was a design for an interconnected network of computers serving HyperText documents. The creator of Xanadu, **Ted Nelson** (the creator of the word **HyperText**), spent many years promoting and developing the system. Although Xanadu never quite came to fruition, the **World Wide Web** effectively does much of what Xanadu promised.

Xanadu would have served up HyperText documents and allow linking between documents by different authors, just like the Web. The single biggest difference between the design of Xanadu and the reality of the World Wide Web is that Xanadu included features to handle royalty payments, and enable one person to quote another's document without infringing on copyright. This was done through a system of payments where the author of the quoted passages would receive a percentage of the royalty paid to the author of the document containing the quote.

See Also

HyperText; Internet; World Wide Web

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Xerox PARC

In 1970, Xerox established the Palo Alto Research Center near the campus of Stanford University. Xerox lured the best minds in computer science, physics, and electrical engineering to the lavish facility to create the next generation of information technology. The researchers were given big budgets and few restrictions. Unlike most corporate research centers, PARC was not expected to produce products, but rather ideas.

The first major project at PARC was a revolutionary computer called the Alto. Unlike most of the computers of its day, the Alto was designed to be *personal*—it was used interactively by a single person at a time. The Alto featured a high-resolution bitmapped display that could show text and graphics just as they would be printed. The Alto could print to a new high-resolution printer technology—the laser printer—and could be networked using EtherNet , another PARC innovation.

Alto could be programmed using yet another PARC invention, SmallTalk. This new **object-oriented** programming language enabled software to be written interactively and dynamically and provided a high degree of code reusability.

The Alto's interface included icons and direct selection using a new input device called the mouse. The mouse had been invented several years earlier by Douglas Englebart, a researcher at the Stanford Research Institute.

All in all, the Alto had all of the major features of a personal computer of the

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1990s at a time when most computers were huge unfriendly behemoths shared by many users. The personal computer industry was non-existent, and most electronics hobbyists could only dream of having their own computer.

The Alto was just a research project, however. Had it been commercialized, the price tag would have been close to \$50,000. But the PARC researchers were proud of the Alto and used every opportunity to show it off to the rest of the computer community. One visitor who saw the Alto was **Jef Raskin**, a visiting scholar at the Stanford Artificial Intelligence Laboratory. Raskin would later begin the Macintosh project at Apple.

In 1979, during the **Lisa** project, Raskin and **Bill Atkinson** convinced **Steve Jobs** to make a visit to Xerox PARC to see the Alto. By that time, however, Xerox had tightened security at PARC. Xerox agreed to allow two Apple visits to PARC in exchange for the opportunity to invest in Apple. Xerox purchased 100,000 shares of Apple stock for \$10 each.

Jobs was excited by what he saw at PARC and immediately began shifting the Lisa project toward the technologies he had seen. Eventually, the same ideas would make their way into the Macintosh as well.

Apple would later hire more than 15 PARC researchers to work on the Lisa and Macintosh projects. Among them were Larry Tesler, who demonstrated the Xerox technologies to the visitors from Apple, and Alan Kay, the visionary force behind the Alto.

Xerox did eventually make a half-hearted attempt to market the technologies

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embodied in the Alto. The Xerox Star was a bigger, better, faster Alto, but suffered from poor marketing and a very high price.

Xerox PARC continues to be a focal point for innovative research in information technology.

See Also

Atkinson, Bill; Jobs, Steve; Lisa; Object-Oriented Programming; Raskin, Jef

XCMDs and XFCNs

Although HyperCard provides a great deal of flexibility, there are some limitations in the scripting language, because HyperTalk provides no calls to the **system toolbox** . HyperCard's functionality, however, *can* be extended using XCMDs (or eXternal commands, pronounced XCommands) and XFCNs (pronounced XFunctions). These are external programs called from within the HyperTalk language.

The routines are stored as **Resources** , and can be transported in a resource file or a HyperCard stack. They are then installed using a resource editor such as **ResEdit** .

XMODEM

See

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File Transfer Protocols, Modem Transfer Protocols

XMODEM-CRC

See

Modem Transfer Protocols

XMODEM-IK

See

File Transfer Protocols

XOFF

See

XOn/XOff

XOn/XOff

XOn/Xoff is a term for “Software Flow Control”. It functions by inserting characters into the stream of data being transmitted to indicate when to pause and resume. Flow control is important to any kind of data transmission, not just modem communications, although it’s used there most often. Flow

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control is also a printer function, in that when your Mac is sending data to a printer, it may need to be told to pause and let the printer catch up.

