CHAPTER 1

Understanding the Flash MX 2004 Framework

In This Chapter

Exploring the uses of Flash MX 2004

Introducing the structure of Flash documents

Identifying Flash file types

Since its humble beginnings as FutureSplash in 1997, Macromedia Flash has matured into a powerful tool for deploying a wide range of media content. With every new version released, the possibilities have increased for imaginative and dynamic content creation — for the Web and beyond. Macromedia has responded to the development community's unprecedented embrace of Flash by expanding advanced features and enhancing tools for new users. Never before has Flash incorporated so many new features in a single release.

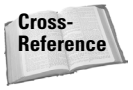
In this chapter, we introduce Flash MX 2004 and explore the many possibilities that are available for your productions. We also discuss how Flash compares to or enhances other programs that you may be familiar with.

Flash movies are usually viewed in a few different ways. The most common method is from within a Web browser, either as an asset within an HTML page or as a Web site completely comprised of a master Flash movie using several smaller Flash movies as loaded SWF assets. The Flash Player is also available as a standalone application (known as a *projector*), which can be used to view movies without needing a Web browser or the plug-in. This method is commonly used for deployment of Flash movies on CD-ROMs, floppy disks, or other offline media formats.

You can learn more about projectors and standalones in Chapter 23, "Using the Flash Player and Projector."

It's a (Flash) MX 2004 World

Flash has seen significant development over the years in both capability and design. Consistently proven with each new release is that developers continue to push the technology into new territory. In its current iteration, Flash MX 2004 is advancing the successes of its predecessor, Flash MX. The new version offers more tools to create the latest breed of Web experiences, dubbed Rich Internet Applications (RIAs), and Macromedia has added more authoring features to help the novice user learn the toolset.



We discuss the topic of RIAs in Chapter 2, "Exploring Web Technologies."

However, Flash is no longer a single authoring product. Macromedia has made two versions of the tool available: Flash MX 2004 and Flash MX Professional 2004. Both editions share many core updates to Flash MX, including our following favorites:

- **Timeline Effects:** A feature added specifically for new users, Timeline Effects enable you to quickly add motion and visual effects to your Flash artwork or text. Flash MX 2004 automatically creates all the tweens and symbols necessary for the chosen effect. You can change or edit effect settings at anytime while authoring your Flash movie. Learn more about Timeline Effects in Chapter 11, "Timeline Animation and Effects."
- **Behaviors:** Another feature added to help novice users, the Behaviors panel adds interactivity to Flash buttons, components, and frames very easily. If you've used behaviors in Dreamweaver, you'll find that using behaviors in Flash is very similar. Several examples throughout this book use the new behaviors in Flash MX 2004.
- **Spell checker:** You can now check the spelling of text within your Flash movie, including text in your ActionScript code.
- **Document tabs:** If you're using the Windows version of Flash MX 2004, you can quickly switch between multiple Flash documents .fla files) by clicking the document's tab in the authoring environment.
- **Improved Actions panel:** The Actions panel has an improved Script navigator, enabling you to edit the actions of any keyframe or instance in your Flash document. You can also pin multiple scripts in the Script pane, so you can quickly switch from one script to another. The Actions panel is discussed throughout Parts V and VII of this book.
- **Find and Replace:** A highly requested feature, Find and Replace does exactly what it says: locates and updates elements in your Flash document. Everything from text to font types to colors to imported graphics and sounds can be searched with this tool.
- **Better graphics support for imported files:** Macromedia dubs this "high-fidelity import," which now enables you to import Adobe PDF and Adobe Illustrator 10 files with better conversion to Flash-equivalent vector graphics.
- **Video Import wizard:** Continuing with Flash MX's video encoding abilities, you have greater control over compression options and in/out points during the video import process. You can find more information about this feature in Chapter 17, "Embedding Video."
- **Flash Player detection:** Flash MX 2004 can create fully built HTML and Flash movie detection files for your Flash content. In previous versions, such automation was only available in Dreamweaver. Now, you can setup this detection process directly in the Flash MX 2004 authoring environment.

- **ActionScript 2.0:** Perhaps one of the biggest advancements in this new version of Flash is a whole new version of the ActionScript language. While most of the coding conventions remain relatively intact, ActionScript 2.0 adds strict data typing, case sensitivity, and close compliance with ECMAScript 4.0.

