

ActiveX Support

Activating the Internet with ActiveX Technologies

Microsoft Internet Explorer 3.0 is the cross-platform Internet client that supports the ActiveX standard. ActiveX is a standard that enables software components to interact with one another in a networked environment, regardless of the language they were created in. With ActiveX, web sites come alive using multimedia effects, interactive objects, and sophisticated applications that create a user experience comparable to that of high quality CD-ROM titles. ActiveX provides the glue that ties together a wide assortment of technology building blocks to enable these “active” web sites.

Most Web users will experience the ActiveX standard as controls, documents and scripts (described below), but the ActiveX standard also embraces client, server and tools technologies, including:

- **ActiveX Controls** are software components that run in Web pages, providing interactive and user-controllable functions. This enables users to view and interact with animation, audio, and video without opening separate programs. Plus, Controls can be reused in applications and written in many popular programming languages, including Java, Visual Basic, Visual C++.
- **ActiveX Control Pad.** This updated, HTML format of the ActiveX Control Pad tutorial assist developers and multimedia designers in developing their first ActiveX™ Web site. The tutorial includes instructions for authoring advanced layout and multimedia features, such as exact object placement, object layering, and transparency effects. To download your copy of the ActiveX Control Pad, visit <http://www.microsoft.com/workshop/author/cpad/tutorial-f.htm>.
- **Active Scripting** supports any popular scripting language, including Visual Basic® Script and Javascript. Scripts can be used to integrate the behavior of several ActiveX Controls and/or Java Applets from the browser or server, extending their functionality.
- **ActiveX Documents** enable you to open a program, complete with its own toolbars and menus, in Microsoft Internet Explorer 3.0. This means you can open non-HTML documents, such as Microsoft Excel or Word files, through a Web browser.
- **Java™ Virtual Machine** is the code that enables any ActiveX-supported browser such as Internet Explorer 3.0 to run Java applets and to integrate Java applets with ActiveX controls.
- **ActiveX Server Framework** provides a number of web server-based functions such as security, database access, and others.
- **Development Tools** from Microsoft and third parties let you use familiar tools and techniques to create controls and Web content. These include Visual Basic, Visual C++, Macromedia Shockwave, Adobe Photoshop, Borland Delphi, tools from Sybase and Borland, Java enable-tools, and other new Internet technologies.

ActiveX™Controls

Imagine having the power of today’s applications redesigned for use on the Internet. That’s what you get with the new Microsoft Internet ActiveX Controls. In creating ActiveX Controls, Microsoft redesigned OLE by leveraging those features of OLE that meet Internet requirements for small and fast computing while retaining basic COM technology.

With ActiveX Controls, you no longer need to download a separate application to make your pages come alive with movies, animations, audio, and more. They can be downloaded and run from within a Web page that is running on cross platforms, including Macintosh, Windows and Unix. Using popular programming languages, such as Visual C++, Visual Basic or Java, content developers can easily learn to create controls and insert them into Web pages. It’s as simple as inserting a control in Visual Basic or Microsoft Access. Plus, using ActiveX Scripting, developers can link controls together, extending the functionality of Java applets and controls. Here are a few examples how controls can create more dynamic Web pages:

- Dynamically update themselves based on user interactions, author-specified events, or their own internal state. For example, the New Item control displays an image until a certain date, or a Timer control can animate and synchronize other controls, or prompt the user after a period of inactivity.
- Solve bandwidth restrictions by rendering visually rich content from tiny amounts of data. For example, the ActiveX Chart control which can be downloaded from www.microsoft.com/ie, displays colorful, data-rich charts. This is a great improvement over use of the IMG tag to add visual content to Web pages. Instead of waiting for large images to download, data can quickly fill a chart.
- Display text at any angle or in an animated sequence along an author-defined path. Vertical or diagonal text can save space or create a graphically more interesting page.

To view these controls, visit the ActiveX Component Gallery (<http://www.microsoft.com/activex/gallery/>)

ActiveX Controls Easy Downloading

ActiveX Controls are automatically installed on your system when viewing a site utilizing them. Unlike other plug-in technology, you do not need to run a setup program and restart your browser to enjoy these activated Web sites.

