



Web Animation Survival Guide

by Cathy Clarke

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Today, animation on the web is primarily confined to eye-catching ad banners, graphic embellishments to static pages, and sideshow experiences that are viewed via a plug-in. Web browsers are evolving to support rich media such as audio, video, and animation. Netscape Communicator, for example, adds dynamic HTML technology that features positioning and layering, which can be used in conjunction with JavaScript to animate and manipulate blocks of HTML content on a web page. Animation plug-ins continue to advance and improve, providing streaming capabilities and better compression. Push technologies and hybrid CD-ROMs offer local caching solutions that support delivery of more robust multimedia content to end users. As a developer, it is a challenge to stay on top of the latest and greatest animation technology in order to incorporate it into your work, while simultaneously considering today's lowest-common-denominator audience. This guide looks at some of the tools and techniques that are available for creating and delivering animation on the web.

Animation on the Web: What Are My Options Today?

For many people, animation is synonymous with multimedia. This is because most high-end multimedia presentations include some animation. Also, the term animation covers a broad range of graphic imaging from moving text to 3D flying logos to Saturday morning-style cartoons. Before creating animation for the Web—whether it involves hand-drawn cels on acetate that are scanned into the computer, or frames drawn using a drawing tablet and digital painting software—the first things to consider are the constraints imposed by the delivery medium. Standard web browsers are capable of displaying sequential animations of a limited nature, such as animated ad banners. To display anything more complex requires additional software or programming.

CGI Animation

Before the advent of browser plug-ins and GIF89 support, the only way to create an animation in a Web page was to use CGI (Common Gateway Interface) animation techniques, such as server-push. A server-push uses a CGI script to send a series of images from the server to the user's browser. Many people, however, find server-pushes annoying as the process is dependent on connection and server bandwidth, and it often takes away a degree of control over the presentation from the user. Now that more options are available to developers, server-push animations are becoming relics. For more information about CGI animation, a good resource site is <http://www.emf.net/~mal/animate.html>.

GIF Animation

Since the release of Navigator 2.0, the standard method of non-plug-in animation has become the GIF (Graphics Interchange Format) animation. Although GIF has been primarily considered a still image file format, since 1989 the GIF standard (GIF1989a) has included the capability to save multiple images within a single file, along with timing information for playback. GIF is a hardware-independent file format that is 100 percent lossless—that is, an image that is decompressed on a user's drive is the same as the original uncompressed image. GIF images can contain up to 256 colors, and any single color within an image's palette can be made transparent. The animated GIF file format (called GIF89a) provides limited animation capability; sequences can be looped, but GIF89a animations often play back inconsistently and they do not support audio or advanced features such as scripting for interactivity. Several good shareware and freeware utilities for converting multiple images into GIF89a animations are

available. The most popular shareware tool for the Mac is **GIF Builder** by Yves Piguet. **Web Painter**, a commercial product from Totally Hip, is a very simple painting and cel animation program that exports animated GIF, QuickTime, sequential PICT and PICS, as well as the proprietary format supported by Totally Hip's Sizzler plug-in (see plug-ins section in this guide). A trial version is available for [download](#).



A number of GIF utilities can be downloaded from **Pedagoguery Software**. Be sure to check out **GIFWizard** from Raspberry Hill Publishing, which is an excellent online utility for optimizing your GIF images and animations, and **GiffyView** from Totally Hip, a utility for displaying GIF89a file stats.

Be aware of cross-browser and cross-platform color palette issues regarding image creation for the web. For information, and to download the browser-compatible Netscape 6-bit color cube, visit <http://www.adobe.com/newsfeatures/palette/main.html>

Plug-ins and Controls

For creating more advanced animations for the web, an increasing number of authoring tools that support multiple media types and formats are available. Resulting animation files are typically played through browser plug-ins or controls. Netscape pioneered the plug-in architecture, which makes the browser extensible. With the release of Internet Explorer 3.0, Microsoft's introduced the ActiveX architecture. Like plug-ins for Navigator, ActiveX controls add functionality and support for various file formats and media types. Through support for plug-ins and controls, browsers are making animation and other media widely and instantly available. For example, **Macromedia Flash** is a plug-in and control that enables developers to create vector animations with features such as synchronized audio and hot links. A vector graphic is a mathematical representation of an image, making it resolution-independent and extremely efficient. Creating animation using Flash requires the usual set of digital animation techniques, but playback of the animation requires that end users have the Shockwave Flash plug-in or control installed.

Here are some plug-ins that you may want to add to your animation toolkit:

Shockwave from Macromedia

Shockwave movies are created for the web using any one of three Macromedia tools: Flash, Director, or Authorware. The Shockwave player plug-in and control has become a multimedia standard on the web, and is supported by most browsers as well as Marimba's **Castanet** and Wayfarer's **INCISA**. The latest release supports streaming audio and animation.

QuickTime from Apple Computer, Inc.

