



macromedia white paper

## Understanding the Power of Macromedia Director MX

September 2003

## Background

### An Industry Tested Pioneer



For nearly 20 years, Macromedia Director has been an essential tool for professional multimedia development. Its latest incarnation, Director MX, builds on this strong foundation with new features and innovations that make Director as indispensable today as ever before.

When Director drew its first breath as a product called VideoWorks, it gained immediate notice for the ease in which it was able to produce complex animations, and for its real time, on-screen compositing engine. In the early 1990's, Macromedia Director helped spark the multimedia revolution by making it easy to combine popular media types with a powerful interactive scripting language called Lingo. Director was so popular and made such an impact on the multimedia industry that by the mid 1990's, more than 70% of all multimedia CD-ROM titles were produced using Director.

By 1996, Director extended its lead in the world of multimedia by introducing Shockwave Player; an innovative way to take Director movies to Internet browsers. The successful launch of Shockwave Player not only brought a new market for creators of Director content, but it also fundamentally changed the way users perceived their Internet experience.

Director MX continues to build on its history of innovation. As a member of the Macromedia MX family of products, Director MX offers a tight level of integration with such essential tools as Macromedia Flash and Fireworks, resulting in a more effective workflow. Today, Director MX remains the tool of choice for professional developers who are creating content for CDs and DVDs, distance learning courses, kiosks, on-line games, and more.

## Professional Multimedia Authoring

### Powerful



high performance playback  
multiple media formats  
robust scripting

One of the principal reasons Director remains popular with developers of interactive multimedia content is because it offers a combination of unparalleled features that have grown more advanced with each new release of the product.

The latest and most powerful version of the Director line, Director MX, lives up to its predecessor's reputation for possessing a unique combination of real-time media compositing and high-performance playback, as well as sophisticated interactive capabilities.

The Director MX media rendering engine offers the fastest playback performance of any multimedia-authoring tool; a direct result of years of fine-tuning and playback enhancements. What's more, Director MX supports the widest variety of multimedia data types of any professional multimedia-authoring tool, supporting such industry standards as Flash, QuickTime, Real, 3D, AVI and many, many others.

With Director MX, powerful performance doesn't stop with on-screen rendering. Lingo, Director's robust scripting language, is extremely efficient and substantially faster than that of similar runtime programming languages, such as JavaScript and VBScript.

## Extendable



- auto player updating
- external device control
- advanced debugging

Director MX is one of the most extendable multimedia authoring applications available today. With its Xtra plug-in architecture, Director MX allows for the maximum degree of custom project modification, including both authoring and runtime extensibility. This means that you can use any number of commercially available plug-ins to add additional functionality both to the authoring environment and to the Player. This dynamic extensibility makes it easy for Director developers to add a broad range of functionality to their projects, such as controlling cameras, joysticks, and other devices without the need for additional programming. What's more, Director is able to detect and update older versions of Xtras at runtime, ensuring a consistent playback environment for all users.

Director's robust scripting language, Lingo, is a powerful object oriented scripting environment that allows Director developers to not only add dynamic interactivity to their content, but it also allows them to hook their Director projects into third-party applications, such as SQL databases, and middleware, like PHP and ASP. While Lingo is an extremely sophisticated programming environment, it was also designed to be easy to learn. Users new to Lingo will appreciate its reusable code fragments, known as Behaviors, which make it simple to add complex interactivity to any media element. Established Lingo programmers welcome the advanced debugging capabilities new to Director MX, which makes it easy to trace and isolate bugs.

## Integrated



- common workflow
- Launch and Edit
- server integration

Director MX offers a tightly integrated workflow with other members of the Macromedia MX family of products. If you are familiar with other MX products the first thing you may notice when launching Director MX is that the user interface is similar to the other MX products. This consistency allows Director developers to work more effectively with other products in the MX family, and ultimately improve their own productivity.

The integration between Director MX and other Macromedia MX products goes much deeper than cosmetics. Flash content inside Director projects can be easily modified and updated using the Director Launch and Edit feature. Modifying Flash content inside Director is as easy as double clicking the Flash cast member, finalizing the changes inside Flash MX, and clicking a close box. The changes made in Flash MX are automatically updated inside the Director MX workspace.