In addition, ActiveX Control licensing ensures the software you install is safe by letting you know the publisher and underwriter. If a control does not already exist on the user's computer, Microsoft Explorer 3.0 checks to see if it has been digitally signed by a software publisher. For more information about code signing (Authenticode™ technology), see the "Security" section later in this White Paper.

Licensing also protects the publisher by only installing the software after the user accepts the terms and conditions. Palette management has also been updated, so content developers can have a finer degree of control over the appearance of their software components.

ActiveX Controls Available Now

A variety of controls, tools and information is available today from Microsoft.

ActiveX Component Gallery

Check out our new ActiveX Gallery on (<http://www.microsoft.com/activex/gallery/>) The gallery is a of ActiveX™ controls and samples--a gallery of components and resources offered by our partners for your Web authoring and development tasks. This gallery will continue to grow as we add more controls, samples, and information. We hope that you will visit this area frequently for the most up-to-date listing of ActiveX components available. To see another example of cool control, check out <http://www.carpoint.msn.com>.

ActiveMovie Control

With ActiveMovie, you can embed all popular video and audio formats into your HTML pages, including AVI and QuickTime video formats, and MPEG video and audio, and audio formats including WAV, AU, AIFF, and MIDI. This unprecedented level of support in an Internet browser means that you have the freedom to embed the content that you want in your page - all is readily available for playback by users of Internet Explorer 3.0.

The extensible architecture of ActiveMovie enables other media formats and functionality to be supported and enhanced by Microsoft and third-parties—ensuring a rich media solution for today and the future.

You can download the ActiveMovie Control from the download area (<http://www.microsoft.com/ie/download/>) for Microsoft Internet Explorer 3.0 Beta 2. For more information about ActiveMovie, see the multimedia section later in this White Paper and visit www.microsoft.com/imedia/activemovie/activem.htm

PowerPoint Animation Player

The new Microsoft PowerPoint® Animation Player for ActiveX is the easiest and fastest way to animate a static HTML page without having to learn a complex programming language or buying expensive, complex multimedia software. Millions of PowerPoint users can now take advantage of the enhanced animation, hyperlinks, sound and special effects they are familiar with in PowerPoint for Windows 95 to create animated banners, advertisements, image maps and more. The all-new PowerPoint Animation Publisher, a free add-in to PowerPoint 95, allows you to compress PowerPoint animations prior to posting, making downloading and viewing effects on the web faster than ever.

For more information, see www.microsoft.com/mspowerpoint/internet/player/default.htm.

VRML Add-in

Supports Virtual Reality Modeling Language (VRML) by providing an ActiveX control add-in for fast viewing of 3-D objects and 3-D virtual worlds on the Internet. This add-on supports VRML 1.0 plus extensions, and lets you download background textures and inline content, embed VRML worlds in a Web page, and display 3-D objects with texture mapping (GIF, JPEG and BMP formats). After the VRML content is downloaded, users can click the graphic and choose how to explore it—by walking, spinning, sliding, or tilting. Navigation of 3-D spaces and manipulation of 3-D objects can be performed with a mouse, keyboard, or joystick. Support for VRML 2.0 will be provided in a future release.

You can download the ActiveMovie Control from the download area (<http://www.microsoft.com/ie/download/ieadd.htm>) for Microsoft Internet Explorer 3.0 Beta 2.

HTML Layout Control

The HTML Layout Control enables you to create more compelling Web pages by providing exact, coordinate control over object layout, layering and transparency. Objects can be specifically placed within a fixed region with respect to the top and the left of the region, and also given specific height, width, and z-order attributes. The HTML Layout Control provides a preview implementation for incorporating these 2D regions within HTML documents for display in the Microsoft Internet Explorer 3.0. The HTML Layout Control creates a 2D layout format that hosts other ActiveX Controls. This Control can also take advantage of the ActiveX Control specification for transparent and windowless controls. For example, consider the following Web page as displayed in Microsoft Internet Explorer 3.0:

Figure 2 HTML Layout Control

The illustration shows a Web page created with HTML Layout Control. The HTML Layout Control pictured above hosts a number of other controls to make up the complete page. In particular, the page includes:

- **Exact 2D placement:** Controls are placed exactly where the author intended them to be placed within the 2D region. On a typical HTML page, the client Web browser determines the placement of each element; using 2D authoring and the HTML Layout Control, the author maintains this control, ensuring consistency of the user interface.
- **Overlapping regions:** The author can also specify the exact Z-order of each control on the page. In the example above, the box containing the "Breaking Grounds" text overlaps part of the larger box containing the "Good Vibrations" image. Both of these regions are overlapped by the "Volcano Coffee" logo image.
- **Transparency:** The text label "Good Vibrations" is overlapping both the background and the large shaded box in the middle of the page. The text control which implements this label is transparent, so that users can see through the text to objects underneath. Also, the cup (a Windows® metafile) is overlapped by the text label, and is itself a transparent control overlapping both the background and large shaded box. Any ActiveX Control implementing the ActiveX Control '96 specification (published on the Microsoft Web site) for windowless controls can be transparent and used in this manner within the HTML Layout Control.
- **Scripting:** The HTML Layout Control also fully supports scripting, including both Visual Basic Script and JavaScript™. Thus, any object contained in a 2D region

can script other objects in that region. In this example page, clicking on various label controls will cause the images within the region to change. Clicking on other objects on the page causes navigation—switching the browser to a different page. In this example, this is handled with VB Script.

You can download the HTML Layout Control from the download area (<http://www.microsoft.com/ie/download/ieadd.htm>) for Microsoft Internet Explorer 3.0 Beta 2.

RealAudio ActiveX Control.

Enables you to embed a RealAudio player right in your Web page.

Marquee ActiveX Control.

Enables you to scroll through the contents of an HTML document that you have inserted into a frame on a Web page. In addition, the Marquee control enables you to set the frame parameters and scrolling speed.

Other Cool Controls

You can download a set of controls that help you easily activate your Web pages from ActiveX Gallery (<http://www.microsoft.com/ie/appdev/controls/default.htm>).

- **Label.** This control displays text any angle, or renders it along an author-defined path. This is a familiar capability to desktop publishers, but to HTML authors, it is exciting and new. Vertical text or diagonal can be used to save space on the page or simply create a graphically more interesting page; or you can place text along a wavy path that jumps out, calling attention to important information. You can then use a scripting language to control the label object: animate it, make it grow or shrink, even have it change colors as often as you like.
- **Preloader.** The preloader control eliminates long download times. By initiating downloads before they are actually needed, the perceived time to load a page can be greatly reduced. Authors can also use the preloader as a gateway, preventing access to a certain page until all the material has been downloaded.
- **Timer.** Combined with simple scripts, the timer control brings Web pages to life. The timer control makes a Web page perform certain actions at certain times, including being used to animate other controls, prompt the user after periods of inactivity, initiate validation code, periodically update a floating frame and more.
- **ViewTracker.** Updates Web pages dynamically as the user scrolls through them, creating a more active Web page.
- **StockTicker.** Changes data continuously, enabling you to display stock information or other types of information that are continually updated.
- **Popup Menu.** Displays a Windows popup menu through ActiveX Scripting, enabling you create lists of choices for visitors to your site.
- **Chart.** Creates charts that display graphically and statistically complex information. The Chart control can display multiple series of data in many different chart styles. It works with inline data or can point to text files.
- **Animated Button.** Displays frames of an AVI to create cool button behavior.

For more information about implementing ActiveX Controls, see the section describing the HTML Layout Control, or visit <http://www.microsoft.com/workshop/author/cpad/>.

ActiveX TMScripting

With its support for Visual Basic® Script or Javascript, Microsoft Internet Explorer 3.0 provides the fastest, most comprehensive, language-independent, script handling capability on the Internet today. With scripting, you can build pages that ask questions, respond to queries, check user data, calculate expressions, link to other programs, and connect to other controls, applets, and 3-D animations.

You can also add scripting language to your HTML code to develop Web-based applications. Unlike other browsers that support scripting, you can create interactive pages that connect and control ActiveX Controls, including Java applets, other software components, and the different components of Internet Explorer, for example, the HTML document, the frame, or the toolbar. This means you can create a rich Internet application controlled by many kinds of scripting languages, including VB Script and Javascript in your Web pages. Plus, you can easily plug in other scripting languages by adding a DLL.