When the modem or other receiving device wants the computer to stop transmitting (pause), it will send ASCII code 19 (Control-S, XOFF) When the modem is ready to resume transmission, it will transmit the XON character (ASCII 17, Control-Q) to inform the computer that it is ready to resume transmission. Users of “dumb terminal” programs can use the Control-S and Control-Q to interrupt the flow of data when scrolling through pages of text on a bulletin board or online service. (Some communication programs may use the ⌘ key rather than the Control key.)

As modems speeds have increased and modem users began transmitting binary files that actually contain the XON and XOFF characters as a part of the files, this type of flow control has become less practical. High-speed modems have replaced it with hardware flow control, also called hardware handshaking, which sends a voltage to a signal pin instead of an ASCII character.

See Also

Flow Control

XPress Tags

Using XPress Tags, users can create plain text documents that, when imported

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into QuarkXPress, contain formatting and style sheets. This capability is particularly useful used in conjunction with text from a database, when it's desirable to automate formatting as much as possible.

XPress Tags files can be created from scratch or by exporting text from QuarkXPress using its XPress Tags filter. The tags are text codes that represent character attributes, paragraph formats, and style sheets; they toggle attributes on and off or specify information such as point size or font.

A code such as “@head1:” applies the “head1” style sheet to a paragraph, whereas character-based attributes are applied with codes such as “” for bold and “<I>” for italic.

A third-party version of the XPress Tags filter called XTags offers all the functionality of XPress Tags, along with other features like the ability to create and fill text and graphics boxes, both anchored and free-standing; use a translation table so that other coding systems can be translated; and apply master pages.

See Also
QuarkXPress

xRes

Macromedia's xRes (version 2) for the Mac is a blend of the original xRes and one of the best painting programs originally written for Windows, Fauve

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Mattise. xRes is capable of assuming three personalities with ease, as an image editing program, a full-featured painting package, and an image compositor. It has the image editing power of Photoshop in numerous areas (and in some cases more), the task oriented capacity to composit large images like Live Picture, and can compete effectively in many ways with Fractal's Painter. A Swap Disk, an area on a targeted hard disk, is an essential part of the way that xRes works, so it is vital that you have enough space set aside for the Swap Disk (the documentation guides you through the process). There are multiple undo levels possible in xRes, but each undo level has an impact on the Swap Disk space that is necessary.

Image Editing xRes contains all of the standard image editing tools, and also a special menu dedicated to "objects" targeted imported images. xRes Objects may be moved, rotated, resized and repositioned according to the layer they rest on (front to back). xRes object tools are somewhat like vector drawing object tools, although xRes is strictly a bitmap program. An Object layer module in the Object/Channel/path dialog allows you to see the objects in an xRes document. Double clicking on their respective icons allows them to be renamed and numerically repositioned. Their icons contain a reduced visual image of the object's shape and color. A handy opacity slider at the top allows you to set the transparency of any targeted object in the stack. Moving members of the stack, either on screen or in the dialog, relocates them front to back. Any selected member may also be targeted for an applied effect. Any member can be cut, pasted, rotated, resized, skewed and duplicated. The result of all of this can be a complex composite graphic accomplished in a short

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amount of time.

Internal Effects xRes has a list of its own effects, in addition to being open to all Photoshop plugins. Although many of its native filters are comparable to those offered as standard features in other image editing software, xRes adds the possibility of previewing either the whole selection or a movable boxscreens current resolution. Because xRes mode performs operations on the actual pixel data, it is not considered a proxy system.

xRes mode takes advantage of two of the addressed file formats, MMI and LRG. MMI files save all of the objects as separate reference data so that they can be manipulated after being loaded in again. LRG files are xRes mode files that automatically put the program in xRes mode when loaded in. Maximum brush sizes in xRes mode are 100 x the zoom level, so that at a zoom of 1/8, the maximum brush size will be 800 x 800 pixels! This accelerates image effects processing and painting. Files are automatically rendered as standard graphics when saved to non-LRG formats. Features now available in xRes mode include the Magic Wand Tool, Bucket Tool, Drop Object and Drop Selection commands, and Indexed 256 Color mode.

Digital Painting xRes has painting tools far beyond those found in Photoshop, and rivaling many of the functions in Fractal's Painter software. It includes three sets of brushes (Media, Effects, and Styles) and an associated Shape Inspector dialog that allows you to alter the brush parameters. The specific brushes include:

- Media Brushes

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Soft—Soft edged nib. Default variants include Semi-Opaque, Opaque, Precision, Fast Cover, Slick, Soft Square, and Large Semi-Opaque.

Hard—Hard edged nib. Default variants include Anti-Aliased, Fast Cover, 1 Pixel, Semi-Opaque, Hard Square, Sharp Line, and Large Semi-Opaque.

Airbrush—Digital Airbrush. Default variants include basic, Light, Grainy, Textured, Flowing, Ink, Brush, and Dark Textured.