Director MX is also tightly integrated with Fireworks MX, allowing easy placement and editing of images in Director projects using the Launch and Edit feature. Menus and rollover buttons created in Fireworks MX come to life when placed on the Stage, making it a snap to drop interactive elements right into Director projects.

Furthermore, Director MX also takes full advantage of Macromedia's powerful server technologies, such as Flash Communication Server MX, Flash Remoting MX and ColdFusion MX. These enabling technologies allow Director developers to create more efficient links between their network infrastructure and their customers.

## Who Benefits from Director MX?

Director MX is often the best tool for the job and continues to attract users from a variety of diverse professional backgrounds.

### Professional Multimedia Developers

Professional multimedia developers have long relied on Director's high performance rendering engine, and the power of the Lingo scripting language. These developers generally develop a wide variety of multimedia projects that they deliver on fixed media, such as CD/DVDs, kiosks, or web-based Shockwave projects. They take advantage of Director's ability to support the widest variety of media types, and many of them extend Director's functionality through its Xtra plug-in architecture.

### E-learning Designers

E-learning courseware designers are attracted to many of Director's key features that make developing distance-learning projects a snap. Director MX also offers a number of important tools that facilitate the creation of accessible content, as mandated by Federal law.

### Game Developers

Game developers harness the power and flexibility of Lingo to produce high performance games that may be deployed either as stand-alone applications, or by using the Shockwave Player. Director MX offers one of the highest performing rendering engines of any off-the-shelf authoring tool available on the market today. Game developers leverage this highly optimized playback engine to significantly reduce the time needed to develop their applications.

### 3D Content Developers

3D content developers have long sought a single playback environment that would provide them with the greatest level of compatibility, for the lowest cost. For these users, Director MX represents an ideal solution because over 60% of web users have Director's Shockwave Player, resulting in a truly cross-platform, royalty-free playback environment for their 3D content. What's more Director MX accepts 3D models from some of the most popular 3D authoring tools on the market today, including Maya from Alias|Wavefront and 3ds max from Discreet.

### Advanced Flash Developers

Macromedia Flash developers who need to extend their projects to new audiences, such as kiosks and rapid prototyping environments, can benefit greatly by bringing Director MX into their project workflow. Flash files are fully controllable through Lingo, and can be used as interface objects that control a wide variety of media types not available in Flash, such as QuickTime, RealVideo, AVI and many others. What's more, Director MX allows roundtrip editing of Flash content inside Director projects. Content that is edited inside Flash MX is immediately updated in Director MX as soon as the modifications are complete. The resulting project is now ready for a variety of fixed media uses, such as CDs and DVDs, kiosks, and other local media.

### You?

On the next few pages, you will hear from a variety of developers who have found Director to be the essential tool for their work. It may also be the best fit for your next project.

## Case Study

### Kiosks Quickly

“Director MX was the only known solution for what we were developing.”



**Kenny Ayers**  
Application Developer  
Applied Research Associates, Inc.

[www.ara.com](http://www.ara.com)

#### key benefits

rapid development time  
playback extensibility  
reusable code

Applied Research Associates had a dilemma on its hands. This Albuquerque, New Mexico based research and development company needed a powerful kiosk solution to present multimedia content for the Air Force Research Laboratories. Other solutions met some of their needs, but lacked key features, such as the playback of high quality, full screen digital video on a Windows 2000™ desktop computer. Their search ended as soon as they discovered Macromedia Director MX.

As an avid user of Macromedia Flash MX, Kenny Ayers, an application developer for Applied Research Associates, found that he could complete this kiosk presentation more effectively by using a combination of Flash MX and Director MX. The result was a high-performance, touch screen driven kiosk that showcased the accomplishments and capabilities of the Air Force Research Laboratories.

“We have yet to find a development suite that can seamlessly integrate Macromedia Flash MX, interactive video and 3D as easily and quickly as Director MX,” remarked Ayers about the capabilities of Director MX.