If you use Flash MX Professional 2004, sometimes referred to as Flash MX Pro or Flash MX Pro 2004, you can take advantage of the following additional features as well:

- **Script editor:** You can edit AS or ASC files (which are external code files for Flash movies or Flash Communication Server applications, respectively) directly in the Flash authoring environment. All of the code support available in the Actions panel is available in the Script editor as well.
- **Screen-based visual development environment:** One of the biggest differences between Flash MX 2004 and Flash MX Pro 2004 is the ability to use a new authoring concept: screens. Screens enable you to quickly put together forms or slide shows.
- **Advanced components:** Flash MX Pro 2004 ships with more components than the standard version, including data connectors that can tap XML and Web service-based data sources. The standard version of Flash MX 2004 has 13 components, whereas the Professional version has 30 components, including Media components that load Flash Video files (.flv files) or MP3 files. We discuss many of the Standard version components in Chapter 29, "Using Components."
- **Data binding:** The Component Inspector panel, available in both editions of Flash MX 2004, has an additional Bindings tab, enables you to easily attach dynamic data to components.
- **Project management:** The Project panel, available only in Flash MX Pro 2004, organizes all of the files associated with your Flash projects. You can create and define sites in Flash MX Pro 2004, just as you do in Dreamweaver. The same site definition files are used between the two programs, making it easy to edit files in either application. The Project panel can publish multiple Flash documents (.fla files) at once, and it can be integrated with Microsoft SourceSafe to version-track your source code. You can learn more about the Project panel in Chapter 3, "Planning Flash Projects."
- **FLV Exporter:** One of the most amazing aspects of Flash MX Pro 2004 isn't even in the authoring environment! A separate installer ships with Flash MX Pro 2004 that enables you to export Flash Video (.flv files) from professional video applications such as Adobe After Effects, Apple Final Cut Pro, and Apple QuickTime Player Pro. This tool actually installs a QuickTime Component that can be used by most QuickTime-aware programs. The quality of the video produced by this tool is far better than the native Video Import wizard. To learn more about the use of this tool, see Chapter 17, "Embedding Video."

Many enhancements are not directly seen in the authoring environment though. While there are two editions of Flash MX 2004, there's still only one Flash Player 7 that's used to view the movies published from either edition. Flash Player 7 adds the following enhancements, among others:

- **Small font size rendering:** You can enable text fields in Flash documents to optimize the display of small font sizes during playback. While it's generally a good idea to anti-alias (or smooth) text in Flash movies, small font sizes can contribute to illegible text — such sizes can be too blurry to read. Now, in Flash Player 7-compatible movies, you can force small text to render *aliased*, with smoothing turned off.

- **FLV file playback from standard Web servers:** When streaming audio and video was introduced with Flash Player 6, a new file format, Flash Video (.flv file), was introduced. Prior to Flash MX 2004, this file format could only be served from a regular Web server if it was imported into a Flash document at author-time. Now, you can load FLV files directly into a Flash movie (.swf file) at runtime, using `NetStream` objects in ActionScript. To learn how to load FLV files in this manner, read Chapter 28, "Sharing and Loading Assets."

You still need Macromedia Flash Communication Server MX to truly stream Flash Video (.flv files) at runtime. The new FLV loading feature of Flash Player 7 progressively downloads the video file, while Flash Communication Server can stream any portion of a video file.

- **Support for Web services:** You can now load data from a Web service running on a remote server. Web services have gained momentum over the last two years as a standard format for sending and receiving data over the Web. Web services access WSDL files (Web Services Description Language) that can tap dynamic data sources such as databases.

Macromedia Flash Remoting MX remains, however, the fastest and most efficient way to deal with data transactions in Flash movies. Expect to see future updates for Flash Remoting MX for the new version of Flash MX 2004.

- **Tougher security restrictions:** Flash Player 7 implements new security policies for data loaded into Flash Player 6 or higher movies. You can only load data from the same domain as that hosting the Flash movie (.swf file), unless a policy file, named `crossdomain.xml`, exists on the remote domain you are trying to access.

For the most up-to-date information on the new security policy and `crossdomain.xml` files, see Macromedia's site at:

`www.macromedia.com/support/flash/ts/documents/loadvars_security.htm.`

- **Better runtime performance:** Macromedia has posted that Flash movie performance has been increased by a factor of two to five times for video, scripting, and general display rendering. In our own tests, we found that even our most complex Flash movies ran better and faster in Flash Player 7.

