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developer's journal

volume 2 issue 11 2004 www.mxdj.com



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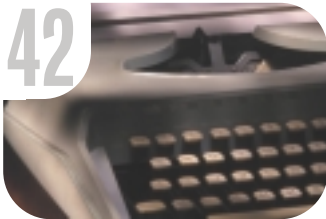


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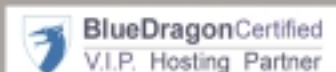
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Cover Price U.S. \$5.99
U.S. \$29.99 (12 issues/1 year)
Canada/Mexico: \$49.99/year
International: \$59.99/year
Credit Card, U.S. Banks or Money Orders
Back Issues: \$12/each

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Worldwide Newsstand Distribution

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MX Developer's Journal (ISSN#1546-2242) is published monthly (12 times a year) by SYS-CON Publications, Inc., 135 Chestnut Ridge Road, Montvale, NJ 07645.

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MX
developer's journal

Categories and Other Sundries

Technologies moving together – not apart

by charles e. brown

In the October issue of this journal, we had a small error; John Bland's fine article entitled "A Little OOP, CF Style" ended up with the classification of Flash ActionScript. Unfortunately it was not caught until the edition was in print. However, when I reviewed the article, I was struck by the fact that many of the OOP concepts John discussed, while putting them in a ColdFusion context, were equally applicable to ActionScript. As a matter of fact, John makes allusions to that very point.

As all of our technologies advance, it is getting harder to differentiate between them. ActionScript is very close, in syntax, to Java; which is very close to the C++ language. We will soon see ColdFusion looking more like ActionScript/Java/C++.

As these technologies grow closer, the ability to seamlessly merge them will also become easier. We already see Flash serving as the graphical user interface to Java applications, lessening the need for the Java applet. What could be more ideal than delivering the power of Java with the low-bandwidth flexibility of Flash? Macromedia's new product, Flex, is certainly taking us in the direction of merging divergent technology.

As industry professionals, we face a number of challenges for the future. First, we must accept that the old categories are quickly eroding away. To be serious developers, we need to have knowledge of multiple technologies. In my opinion, knowledge of Flash ActionScript 2.0 demands knowledge of Java. Second, we must realize that the distinction between designer and developer is slowly going away. Increasingly, graphics people must know some programming, and programmers must understand graphic concepts. Rest assured that for many the learning curve is going to be long and hard. But, in my opinion, this future is now carved in stone.

In September, I had the pleasure of speaking at the MXimize conference in Boston. Here we saw workshops for these seemingly divergent technologies. I

delivered workshops on CSS, Dreamweaver Behaviors, and moving away from the Flash Timeline. Tom Green spoke about Flash Video while Joseph Lowrey and Art Phillips spoke about RAD (Art's series on RAD started in *MXDJ* October as well). Our own Dave McFarland, Dreamweaver section editor, spoke about Dreamweaver design concepts.

Conferences such as this, and the MAX conference just held, are important. I find that the interaction of the participants can be a shot of adrenalin. I was amazed at how many people, who had never met each other before, were exchanging business cards and networking with each other.

We will be repeating this conference in Orlando, Florida, December 14–16. I sincerely hope I will see many of you there (www.mximizeconference.com).

With all of these technologies coming together, education is going to be a major factor. As industry professionals, we must work constantly to update our skills to keep them fresh and marketable. In addition, training needs to be delivered to the end users of the products we are developing. Programs such as RoboDemo 5.0 are making major strides in delivering this needed training in a cost-efficient manner.

By the time you receive this issue, a new version of RoboDemo will be available. Not only will it have a new look and feel, but it will have a new name: Captivate. This product will have the ability to tightly integrate with Flash. Once again, we are seeing technologies merging. In my opinion, this is going to be a major topic within the e-learning community. In that light, we will develop a new section devoted to Captivate, headed by noted author Tom Green. Tom has already shown me some fascinating uses for this newly updated technology – in fact, this issue of *MXDJ* has a review of Captivate.

Next month, I'll discuss the exciting plans we have for *MXDJ* in 2005. ☺

Charles E. Brown is the editor-in-chief of MX Developer's Journal. He is the author of Fireworks MX From Zero to Hero and Beginning Dreamweaver MX. He also contributed to The Macromedia Studio MX Bible. Charles is a senior trainer for FMC on the MX product family.

The Reader's Exchange

Charles Brown's editorial last month brought praise and discussion. These are just a few of the comments we received -- and some of his answers.