Another key factor that attracted Ayers to Director MX was his need for full-screen, high-quality video. After trying a number of full screen video formats, Ayers found MPEG2 to have the best image quality for the display he would ultimately use; a 52-inch touch screen monitor. While he didn’t originally plan to use MPEG2 content in his project, Ayers found that he could quickly add this higher quality video content by using a commercially available third party Director Xtra.

“We used MPEG Advance Xtra by Tabuleiro (<http://xtras.tabuleiro.com/>) to extend the video functionality of Director MX to include the MPEG2 video format,” said Ayers. “This plug-in was easy to use and its integration was seamless – even though the presentation was developed before this Xtra was even made available to us.”

A narrow deployment schedule was another key consideration that drove ARA’s decision to use Director MX for this project. Ayers was able to repurpose Lingo code and Behaviors from other projects to rapidly add interactivity to this new project.

“Development time was a critical factor for this project. Deadlines were tight, but the ease of use of Macromedia products helped enormously in developing the different iterations of the presentation in a timely manner,” explained Ayers. “Reusing code from previously completed projects has saved me many hours of development time.”

Using Director MX allowed Applied Research Associates to develop the highest quality kiosk project in the shortest amount of time, yet perhaps the best measure of the project’s success was the results it produced for Applied Research Associate’s client.

“... our kiosk presentation system contributed to the Air Force Research Laboratory being awarded several multimillion dollar projects,” announced Ayers.

## Case Study

### Taming Prototype Development

"Director allows us to do in a day or two what used to take us weeks to accomplish."



Larry DeMar  
Founder  
Leading Edge Design

[www.ledgaming.com](http://www.ledgaming.com)

#### key benefits

rapid application development  
powerful scripting  
collaboration

The next slot machine you place a quarter into in Las Vegas may have started its life on the Director timeline. Leading Edge Design is a Chicago-based casino game developer that licenses its games to slot machine giant International Game Technology (IGT). Years ago, they discovered that they could greatly reduce the amount of time it took to prototype games by using Director. Director's powerful scripting language, Lingo, provides the horsepower to turn ideas into interactivity.

"Before using Director we used to code up our games on our target system, which was a slow low-cost embedded system. This is a process that often took weeks to get going," announced Larry DeMar, founder of Leading Edge Design. "Using Director for prototyping, it is not uncommon for us to be able to play a crude version of a new game on the day that it is conceived and a very refined version in the next day or two."

Moving a perspective game from an idea to a functional prototype quickly is an essential aspect of Leading Edge's business. Not every game IGT sees makes it onto the floor of a Vegas casino, so it's imperative to bring the games to life as rapidly as possible.

"Through the use of Director we don't have to wave our hands around when we demonstrate a new game. We bring them a fully working prototype that looks and sounds like what we envision for the final casino product," says DeMar. "Once IGT licenses the game, the Director prototype is used as a reference for the implementation of the game on the IGT electronic system."

While Leading Edge has gained a competitive edge by using Director as a rapid prototyping development environment for their games, they soon found that it was also an excellent group collaboration environment.

"My associates Scott Slomiany and Duncan Brown are so proficient with Director, they use it to create interactive tools in addition to the development of the games. On a game we are currently working on we have created two Director projectors which have helped us convey the 3 dimensional design and operation of a motorized 'topper' unit," explains DeMar. "While working from Chicago with our partners in Reno we sometimes use a tool which Scott and Duncan used Director to create that allows us to interactively chat, draw and paste pictures over the internet."

Leading Edge has parlayed its innovative gaming ideas into fully functional prototypes faster than they had ever imagined by using Director. The result has been an award winning line of games based on Leading Edge's Multi-Strike brand.

"We don't know of any other tool that makes rapid prototyping so fast and easy," remarks DeMar.

The first of Leading Edge's Multi-Strike games have already hit the floors of Vegas casinos and you can play the Shockwave versions online by going to Leading Edge's website.

## Case Study

### A New Spin on eCD

"For Arcavista, using Director MX is a 'no-brainer'."