This is a relatively simple feature to test. Open one of your most intensive Flash movies created in Flash MX, and publish it as a Flash Player 7 movie from Flash MX 2004. Run the new movie in Flash Player 7 and see if you notice a difference.

- **Automatic player updates:** The Windows version of Flash Player 7 can now be updated automatically. This great enhancement means that you can more reliably use enhancements that Macromedia may make available in minor revisions of Flash Player 7, not to mention future major revisions of Flash Player.

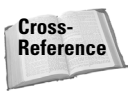
For a complete list of features in each edition of Flash MX 2004, see the Help pages in the Help panel's booklet, Getting Started with Flash ➪ Getting Started ➪ What's new in Flash.

Before you buy or upgrade Flash MX 2004, we highly recommend that you take a look at the detailed feature comparison table on Macromedia's site at:

`www.macromedia.com/software/flash/productinfo/features/comparison/`.

If you're using the trial version of Flash MX 2004 (included on this book's CD-ROM), you can switch to either the Standard or Professional version at anytime by choosing Help ➪ Switch to Flash MX Professional 2004 or Help ➪ Switch to Flash MX 2004, depending on which version you're currently running.

Macromedia also released new versions of Dreamweaver and Fireworks, as part of the Studio MX 2004 software bundle. The user interfaces for Flash, Dreamweaver, and Fireworks are nearly identical, each touting a Property inspector, dockable panel sets, and specialized tools to integrate the products with one another.



To learn more about enhancing your Flash production with Dreamweaver, Fireworks, FreeHand, and Director, refer to Part VIII, "Expanding Flash."

Although the broad array of Flash work created by Web designers and developers already speaks for itself, the sleek interface and the powerful additional features of Flash MX 2004 surely inspires more challenging, functional, entertaining, informative, bizarre, humorous, beautiful, fascinating experiments and innovations.

There are probably more ways to use Flash than there are adjectives to describe them, but here are just a few examples:

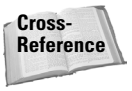
- ✦ Forms for collecting user information and dynamically loading custom content based on this interaction
- ✦ Real-time interaction with multiple users on a forum or support site, including live audio/video feeds of connected parties
- ✦ A video portfolio using native MX 2004 video import capabilities and dynamic loading of content
- ✦ Animated I.D. spots and loading screens with built-in download detection
- ✦ A practical Web utility, such as a mortgage calculator or a search tool
- ✦ Robust chat rooms based on XML and server-socket technology
- ✦ An audio interface dynamically pulling in requested songs using native MX support for MP3 loading
- ✦ Interactive conceptual art experimentations involving several users, 3D, or recording and playback of user interaction
- ✦ Shopping and e-commerce solutions built entirely using Flash and server-side technology
- ✦ Alternative content or movie attributes based on system capability testing (if a device or desktop doesn't support audio streaming, then a text equivalent of the audio transcript is presented to the user)

- ✦ Projectors used for creating slide show presentations in the style of PowerPoint, either on either CD-ROM or an alternative storage device
- ✦ Broadcast quality cartoons, advertising, or titling
- ✦ Optimized animations for the Web, and for portable devices such as cell phones or Pocket PCs
- ✦ An interface that addresses accessibility issues by modifying certain elements when a screen reader is active
- ✦ Flash movies specifically exported for use in digital video projects requiring special effects and compositing

This list is obviously far from complete and is ever-expanding with each new release of the program. As you can probably tell from this list, if you can imagine a use for Flash, it can probably be accomplished.

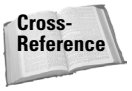
The topography of Flash MX 2004

Before you attempt to construct interactive projects in Flash, you should be familiar with the structure of the authoring environment. Even if you already know a previous version of Flash, this is advisable. That's because with the release of Flash MX 2004, Macromedia has again added many new features to the interface and either moved or improved other features and functionalities. So, to get a firm footing in the new interface, we strongly suggest that you work your way through this book — from the beginning.



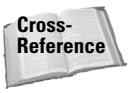
Chapter 4, "Interface Fundamentals," introduces the new Flash MX 2004 interface and gives you tips for customizing your workspace and optimizing your workflow.

Moreover, you need to proactively plan your interactive projects before you attempt to author them in Flash. An ounce of preplanning goes a long way during the production process. Don't fool yourself — the better your plan looks on paper, the better it performs when it comes to the final execution.