Visual Basic Scripting Edition

VB Script, which is a subset of the Visual Basic language, is a high-performance scripting language designed to help create active content on Web. With it, you can link and automate a wide variety of objects in Web pages, including Java applets and other ActiveX Controls. Plus, it is fully compatible with Visual Basic and Visual Basic for Applications. Microsoft will make the VBScript source code available under license free of cost to any browser vendors and application vendors who want to support VBScript in their applications. With VBScript, developers can trap events from ActiveX Controls, invoke methods, and modify properties of ActiveX Controls.

Because VBScript code is simple to write and is always maintained in source code in the Web page, it is easy to modify. Plus, developers can enable their VBScript code to run across platforms, including Windows, Macintosh, and all major UNIX systems.

Java Scripting

Javascript, which provides the same functionality as VBScript, also enables you to create active content on Web. Microsoft's implementation of Javascript enables you to link and automate a wide variety of objects, link together ActiveX controls and Java applets, and build pages that respond to queries and calculate expressions.

ActiveX Documents

ActiveX Documents enables you to open an application with its own toolbars and menus in the Internet Explorer window. This means you can open richly formatted documents, such as a Microsoft Excel spreadsheet, without having to open another application. You can do your work and then go back to the Web page you were last viewing.

Like all ActiveX technologies, ActiveX Documents is an open, published specification available to all parties. Support for ActiveX Documents enables you Internet Explorer becomes the frame in which users can browse and view these non-HTML documents and applications. To the users, it seems as if they are running the stand-alone application complete with toolbars, menus, and all other user interface elements, while network administrators can use existing documents and applications on their intranet site without having to convert them all to HTML format.

The Internet Explorer frame is not only an ActiveX Document host, but also packages the HTML viewer as an ActiveX Document. This means that other vendors can use Internet Explorer as a document viewer for files in other formats.

ActiveX Documents are a set of extensions to OLE Documents, the compound document technology of OLE. The extensions are in the form of additional interfaces that allow what looks like an embeddable in-place object to represent an entire document instead of a single piece of embedded content. As with OLE Documents, ActiveX Documents involve a container that provides the display space for ActiveX Documents and servers that provide the user interface and manipulation capabilities for DocObjects themselves.

Tools for ActiveX Technology

Developers can create ActiveX Controls in any language using any tool, including a wide variety of familiar tools, such as Visual Basic, Visual C++, or new tools, such as Microsoft's Java development tool.

With the upcoming release of Visual Basic 5.0, developers will be able to write ActiveX Controls and convert existing VB code to ActiveX Controls with a simple point and click operation. With Microsoft's Java Development Tool, you will be able to use all the features of Microsoft Developer's Studio—a great debugger and editor to integrate with COMs and Windows® APIs—to create Java applets that will run in

Internet Explorer 3.0. Plus, developers can use all the macros and documents that they write for Microsoft Office applications in Microsoft Internet Explorer 3.0.

To get a jump-start on building ActiveX Internet applications and content, developers can use the Microsoft ActiveX Development Kit (MADK). It includes all the tools and information developers need to successfully create active content for the Web using ActiveX Technologies and to build Internet or intranet solutions using Internet Information Server.

Webmasters can author and manage their entire website with Microsoft FrontPage, the easiest and fastest way to create and manage a Web site. Microsoft FrontPage comes with templates and editors that let you easily create HTML pages, including links, hotspots, tables and frames. And, in the next version, FrontPage will support inserting ActiveX Controls into Web pages.

ActiveX Technologies Server Side

Microsoft Internet Explorer 3.0 is fully integrated with ActiveX technologies for servers, including integration with the Microsoft Internet Server API (ISAPI). This integration allows content developers to easily extend Web servers in a fast and scaleable manner. Plus, with the Internet Database Connection, content developers can insert database capabilities into Web pages.

Using the ActiveX server framework, content developers can use the same tools for server-side development as they use for creating Web pages. For more information about the Microsoft Internet Server and its integration into ActiveX technologies, visit [//www.microsoft.com/infoserv/](http://www.microsoft.com/infoserv/)