Matthew de Gannon  
Chief Marketing Officer  
Arcavista Corporation

[www.arcavista.com](http://www.arcavista.com)

#### key benefits

high performance playback  
flexible extendability  
powerful scripting

When Arcavista, a Manhattan-based software development company, was tapped to develop the enhanced CD portion of the new Kelly Clarkson disk *Thankful*, they decided to take the project in a new direction. Rather than place all of the interactive elements onto the disk, Arcavista employed Macromedia Director MX to introduce a new twist on the traditional eCD. Dubbed the Arcavista Communicator, this new technology delivers video, audio, slide shows, and other interactive content directly to the users desktop, eliminating the need for the physical disk and creating a robust 2-way communication between the music enthusiast and the studio. This unique desktop delivery model allows Arcavista to deliver updates, new content, and current artist information directly to the end user in a very effective manner.

Arcavista turned to Director MX for a number of key reasons. Arcavista knew that they could count on Director's long and established history of high performance compositing and playback rendering, but to make Communicator a reality, they also needed flexibility as well as power. Lingo's robust scripting capabilities allowed Communicator to efficiently deliver and manage the distribution of new content to the end-user's machine with minimal effort. By combining Director MX driven content with specialized, home-grown components, Arcavista was able to rapidly develop a successful new communication model.

"Director MX is simply the foremost multimedia creation environment in existence," says Matthew de Gannon, Chief Marketing Officer for Arcavista. "Arcavista integrates Director MX into a very complex relationship with C++ client components and a server backend. Director does some rather heavy lifting for us, enabling our development team to focus on advanced, proprietary library functionality and the client to focus on the engaging interface."

The Arcavista Communicator makes heavy use of Director's powerful component management system. Having a self-upgradeable playback engine was a key requirement for Arcavista, and Director MX filled that need very effectively. At runtime, the Director MX playback engine automatically checks for newer Xtras, and automatically downloads them to the client machine.

"If a client requires some functionality that another Xtra supplies, all we need to do is download it. This allows us to deliver the smallest, but most flexible playback engine possible for our client," explains de Gannon.

When Arcavista sought the best possible solution for their innovations, no other tool came close to filling their needs.

"We do not know any other content creation system that allows for such power and expandability. For Arcavista, using Director MX is a 'no brainer'," remarks de Gannon.

## Case Study

### Shockingly Great Games

“Skunk Studios considers the Shockwave browser plug-in to be the best technology available for online games.”



**Kalle Wik**  
Chief Technical Officer  
Skunk Studios

[www.skunkstudios.com](http://www.skunkstudios.com)

#### key benefits

cross-platform authoring  
deep player penetration  
advanced compositing

When independent game developer Skunk Studios was looking for a development platform for their popular web-based and downloadable games, they considered a number of options. When they chose Director MX, they found the best combination of high performance rendering, player support, and extensibility.

“Skunk Studios considers the Shockwave browser plug-in to be the best technology available for online games. It is much faster than Java, has a widespread installed user base, Flash media support, and fantastic compression for all types of media,” says Kalle Wik, Chief Technical Officer for Skunk Studios. “We are able to use a central codebase for both downloadable and web products, which would not be possible with any other browser based technology.”

Another important consideration that led Skunk Studios to choose Director MX was that it is broadly extendible, both in the authoring and playback environment. By using Xtras, Director’s flexible plug-in architecture, Skunk Studios can add new functionality to their projects without the need for additional programming. What’s more, the Shockwave Player has an auto update feature that makes it a snap to automatically update Xtras at runtime.

“We use Xtras to extend the functionality in each of our downloadable games. Use of Xtras allows our games to seamlessly integrate with all Windows and Mac operating systems, enabling features such as full screen, Windows registry access, custom dialog boxes, and importing images from a user’s hard drive into our applications,” remarks Wik. “It is also comforting to know that if we need a specific feature not already built into Director MX, we can author an Xtra to do just about anything we’d ever need.”

Skunk Studios also makes heavy use of the workflow improvements introduced into Director MX. Already well familiar with other tools in the MX family, Director MX represents an extension of tools they are already accustomed to. Another consideration that won Skunk Studios over was that Director MX offers truly cross-platform development.

“The cross-platform capabilities of Director MX are very important in our daily life. We prefer using the Mac OS X platform for day-to-day development work, and Director MX allows us to develop on the Mac platform, then instantly port to Windows by simply opening up the source file on that platform,” noted Wik. “Being able to count on this cross-platform compatibility means we can spend more of our time designing great games, and less time worrying about ports and platform-specific issues common with other authoring tools.”