The foundation for planning interactive Flash projects is detailed in Chapter 3, "Planning Flash Projects," and you will find these concepts reiterated and expanded in chapters that discuss specific project workflows. Chapter 20, "Making Your First Flash MX 2004 Project," is a great place to start applying these planning strategies.

In this edition of the *Flash Bible*, we've consolidated the overview of interactive planning in the early chapters of the book. In later chapters, we've included step-by-step descriptions of real-world projects that allow you to see how all the theory and planning suggestions apply to the development of specific projects.



Chapter 32, "Creating a Portfolio Site in Flash," describes the process for creating a site that includes a variety of source images. Chapter 33, "Creating a Game in Flash," walks through the logic required to design and script a functional and engaging game.

There are two primary files that you create during Flash development: Flash documents (.fla files) and Flash movies (.swf files). We discuss both of these formats next.

File types in Flash MX 2004

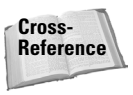
Flash documents (.fla files) are architected to provide an efficient authoring environment for projects of all sizes. Within this environment, content can be organized into scenes, and the ordering of scenes can be rearranged throughout the production cycle. Layers provide easy separation of graphics within each scene, and, as Guide or Mask layers, they can also aid drawing or even provide special effects. The Timeline shows keyframes, motion and shape tweens, labels, and comments. The Library (which can be shared amongst movies at author-time or at runtime) stores all the symbols in your project such as graphics, fonts, animated elements, sounds or video, and components.

Flash documents

Throughout this book, you will see us refer to Flash documents, which are the .fla files created by Flash MX 2004 when you choose File ➪ Save or File ➪ Save As. Unlike some graphic applications such as Macromedia FreeHand or Adobe Illustrator, the file extension for Flash documents does not reflect the version of the authoring tool. For example, Flash 5, Flash MX, and Flash MX 2004 save Flash documents as FLA files. You cannot open later version documents in previous versions of the authoring tool. You do not use Flash documents with the Flash Player, nor do you need to upload these files to your Web server. Always keep a version (and a backup!) of your Flash document.

Flash MX 2004 allows you to resave your Flash MX 2004 document (.fla file) as a Flash MX document (.fla file). Choose File ➪ Save As and select Flash MX Document in the Save as type menu. If you save the document in this manner, you can open the Flash document (.fla file) in the Flash MX authoring application.

Figure 1-1 shows how Flash documents are composed of individual scenes that contain keyframes to describe changes on the Stage. What you can't see in this figure is the efficiency of sharing Flash Libraries among several Flash documents, loading other Flash movies into a parent or "master" Flash movie using the `loadMovie()` action, or creating interactive elements with scripting methods.



Part VII of this book, "Approaching ActionScript," addresses the topic of sharing and loading Flash movies. This part prepares you for taking on more advanced ActionScript development.

Flash movies

When you publish or test a Flash document, Flash MX 2004 creates a Flash movie file with the .swf file extension. This file format is an optimized version of the Flash document, retaining only the elements from the project file that are actually used. Flash movies are uploaded to your Web server where they are usually integrated into HTML documents for other Web users to view. You can protect your finished Flash movies from being easily imported or edited in the authoring environment by other users.

The Protect from import option in the Publish Settings does not prevent third-party utilities from stripping artwork, symbols, sounds, and ActionScript code from your Flash movies. For more information, read Chapter 21, "Publishing Flash Movies."