I agree that Flash is the technology that will take over the Web, but how will MM overcome the search engine issues that currently keep e-Comm sites from using

Flash on their sites? I develop for Flash as well as e-Commerce, but rarely the both in the same project. E-commerce people always say they don't want to use Flash because of the lack of recognition by the search spiders.

john rossey

It was refreshing to read "A Move to the Future" in answer to the question of where we are going. I look forward to each month with anticipation. And I would also like to congratulate you on writing something worth reading.

josh utley

I disagree; my use of the Web is for information, *not* Flash. I find the sites with Flash are slow to load; while I wait to see if there is worthwhile data, I am losing time looking for data that can improve the health of my patients or slow down the students in my classes looking for better information. When I go to commercial sites using Flash the pictures get in the way of information. Flash is nothing but hype! All emotion, no reality.

kim buttery

I am sure Macromedia would like this very much to happen.

As I looked around when I read your article, I couldn't really find a lot of full Flash-based Web sites or tools that would help me create standardized and exchangeable tools to create these sites. As a Web designer/developer, I don't have a lot of requests from customers for Flash (only the intros and banner stuff). I think the hype is within the industry itself, but not the customer/client side. I think IBM knows where we're going, but you will hear about this soon.

marcellino bommezijn

I have to add a comment in response to what Kim said: While it is true that there is a bunch of Flash out there that detracts from the Web site content, that is not how it has to be. Carefully designed Flash can be very, very quick to load. If the full capabilities of Flash are implemented, it

Developing Databases

Charles,

I appreciated your fresh, forward-looking insights in your article about Flash. I'm a new Web developer who has embraced Macromedia almost exclusively. I have heretofore shunned other companies' programs (e.g., Adobe) in order to maximize the journey up the learning curve and to take advantage of synergies and compatibilities between the programs in the suite of MX 2004 products.

I love that you are going to start next time with ActionScript 2.0 tidbits! I have just learned how to use levels to launch various Flash files from a main Flash file. Nice, modular, clean!

I do have a question: My middleware of choice is, of course, CF. My question is whether you think (even from a forward-looking perspective) that in general we should develop dynamic, database-driven (e.g., MySQL) Web sites as Hybrids (pull data from CF in HTML) and attach/insert Flash movies separately within an HTML table. **OR**

Do you believe that we should develop dynamic, database driven sites entirely in Flash? I know that the latter is possible via Flash remoting, but I have been counseled by some Flash experts to do the hybrid approach (which appears to be quite a bit easier).

Do you see the hybrid approach going away? Should we migrate to using just Flash? If Web site search engine optimization is not important, should we migrate to using just Flash? Or is the hybrid approach OK in your opinion?

jim

Charles Brown's answer

Every situation presents its own requirements. There is no one answer that will fit all situations. I always tell beginning Web developers to "know your audience."

As an example, I did a Flash site for a symphony orchestra. We subsequently discovered that a high percentage of the intended audience had older machines and slower connections. As a result, we had to recast the site to HTML. For most sites, a hybrid is usually the way to go. However, as I said last month, plan for the future when designing it.

Beginning in the December issue, I will be starting an ActionScript series that will look at it from the beginning.

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can be faster than HTML regardless of bandwidth. I have developed .swf's for sites that weigh less than 1.5k. Yes that's right. Many of the .swf's I have put on Web sites actually appear *first* on the loading of the page. Poorly built Flash is slow and cumbersome, but that is poor design, not the fault of Flash. It is vital that these misconceptions be destroyed so that Flash can flourish as it deserves to. What other Web technology is capable of doing almost anything you can imagine? Only Flash.

john rossey

I agree with Marcellino Bommezijn – the Flash hype is within the industry. Clients normally do not understand the difference between HTML, ASP.NET and Flash. However, it is our responsibility as designers and developers to educate them.

Marketing Flash

As a Flash developer who has worked with the program for over half a decade, I totally agree with your article. Flash certainly is the optimal solution for data integration. It is just unfortunate that the popular search engines tend to have a "blindspot" for all-Flash applications.

Anyway, to the million-dollar question...

What have you found to be the best approach to marketing your Flash data integration services to potential clients?

Our company has had great success, from a technical standpoint at least, with developing Flash RIAs that integrate dynamic data via Web services. The challenge seems to be convincing companies that they should update their sites to this technology, or at least incorporate Flash RIAs where applicable.

Can you recommend any approaches that have been successful for your company?

scott

Charles Brown's answer

Right after the article came out, I got hit with a ton of e-mail asking about the search engine issue.