Adopting Director MX as their on-line game-authoring platform has allowed Skunk Studios to rapidly develop their popular games, which include Gutterball™, an action packed bowling game, and QBz™, a fast-paced strategy game. Find out more about Skunk Studios by going to their website.

## Case Study

### E-Learning made Easy

"Macromedia Shockwave and Flash Players are a better solution for our customers as they are proven industry standard streaming technologies."



**Jeff Felice**  
VP, Media Development & Systems  
Element K.

[www.elementk.com](http://www.elementk.com)

#### key benefits

deep player penetration  
flash integration  
accessibility

New York-based Element K Corporation is an innovator in the field of electronic learning. They provide coursework and e-learning infrastructure to a large number of Fortune 1000 companies and educational institutions. Element K uses Director MX-based Shockwave presentations as the core of their e-learning solution because it provides the best combination of efficient authoring workflow, extensibility, and high performance end-user playback.

"Element K selected Director as our development platform for many reasons, but the two most important factors were Director's flexible and extensible authoring environment and Shockwave Player being a standard, widely available streaming technology," remarks Jeff Felice, Vice President of Media Development & Systems at Element K. "Over the years we have been able to extend the Director authoring environment with tools scripted in Lingo that have made our development teams more productive while providing our users with a engaging and instructionally effective learning experience using standard technologies."

Courseware developers at Element K take full advantage of the tight integration between Macromedia Flash MX and Director MX. The combination of these two key technologies allows Element K to couple easy to author user interface elements from Flash MX with the speed and advanced debugging capabilities of Lingo.

Accessibility is a vitally important component of Element K courseware. Under Section 508 of the United States Rehabilitation Act, all taxpayer funded media, including web content, CD/DVD-ROM projects, and other multimedia presentations must achieve a Federally mandated level of accessibility. Director MX contains a number of powerful technologies that make Section 508 compliance a breeze. Element K uses the Speech Xtra to access OS native text-to-speech technologies, thus eliminating the need for expensive third party screen reading devices. Director MX also ships with a library of specialized Behaviors, which ease in the implementation of certain accessibility related tasks, such as keyboard shortcuts and captioning.

"The greatest advantage to Element K is that Macromedia has seen the need to incorporate these features into their standard authoring environment ... as opposed to having to build a proprietary solution," adds Felice. "This will provide our customers with a fully compliant solution without having to change their existing implementations."

Element K employs Director MX as their authoring tool of choice in part because they know they can count on the stability and performance of the Shockwave playback format.

"Whereas other companies may offer a proprietary player that is an unknown, both from an implementation and security perspective, Element K is able to offer our customers and their IT departments a known quantity to deliver an effective learning solution," remarks Felice.

Learn More

## 5 Minute Training



By now you have come to learn what veteran Director developers have known for nearly 20 years. Over its nearly two-decade life span, Director has been a leading innovator in the multimedia industry. Director MX is the latest and most sophisticated version of the Director line that offers its developers a unique combination of power, extendibility, and workflow integration with the Macromedia MX product line. Many professional developers rely on Director for a wide variety of applications, such as multimedia projects, e-learning courseware, kiosks, gaming, and many other uses.

Do you think you have a job for Director MX, but are pressed for time? Check out the series of short, yet highly informative 5 Minute Training presentations to pick up more information on what Director MX can do for you. These informative Breeze presentations cover a wide variety of diverse uses, and will help you understand how you can tap into the power of Director MX to speed you through your next project.

Visit the Backstage with Director website, and learn more about what Director can do for you.

## Macromedia DevNet

With its long history of innovative multimedia development, Director MX is possibly the best-supported tool of its kind. There are dozens of third party websites and newsgroups devoted to its use. Macromedia DevNet is a repository of information, suggestions and tips from the Director development community. This site contains articles, sample code and other resources that are useful for nearly every level of developer.

Check out the Director MX section of DevNet, and get helpful developer tips.

## 30 Day Trial Version

Macromedia provides a full featured, 30-day trial version of Director MX for both the Windows™ and Macintosh™ operating system.

Download a trial version today.