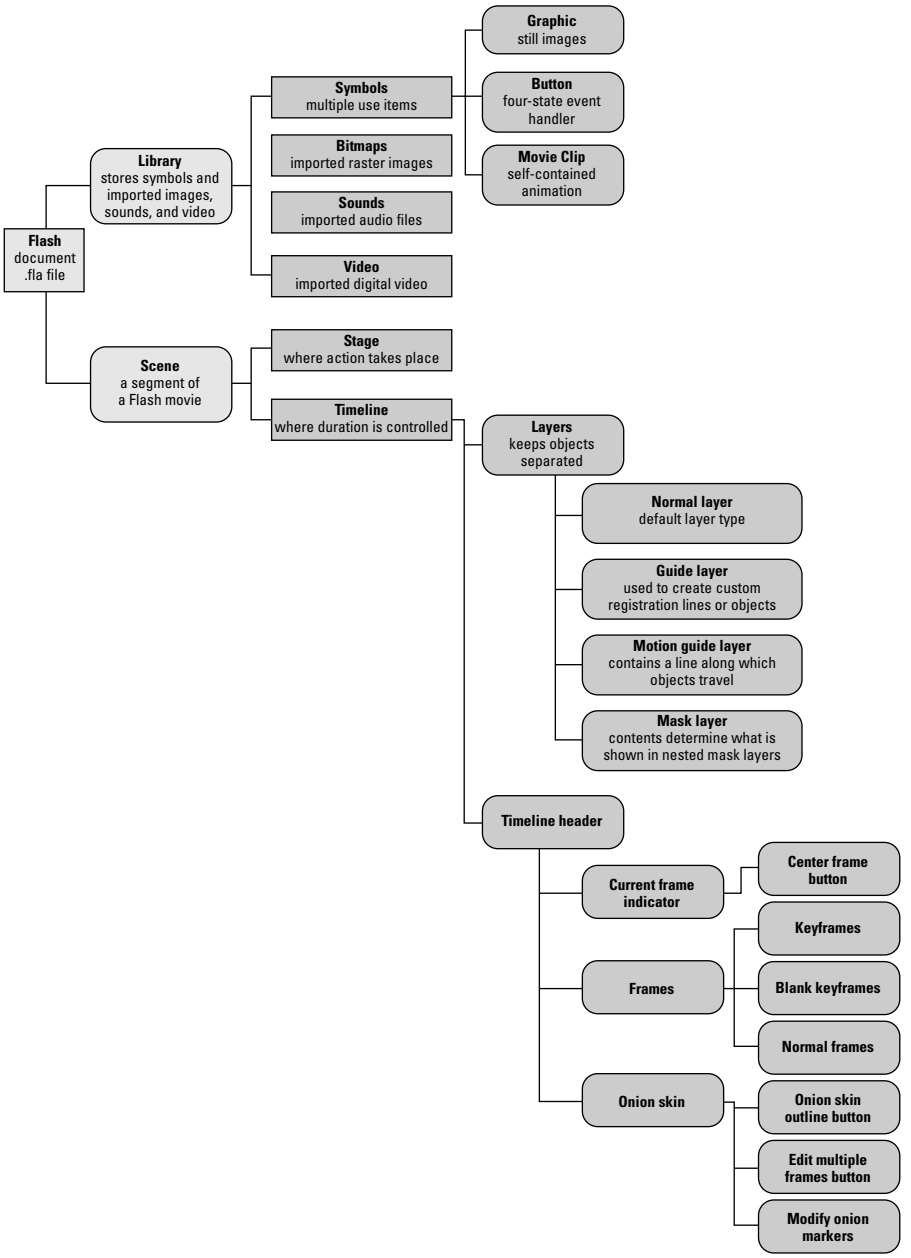


Figure 1-1: Elements of a Flash document (FLA) in the authoring environment

Much of the information contained originally within a Flash document (.fla file) is discarded in the attempt to make the smallest file possible when exporting a Flash move (.swf file). When your movie is exported, all original elements remain but layers are essentially flattened and run on one timeline, in the order that was established in the Flash document. Practically all information originally in the file will be optimized somehow, and any unused Library elements are not exported with the Flash movie. Library assets are loaded into and stored in the first frame they are used in. For optimization, reused assets are only saved to the file once and are referenced throughout the movie from this one area. Bitmap images and sounds can be compressed with a variety of quality settings as well.

Flash Player 6 and 7 movies can be optimized with a specialized **Compress Movie** option that is available in the Flash tab of the Publish Settings dialog box (File ➪ Publish Settings). When you apply this option, you will see drastic file-size savings with movies that use a significant amount of ActionScript code.

Refer to Figure 1-2 for a graphic explanation of the characteristics of the Flash movie (.swf file) format.