There are several ways around this. First of all, you could embed the search engine tags within the calling HTML page. Second, Macromedia has a search engine SDK for Flash at www.macromedia.com/support/flash/ts/documents/search_engines.htm>http://www.macromedia.com/support/flash/ts/documents/search_engines.htm

I have not had the opportunity to test it with MX 2004 Professional. However if someone wants to test it, or any potential third-party software, and write an article, it would be happily received (hint...hint...hint).

I completely disagree with Kim Buttery's opinion. She must be looking at sites that were created in Flash 4 – 1998 technology. Since the release of Flash 5 and Flash Generator, developers have been able to build fast-loading database driven information based sites. Over the past 3 years we have seen a huge success in database integration with the release of Flash MX and then Flash MX 2004 with Action Script 2.0.

In regards to the comment on download time, Flash is *not* to blame. That argument also holds true for HTML sites that have large 100k JPEG images or sites that have 1 image sliced into 20 images. The download time has everything to do with how the developer/designer builds the site.

The only thing I have left to say is this... Flash is currently the best tool to build intuitive dynamic Web sites. But like HTML, Flash will one day be replaced by another great technology and as Web developers we should embrace these new technologies. Hopefully the next new technology will allow search engines to index Flash content. :o)

dave

First let me say that I really like Flash. I like being able to use fonts and control layout with complete confidence that it won't look goofy in some browser. However, to say that the industry is going to Flash is simply an overstatement.

As someone else mentioned, there are problems for Flash-based sites as it relates to search engines and more importantly accessibility. HTML-based sites are often terrible in their support of accessibility, but with the adoption of CSS and education, this is improving dramatically. Flash has been inaccessible for people who rely on assistive technologies. However, the newest versions of Flash now allow for support of assistive devices like screen readers, but again it will require education of designers/developers to take advantage of these new features. Which leads to my fundamental problem with adoption of Flash on such a wide scale... versions.

The main benefit for using Flash was to dispense with the tedious task of writing code/HTML for x, y, z platforms and a,

b, and c browsers. While Flash is not affected greatly by the platform issue, we now have versions of Flash which do not support some of the nifty (and essential) new features. And now we have to do not just Flash detection, but Flash version detection.

jim lofton

I just worked on a project where I wanted to use styles with XML content displayed in a Flash interface. At first I saved it to be backward compatible with older Flash players... and then I noticed that the styles did not get applied... Yes, users can be prompted to upgrade their player. But as they say in retail/e-commerce, every step between the customer and the purchase of your products is yet another hurdle or barrier the customer may not jump.

So while it is great to see Flash address some of its earlier shortcomings (which I would think that the accessibility features can also be used to address the search engine problem), it introduces another problem or more accurately, suffers some inherent problems of delivering content to a client – a client not maintained or controlled by you. I look forward to using Flash in any project I can, but it is still going to be limited by what the projects requirements are and not what I want to do.

In my opinion, client-side technologies, such as HTML and related scripts, have run their course and are relics of a past state of technological evolution. "...Is Flash no longer a client-side technology?"

nick

Actually, since Flash can interact with XML so well, it is not really a client-side technology in the sense that HTML is. HTML is limited to what you can "strap-on" whereas Flash is ready to interact with anything from databases to ASP scripts through XML and therefore is as much a server-side solution as ASP.NET. At least that's how I feel about it. Let's not forget the fact that Flash is the same in every browser that supports it. I can't think of any other language or technology that behaves the same no matter which platform the user is on.

john rossey 

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Captured by Captivate

Feature rich and a lot of fun

by tom green

As an educator with a post-secondary institution I have had something of a ringside seat watching the evolution of e-Learning. My biggest complaint was that, in general, most institutions getting into the game just "didn't get it." Their approach to the process was to create what I called "digital in-baskets" where the student com-

pleted the work and sent it in as an e-mail attachment. How they could regard this process as "distance learning" or the "digital classroom" was a mystery to me. One institution proudly walked me through their "digital in-basket" and was quite upset when I suggested they could save themselves some serious infrastructure dollars by replacing the program



with something more efficient: envelopes and stamps.