Calligraphy—A thick and thin brush. Default variants include Shaded, Ribbon, Wet, Marker, Railroad, and Gift Warp.

Charcoal—Charcoal-like media. Default variants include Textured, Creamy, Grainy, Soft, Pastel, Chalk.

Crayon—A brush that skips the surface a bit. Default variants include Wax, Wet, Chunky, and Monkey.

Felt Tip—Like store-bought marker pens. Default variants include Basic Marker, Highlighter, and Thin.

Japanese—Zen art brushes. Default variants include Bamboo, Sumi, and Rising Sun.

Oil—Oil painting simulation. Default variants include Bristle, Rainbow, Strands, Fauve, Splatter, Textured Bristle, and Broad Splatter.

Pencil—Drawing pencils. Default variants include Hard Edged, Number

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2, Colored Pencil, and Chameleon.

Quill—An old style Quill pen. Default variants include Feather, Dark, Splatter, and Watered Ink.

Water—Artist's water media. Default variants include Watercolor, Thick, and Heavy.

- Effects Brushes

Dodge—Lightens the image area. Default variants include Basic, Large, Strong, Weak, Large Weak, Precision, and Precision Weak.

Burn—Darkens the image area. Default variants include Basic, Large, Strong, Weak, Large Weak, Precision, and Precision Weak.

Sponge—Applied media with a sponge-like texture. Default variants include Saturate, Desaturate, Strong Saturate, Strong Desaturate, Weak Saturate, and Weak Desaturate.

Tint—Adds a wash of the chosen color. Default variants include Basic, Strong, Weak, Very Strong, and Very Weak.

Contrast—Applies a contrasted look. Default variants include Increase, Decrease, and Strong/Weak Increase/Decrease.

Noise—Adds pixelated dirt. Default variants include Normal, Strong, Weak, Hue Protect, and Strong/Weak Hue Protect.

Smear—Smears the underlying graphics (to smear floating objects,

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they have to be selected first). Default variants include Soft, Grainy, Heavy, and Sharp.

- **Style Brushes**

These are brushes that emulate various artistic styles, and default variants include Pointillist, Cubist, Van Gogh, Rice, Spray, Nature, and Glass.

Any selected brush can also be cloned and saved under a new name and reconfigured as to nib and other parameters (in the Shape Inspector dialog), and then saved to take its place as a new option in the brush menu.

Texture Painting in xRes xRes features the most intuitive and easy-to-apply texture brush painting of any graphics software on the market. Any image area may be saved to the already full texture library.

xRes also lists some unique effects filters, among which are

- Luminosity can be targeted for sharpening, separated out from the other channels.
- Distort/Whirlpool, which adds more appeal to the standard twist option.
- Stylize/Glowing Edge, a new filter that adds stark glows to the selection.

xRes Image Compositing File Management Macromedia's xRes uses its own method for working with large image files for compositing operations.

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xRes graphics can be worked on in Direct Mode (standard mode comparable to all other editing software) or in the proprietary xRes mode. xRes mode is much faster as far as all graphics operations are concerned, usually by 1000% and more. xRes mode is made for working on image sizes 10MB and up, and those that may contain at least a dozen separate objects. Changes are applied only to the current image area visible on the screen, and not to the whole selection (unless you can see it), and only at the foreground/background colors). Very large textures can be created and saved. Airbrush and Charcoal brushes have options that apply the texture to the image area. Textures are tiled to repeat. Airbrushed applications are especially effective because you can manually control the fades.

File Load/Save Conventions Aside from the MMI and LRG formats already discussed, xRes allows you to save the following formats (xRes files are saved as MMI): Targa, TIFF, PICT, Photoshop 3, JPEG and JPEG Progressive, EPS, Scitex CT, BMP, GIF, and PMG (a favorite of Web page designers because of its small file size and lossless compression). It loads the same parameter files. File imports are treated as “Objects” and can be repositioned and manipulated as indicated previously.

LRG files are rendered on-screen if they need to be viewed in new resolutions. It can open (Load) BMP, GIF, JPEG, LRG, MMI, PhotoCD, Photoshop 3, PICT, PNG, Scitex CT, Targa and TIFF

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XTensions

QuarkXPress was the first page layout package to offer add-on software, XTensions, that could add features to the main program. Although competitor PageMaker now supports plug-ins as well (previously called Additions), the library of XTensions is much bigger.

Ranging in price from a few dollars to hundreds, XTensions also range in functionality. PasteBoardXT has one simple function: Allows users to enlarge or shrink the size of the virtual pasteboard on which their pages sit in QuarkXPress. On the other end of the scale, AutoPage and Pianzhang automate many page-layout functions, such as picture placement and cross-aligning spreads.

XChange is a cooperative for XTension publishers: 1-800-788-7557 or <http://www.xpsi.com>.