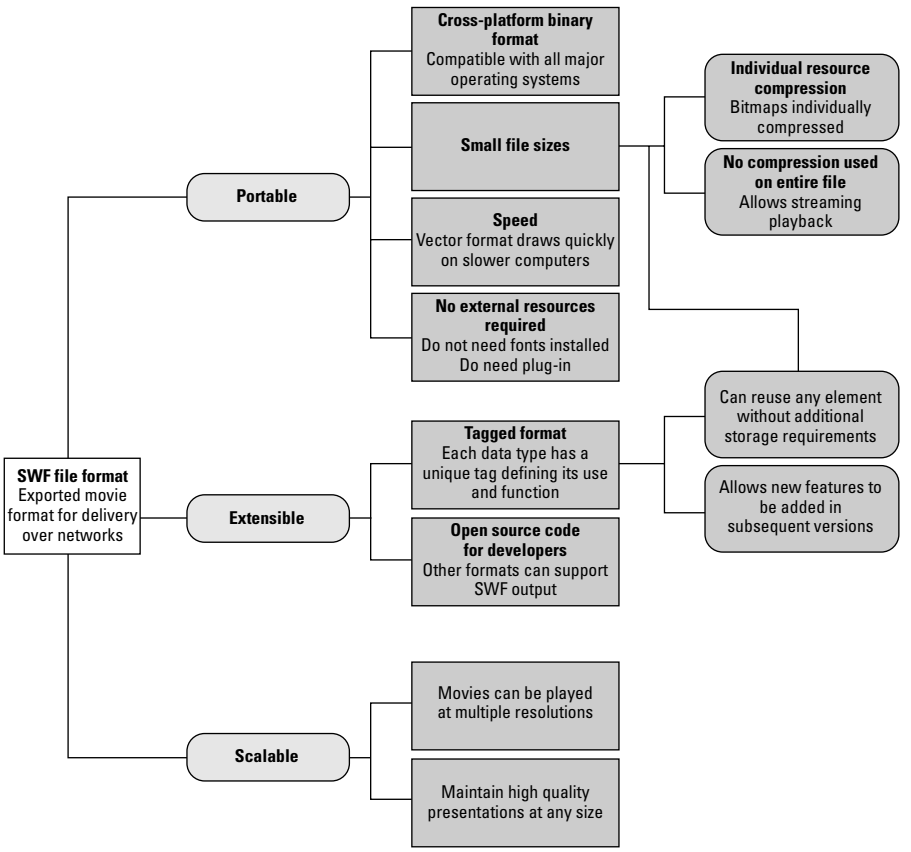
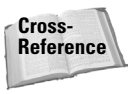


Figure 1-2: Overview of the Flash movie (SWF) format

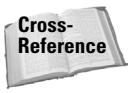
Introducing Flash Player 7

The difference between the naming conventions of the Flash Player plug-in and the Flash authoring software is potentially confusing. Macromedia refers to its latest release of the player as Flash Player 7, tagging the version number at the end of the name instead of following in the naming convention of its predecessors (that is, "Flash 5 Player"). One probable reason the Flash Player is numbered, rather than dubbed "MX" like the authoring software, is because a standard sequential number is required for plug-in detection.

Flash Player 7 continues to integrate MSAA technology to support assistive technologies, such as screen readers to make Flash content more accessible to people with disabilities. Playback on the Macintosh has been improved, while the file size of the player download has been kept small (despite the additions).



Flash Player detection is discussed in detail in Chapter 22, "Integrating Flash Content with Web Pages."



Guidelines for creating accessible content for the Flash Player 7 are introduced in Chapter 20, "Making Your First Flash MX 2004 Project."

There are several other ways in which Flash movies, or their parts, can be played back or displayed. Since Flash 4, the Publish feature has offered provisions for the export of movies or sections of movies to either the QuickTime digital video format, the QuickTime Flash layer vector format, or to the Animated GIF format. Parts of movies can also be exported as a series of individual bitmaps or as vector files. Single frames can also be exported to these formats.

The Many Faces of Flash MX 2004

Flash is a hybrid application that is like no other application. On the immediate surface, it may seem (to some) to be a simple hybrid between a Web-oriented bitmap handler, and a vector-drawing program, such as Macromedia FreeHand or Adobe Illustrator. But while Flash is indeed such a hybrid, it's also capable of much, much more. It's also an interactive multimedia-authoring program and a sophisticated animation program suitable for creating a range of animations — from simple Web ornaments to broadcast-quality cartoons. As if that weren't enough, it's also the host of a powerful and adaptable scripting language.

ActionScript has evolved from a limited drag-and-drop method of enabling animation to a full-fledged object-oriented programming language very similar to JavaScript. Flash ActionScript can work in conjunction with XML (e*X*tensible *M*arkup *L*anguage), HTML, and many other applications and parts of the Web. Flash content can be integrated with many server-side technologies including Flash Remoting MX and Flash Communication Server MX, and the Flash Player offers built-in support for dynamically loading images, MP3s, movies, and other data. Flash can work seamlessly with ColdFusion MX 6.1 and XML socket servers to deliver streamlined dynamic interactive experiences.