Things changed for me this spring. I was talking to my Dean about instituting an e-Learning program at my college and there was no discussion of "in baskets". The rationale actually made sense. The college, looking to expand its reach, realized it was running out of parking lots for new buildings and that maybe the college should go to the students rather than the students come to the college. At about the same time, this discussion was going on, Peachpit Press asked if I would be interested in writing the RoboDemo Visual QuickStart. Right in the middle of that project, Macromedia unveiled the beta of RoboDemo's replacement, Captivate, and it was at that point that I realized e-Learning had become serious business and Macromedia was, as is so typical of the company, in the vanguard of an evolving discipline.

It Does Almost Everything

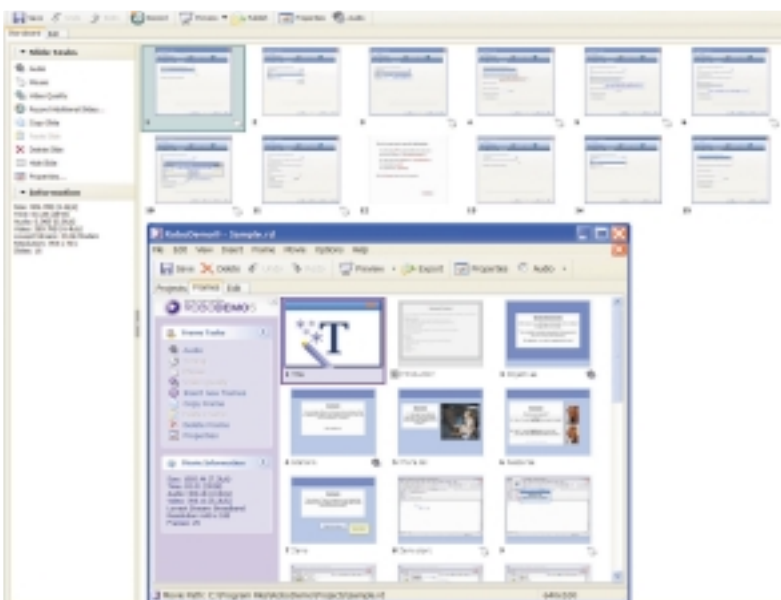
Captivate has all the hallmarks of becoming an important Macromedia product. If you are looking at doing any sort of e-Learning either in the private or public sectors, Captivate will most likely become your most important course development and support tool. What follows is an overview of the major features of the product.

First, if you are a longtime RoboDemo user understand this: "RoboDemo is dead. Get over it." What Macromedia has managed to do is to successfully retain all that was good about RoboDemo and then seriously improve on it by either

figure 1



figure 2



beefing up the feature or replacing it with something even better. In fact, it starts as soon as you open the application.

When Captivate launches you arrive in a very familiar place: a typical Macromedia Start Page that replaces RoboDemo's Project View panel. Here you can open new documents, create new recordings, open other types of movies, and even work your way through a few tutorials. A rather nifty feature of this page is the ability to keep the page manageable. If you right-click on the name of a recent movie, you are given the opportunity to open the movie, hide the movie, or even delete it from the Start Page. If you are a RoboDemo user your movies are still compatible with Captivate. If you open a RoboDemo movie in Captivate, the movie is converted to the Captivate format, including the replacement of the .RD extension with the new .cpt file extension (see Figure 1).

When a movie opens you will experience another great change. The RoboDemo Frames and Edit View Panels have been replaced with panels named Storyboard and Edit. In fact, the term "frames" is defunct. It has been replaced with the more succinct term "slide". Figure 2 shows you the differences between the Frames View panel in RoboDemo and Captivate's new Slideshow View panel.

The two biggest changes are the addition of "Record" and "Publish" buttons to the Main toolbar. Click the Record button and Captivate will ask you where the new recording will be placed in the currently open movie (see Figure 3). Click the Publish button and you have one click access to a number of new and old output options (see Figure 2). The term "publish" replaces the term "export" in RoboDemo and moves Captivate's terminology into line with the rest of Macromedia's products.

The Edit View panel is another area where there have been some major changes. The first one you'll notice is the addition of a timeline and a change in the Advanced Toolbar that reflects many of the

changes in the application (see Figure 4).