QuickTime is scaleable, cross-platform technology for displaying temporal information dynamically. Information can be stored as a variety of data types that include (not exclusively): video, audio, text, sprites, music data, and time code. Apple's own FastStart plug-in for QuickTime ships with Netscape Navigator and many third-party plug-ins incorporate QuickTime (such as **MovieStar** and **ClearFusion**).

mPire from mFactory

The mPire plug-in allows playback of interactive multimedia titles, created using the mTropolis authoring tool, inside web pages.

mBed Interactor from mBed Software

Interactor is an easy-to-use multimedia authoring tool for creating animations with basic interactivity. Interactor supports GIF and JPEG images and animated sequences, and provides for 8-bit alpha-channel masks. mBed's Interactor Player plug-in streams animations and audio over the web.

Sizzler from Totally Hip

The Sizzler Editor/Convertor lets you create animations by converting existing PICS sequences or QuickTime movies for Macintosh and AVI files or DIB lists for Windows. The Sizzler plug-in and control displays animations progressively, much like interlaced GIF images.

PNG Live from Siegel & Gale

The PNG Live plug-in displays the PNG (Portable Network Graphics) graphics file format, which is sponsored by the World Wide Web Consortium (W3C). PNG has advantages over other image standards such as JPEG and GIF, such as support for resolutions up to 32-bit, multiple transparency layers, and interlacing.



QuarkImmedia from Quark, Inc.

QuarkImmedia Design Tool works in conjunction with QuarkXPress to create multimedia for the web. The QuarkImmedia Viewer is a stand-alone player application (not a plug-in) that can connect to the Internet directly and browse exported QuarkImmedia projects. If you link to a QuarkImmedia project from an HTML browser, the URL can be automatically passed to and opened by QuarkImmedia Viewer if it is available.

Java Applets and Scripted Animation

If you wish to avoid plug-ins and third party playback tools, it is also possible to create animation through scripting and programming. This can be accomplished by creating Java applets or writing client-side scripts to accomplish simple animations using JavaScript or VBScript, for example.

Java is often referred to as the lingua franca of the web, and Java applet authoring tools for non-programmers are proliferating. While the animation capabilities and animation feature sets of these tools do not yet compare with established, time- and motion-based authoring tools such as Macromedia **Director** and Adobe **Premiere**, the cross-platform nature of Java and its seamless integration with standard browsers are main selling points and driving forces behind Java's success.

Here are a few of today's visual tools that let you build Java content without programming code:

Astound WebMotion

Noware Activator

Macromedia Applet Ace

Power Production Web Burst

Kinetix Hyperwire

If you are willing to dive into browser scripting, JavaScript can be used to animate a series of images within a page at a consistent speed (see a tip for accomplishing this at <http://webreference.com/javascript/960527/animation.htm>), or swap highlighted button states on cursor rollover (see a tip at webreference.com/javascript/960930/index.html). While client-side scripting is accomplished through HTML and does not require plug-ins, it is important to note that incompatibilities do exist between Netscape's JavaScript implementation in Navigator and Microsoft's JavaScript (called Jscript) implementation in Internet Explorer. It is important to test all scripts on multiple platforms and configurations before publishing scripted animations. You can read about these compatibility issues at <http://www.gmccomb.com/javascript/ie30.html> and <http://kudonet.com/~markst/jscript/oldbug.htm>.

Visit the JavaScript tip repository at <http://webreference.com/javascript/> for some excellent application examples and source code. Additional scripting resources can be found at the URLs listed below.

JavaScripting:

<http://javascript.developer.com/>
<http://www.dannyg.com/javascript/>
<http://www.freqgrafx.com/411/>
<http://www.gamelan.com>
http://home.netscape.com/comprod/products/navigator/version_2.0/script/script_info/

VBScripting:

<http://www.microsoft.com/vbscript/>

Conclusion

The world of web animation is changing rapidly. Before building animations for a web site, determine whether you will require visitors to the site to download and/or install software for playing back animation. If you do not wish to establish additional requirements for end users, consider using GIF and/or programmatic animations. Higher bandwidth and faster connections will permit you to create more complex animations at larger sizes with more frames and better resolution. If you are delivering animation over the web for target users on 28.8 modem connections, you will, for bitmap animation, be limited to partial screen size, a limited number of frames, and lower resolution. In these situations, consider using vector animations, small animation and audio loops, reduced colors, ink effects and transitions, and tiled graphics to keep file sizes small.

About the Author

Cathy Clarke (clarke@dxm.com) is president of DXM Productions, a multimedia design and production studio based in San Francisco. DXM is the creator and publisher of EarshotSFX (www.earshotsfx.com), a digital sound effects library for new media developers. Prior to co-founding DXM, she held positions as Director of Development and Creative Director at T/Maker Company, where she was responsible for the development of CD-ROM titles in the children's edutainment category. Cathy holds a Master's degree from the Interactive Telecommunications Program at New York University's Tisch School of the Arts. She is co-author of *Shocking the Web* (www.shockingtheweb.com) from Macromedia Press and the *Macromedia Director Design Guide* from Hayden Books/Prentice-Hall.