So, what's this evolving hybrid we call Flash really capable of? That's a question that remains to be answered by developers such as you. In fact, we're hoping that you will master this application and show us a thing or two. That's why we've written this book: to put the tool in your hands and get you started on the road to your own innovations.

Because Flash is a hybrid application capable of just about anything, a good place to start working with this powerhouse is to inquire: What are the components of this hybrid? And if they were separated out, how might their capabilities be described? Those are the questions that we answer in this chapter.

Bitmap handler

In truth, Flash has limited capabilities as an image-editing program. It is more accurate to describe this part of the Flash application as a bitmap *handler*. Bitmap images are composed of dots on a grid of individual pixels. The location (and color) of each dot must be stored in memory, which makes this a memory-intensive format and leads to larger file sizes. Another characteristic of bitmap images is that they cannot be scaled without compromising quality (clarity and sharpness). The adverse effects of scaling an image up are more pronounced than when scaling down. Because of these two drawbacks — file sizes and scaling limitations — bitmap images are not ideal for Web use. However, for photographic-quality images, bitmap formats are indispensable and often produce better image quality and lower file sizes than vector images of equivalent complexity.

Vector-based drawing program

The heart of the Flash application is a vector-based drawing program, with capabilities similar to either Macromedia FreeHand or Adobe Illustrator. A vector-based drawing program doesn't rely upon individual pixels to compose an image. Instead, it draws shapes by defining points that are described by coordinates. Lines that connect these points are called paths, and vectors at each point describe the curvature of the path. Because this scheme is mathematical, there are two distinct advantages: Vector content is significantly more compact, and it's thoroughly scalable without image degradation. These advantages are especially significant for Web use.

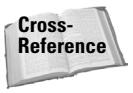
Vector-based animator

The vector animation component of the Flash application is unlike any other program that preceded it. Although Flash is capable of handling bitmaps, its native file format is vector-based. So, unlike many other animation and media programs, Flash relies on the slim and trim vector format for transmission of your final work. Instead of storing megabytes of pixel information for each frame, Flash stores compact vector descriptions of each frame. Whereas a bitmap-based animation program (such as Apple's QuickTime) struggles to display each bitmap in rapid succession, Flash quickly renders the vector descriptions as needed and with far less strain on either the bandwidth or the recipient's machine. This is a huge advantage when transmitting animations and other graphic content over the Web.

Video compressor

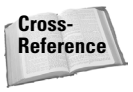
Flash Player 6 and 7 include a built-in video engine — the Sorenson Spark codec — which means that the Flash Player plug-in can be considered one of the world's smallest video

plug-ins. You can import source video files directly into Flash MX 2004 documents (.fla files). Users do not need to have Apple QuickTime, RealSystems RealOne, or Microsoft Windows Media Player installed in order to view video in a Flash movie. Unlike Director Shockwave, which accommodates video but still requires Apple QuickTime to be installed to playback the video, Flash Player 6 and 7 provide a seamless solution.



To learn more about this exciting aspect of Flash authoring, refer to Chapter 17, "Embedding Video." We also discuss the Flash Video Exporter tool and Sorenson Squeeze, applications designed to create the highest-quality Flash video content.

You can manipulate video content and/or include them in your productions, but you could also use Flash MX 2004 to directly export high-quality video content for broadcast video production.



You can learn how to transfer Flash animations to high-quality video in Chapter 14, "Exporting Animation."

Audio player

Since Flash Player 6, Flash movies (.swf files) have had the capability to load MP3 files during runtime. You can also import other audio file formats into a Flash document (.fla file) during author-time. Sounds can be attached to keyframes or buttons, for background tracks or sound effects. A sound file's bytes can be distributed evenly across a timeline, so that the SWF file can be progressively downloaded into the Flash Player, enabling a movie to start playing before the entire sound file has been downloaded.

Multimedia authoring program

If the heart of Flash is a vector-based drawing program, then the body of Flash is a multimedia-authoring program (or authoring *environment*). Flash documents (.fla files) can contain multiple media assets, including sound, still graphics, animation, and video. Moreover, Flash is a powerful tool for creating truly interactive content because it allows you to add (ActionScript) commands to dynamically control movie (.swf file) playback. Whether you are designing simple menu systems or customized and intuitive experimental interfaces, Flash content can be authored to recognize and respond to user-input.