The timeline is probably the single most important addition to the product. One of my biggest complaints with RoboDemo was an inability to control the timing and duration of objects in a frame and even the frame itself. This has all changed. If you are a Flash or Director user, the biggest mistake you can make is to view the Captivate timeline as being similar to the ones in those two applications. A good way of looking at the timeline in Captivate is to regard it as a micro view of each frame in a Flash or Director movie. Objects on the timeline can be dragged to new positions on the timeline. You can expand or contract their duration

figure 3

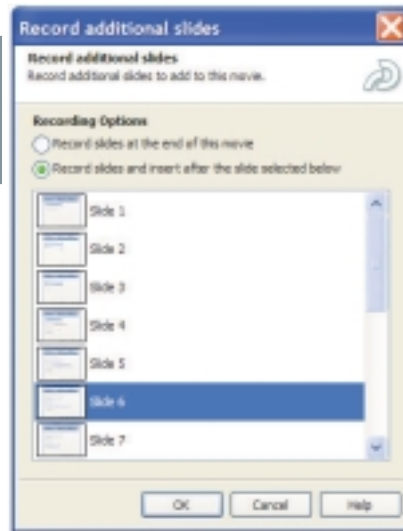


figure 4

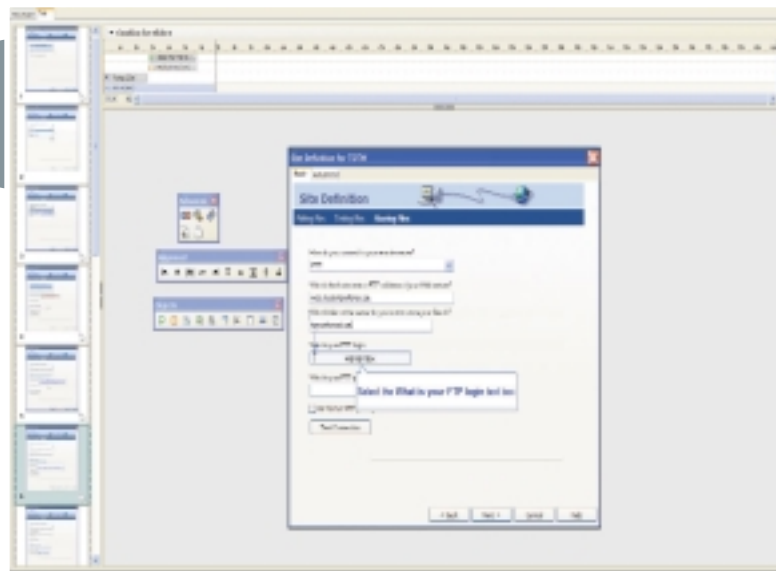


figure 5

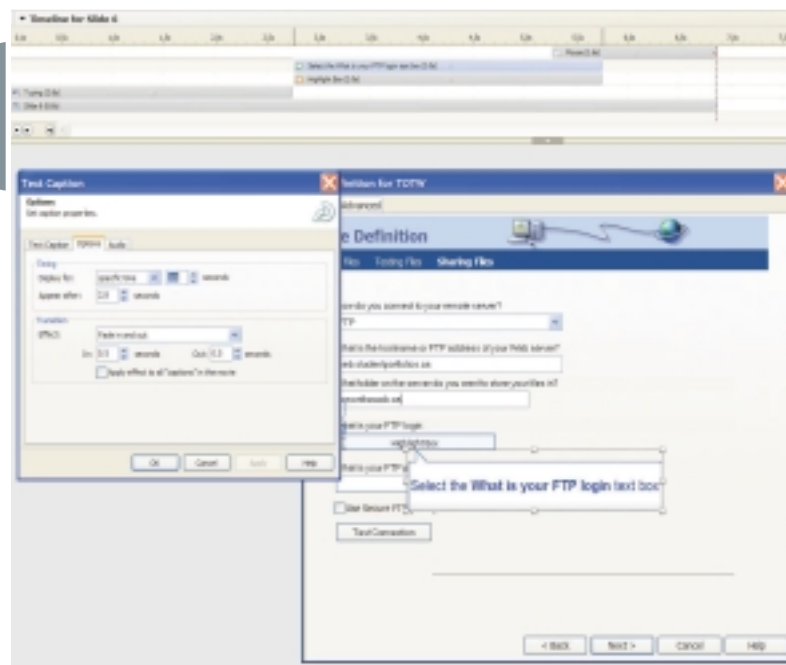


figure 6

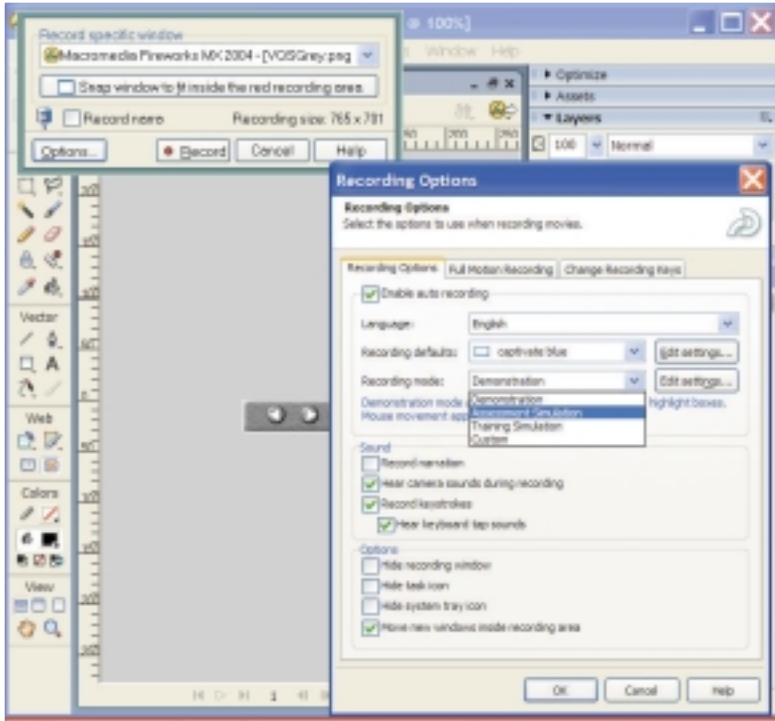


figure 7

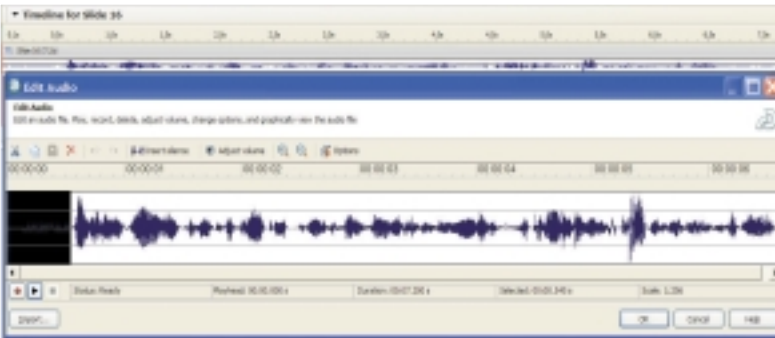
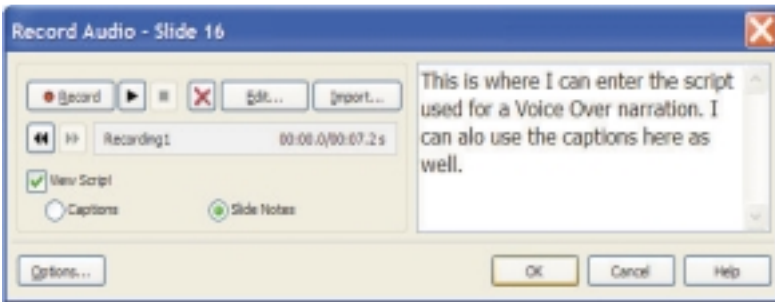


figure 8



by dragging the edge inwards or outwards and, if you're a control freak like me, double-click any object on the timeline and you can set its appearance and duration in the slide "by the numbers" (see Figure 5). Double-clicking a timeline object opens the Object's properties dialog box where the object can be edited.

Even the recording process has undergone a fundamental change ... for the better. Macromedia spends an inordi-

nate amount of time listening to its users and the changes to the recording process reflect how users approach the end use of the product. There are three types of recordings you can create. They are:

- **Demonstration:** A typical "sit-back-and-watch-how-it-is-done" presentation
- **Simulation:** Simulates how the product is used and requires the viewer to be engaged in the process

- **Training:** The student is essentially told, "You have seen the demo and you have seen how to use it. Now you try it."

These modes are now available to you right in the Recording Window. Click the Options button in the Recording dialog box and the options will appear (see Figure 6).

Another handy feature of the Recording window is the "Snap window to fit inside the red recording area" button. Clicking this button moves the entire screen being recorded inside the recording area. Another major change to the recording process is the loss of "full motion" recording. This required a little extra work in RoboDemo if you wanted to record mouse movements. It is now an automated process in Captivate.

Sound is a major element in any new media presentation and Macromedia hasn't overlooked this feature. You can add MP3 background audio tracks to the movie or the slide and record slide-by-slide voice-over narrations, but the handling of sound in Captivate has had its molecules turned inside out and rearranged when compared to RoboDemo's abilities.

First, sound is added to the timeline and double-clicking the sound on the timeline opens the new Edit Audio dialog box (see Figure 7). When it opens you can perform some basic sound editing operations to the waveform which include adding silence, deleting sections of the waveform, and adding normalization to the waveform to "clean up" the recording.

Another welcome addition to the audio recording features is the ability to enter scripts directly into the audio recording dialog box by selecting View Script. Now when you click the Record button, you have the script for the narration visible right in the Recording dialog box (see Figure 8).

Creating and editing the movie is important, but the end game – preparing the movie for output – is also important. Again, Macromedia has added some very important changes to this process. The first, as noted earlier, is a terminology change. Movies are no longer exported, they are "published," and this process has been added to and, more importantly, streamlined (see Figure 9).

Publishing a movie in RoboDemo was a rather complicated process. Captivate smoothes out this process and puts all of

the options in one place for easy access. Click an output option and the window changes to reflect your choice and the ability to access the Movie Preferences to, for example, change the Playback Control style or remove the Controller entirely. One of the major changes to the publishing process is the ability to publish the movie directly to your Breeze or BreezeLive server from within Captivate.

Wait, There Are Flaws...

Though I have sounded pretty positive about the application there is one aspect that disturbs me. It is the ability to export your Captivate movies directly into Flash MX 2004 or Flash MX Professional 2004. This release marks the demise of the Flash Module for RoboDemo. Instead of being a separate product, it has been folded into Captivate. The issue I have is the import into Flash.

First, if you select Import/Export> Export to Flash you will see a dialog box that essentially tells you nothing more than "Click this Button to launch Flash." That's exactly what the button does: it launches Flash. You then have to import the Captivate file into Flash using the Import dialog box in Flash (see Figure 10). If you are familiar with the Quick Export feature of Fireworks MX, for example, it strikes me that it makes sense to add this as a "Launch Flash" button on the Main Toolbar than as a menu item that implies more than it does.

When a file is imported into Flash the entire movie is placed on the Flash timeline. This means if you have a Captivate movie that is 30 seconds in duration you can reasonably expect to see a Flash timeline that is 900 frames long because Captivate movies play at a rate of 30 frames per second. When you consider that there are performance degradations in Flash when the frame count exceeds 16,000 frames, there are going to be some issues with longer Captivate movies. If you are a Flash developer and think you can get around this by importing the movie directly into the Library, think again. There is a known Flash bug involving .png images that will crash Flash if you try to drag the Captivate movie clip to the Main timeline.

When you do import a Captivate movie to the Flash stage pay careful attention to the Captivate Options dialog box (see

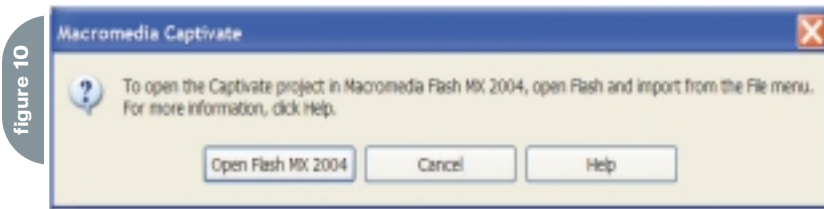
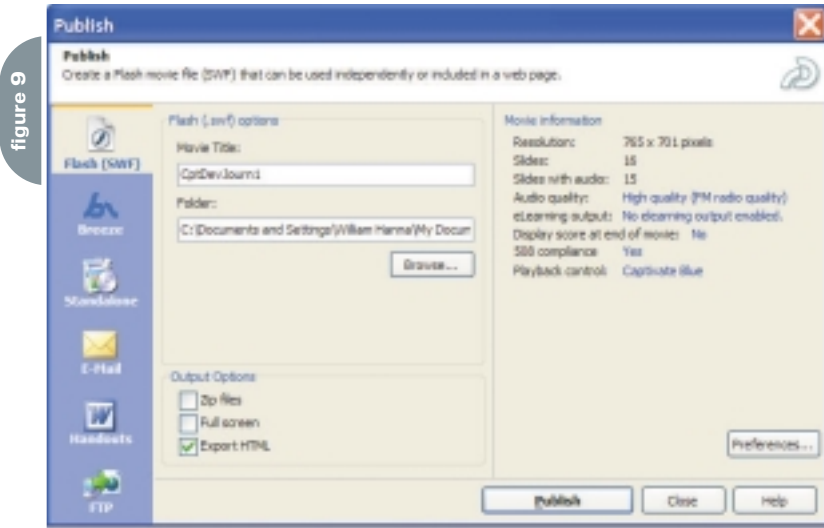


Figure 11). The more items you deselect – the End Options, Hints, and Playback Controller are good candidates – the smaller the movie will be. Also, the Flash Library is populated with bitmaps for every item on every slide, each slide is indicated on the Flash timeline with a Label on the timeline, and, finally, if you create Question slides where the user takes a test, these slides currently don't import into Flash.