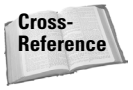
Animation sequencer

Most multimedia-authoring programs have a component for sequencing content as animation, and Flash is no exception. But in Flash, the animation sequencer is the core of the application. The Timeline window controls the display of all content — static or animated — within your Flash project. Within the Timeline window, there are two areas that allow you to organize content in visual space and in linear time.

Layers and layer folders allow you to keep track of content that has been placed into your Flash document. The visibility of each layer can be controlled independently to make it easier to isolate specific elements as you are authoring. Layers are viewed from front to back within each frame of the Timeline — items on upper layers overlay other items on lower layers. Any number of items can be placed on a single layer, but you have less control over the stacking

order within a layer. Within the same layer, ungrouped vector lines and shapes will always be on the bottom level, whereas bitmaps, text, grouped items, and symbol instances will be on the upper level.

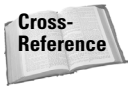
Flash MX 2004 documents can use Layer folders. This is invaluable for organizing projects that involve many separate elements.



For a detailed "tour" of the Flash MX 2004 environment, refer to Chapter 4, "Interface Fundamentals." The process of making artwork and managing groups and symbols is discussed in Chapter 5, "Drawing in Flash," and in Chapter 6, "Symbols, Instances, and the Library," respectively.

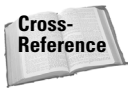
The structure that creates the illusion of movement in a Flash movie is a series of frames. Each frame represents a still moment in time. By controlling how the Playhead moves through these frames, you can control the speed, duration, and order of an animated sequence.

By changing the content in your layers on each frame, you can manually create frame-by-frame animation. However, one of the things that makes Flash such a popular animation machine is its ability to auto-interpolate or *tween* animation. By defining the content on a beginning and an end keyframe and applying a Motion tween or a Shape tween, you can quickly create or modify animated shape transformations and the movement of elements on the Stage.



The many ways of creating Flash animation are discussed in Part III: "Creating Animation and Effects."

Within one Flash document you can also set up a series of separate scenes, each scene is a continuation of the same Main Timeline, but scenes can be named, and reordered at any time. Scenes play through from first to last without interruption unless Flash's interactive commands ("actions") dictate otherwise.



The steps for using ActionScript for simple control of movie playback are introduced in Part V: "Adding Basic Interactivity to Flash Movies."

Programming and database front end

The past few versions of Flash brought vast expansion of the possibilities for integrating Flash interfaces with server-side technology and dynamic loading of content using XML, ColdFusion, and new server technologies such as PHP, ASP, JSP, Flash Remoting MX and Flash Communication Server MX. These improvements largely came out of the development and maturity of ActionScript as a viable programming language. Flash developed into an alternative front end for large databases, which meant it could serve as an online store, MP3 player, or multi-user game and chat room — an amazing feat for an "animation program"!

With Flash MX 2004 there are even more possibilities at our fingertips. One of the extended functionalities in this version is the incorporation of components supporting advanced data-aware capabilities. You can load JPEGs, MP3s, and Flash Video files into Flash at runtime (or "on the fly"), without having to use a special server technology. Support for XML has been expanded to the use of Web services, a growing standard for data transmission.

There are many other enhancements to the programming environment and functionality of Flash that experienced users will appreciate and new users will come to value. ActionScript 2.0 marks an evolution of Flash's scripting language to a much more-mature format, more closely adhering to ECMAScript 4. These changes support ActionScript's move toward acceptance as a standard, object-oriented programming (OOP) language on its own.

Summary

- ✦ Flash MX 2004 combines many of the key tools for multimedia authoring into one nimble program. The integration it facilitates with other programs and languages promotes better Web content and more advanced applications.
- ✦ Flash content is not only found on the Web. For example, it is also used for CD-ROM authoring, broadcast graphics, offline interfaces, and business presentations.
- ✦ Flash MX 2004 is a multifaceted application that can create a wide range of interactive products for the ever-growing variety of Web-enabled devices that surfers use to access the Internet.
- ✦ Careful planning of Flash development will undoubtedly save you time and effort in the long run.

✦ ✦ ✦