The other "gotcha" to be aware of is the fact that Captivate movies play at roughly 30 frames per second. Flash movies traditionally play at 12–15 frames per second. If you "downshift" the Captivate movie to that rate, you will wind up with fewer Flash frames but the timing of other media such as sounds and .swf files containing mouse movements will also be profoundly affected.

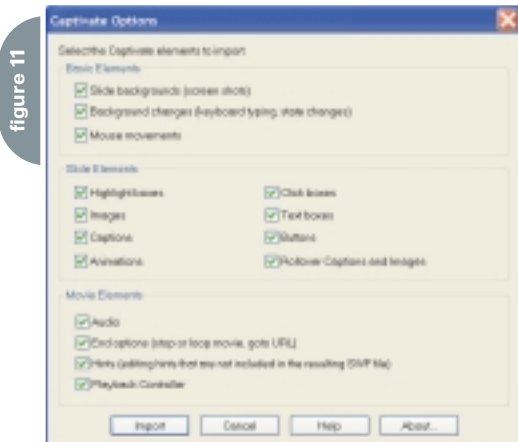
Having said all of that, the ability to move smaller Captivate movies into Flash allows you to take full advantage of all of the Flash Player 7 features – streaming video for example – that are simply unavailable in Captivate. They may require a bit of extra work to "clean up", but in many respects the effort is worth it.

Conclusion

As you may have guessed, Macromedia has taken RoboDemo,

turned it inside out, and rearranged its molecules. The end result is Captivate. I will tell anybody who cares to listen that Macromedia has a solid hit on its hands because it hands Web developers an easy-to-learn and easy-to-master tool that allows them to extend their service offerings. Educators, in both the private and the public sectors, once they catch on to what it can do and how easily it integrates with their existing Learning Management System, are going to give this application more than a passing look. Even so, like all Macromedia products, Captivate is deep, rich, feature laden, and most important, a heck of a lot of fun. ☺

Teacher, author, chief cook and bottle washer. Instructor at Humber College's School of Media Studies in Toronto, Tom Green is also the author of Building Web Sites with Macromedia Studio MX and Building Dynamic Web Sites with Macromedia Studio MX 2004. Both are published by New Riders. tgreen17@cogeco.ca





R

Recently,
while doing some consulting, I
observed a programmer hand-
coding a query and database
fields onto a Web page. Here is
the scary part: they were using
Dreamweaver MX 2004.

by charles e. brown

dynamic**dreamweaver**



The following week I delivered a seminar and spoke about dynamic technology. I was amazed how many did not know about the built-in features of Dreamweaver for creating these pages.

As editor-in-chief of this journal, I felt it was time to rectify this problem fast.

In this article I will demonstrate how simple it is to create dynamic Web pages using some of the built-in features of Dreamweaver MX 2004. For the purposes of this article, we will use ColdFusion MX as the server model. However, within Dreamweaver the other server models will present only minor differences.

Preparing the Site

If you are going to create dynamic Web pages, you need a server. Dreamweaver supports five server models. Table 1 shows which dynamic model uses which server.

As I stated from the outset, we will use ColdFusion here.

Before we begin, you will want to register the database with the server. ColdFusion makes this job very easy. All you need to do is start the ColdFusion administrator and select the Data Sources category under the Data and Services category (see Figure 1).

You need to give the database an identifying connection name (it can be a name of your choosing) and select the correct driver for the type of database you are working with. You will see that ColdFusion has drivers for most of the major database engines. (*Note:* ColdFusion uses JDBC drivers.) For the purposes of this article, we will use a simple Access database that I will call myDatabase.

Once you have performed those steps, click Add. You will be taken to a screen where you can either type or browse to the URL of the database files, enter the username and password (if necessary), and add any other information necessary to establish the connection

table 1

Model	Server
ColdFusion	ColdFusion MX
.NET	.NET Framework & IIS
ASP	IIS
JSP	A number of servers including JRun and Apache
PHP	Apache

figure 1

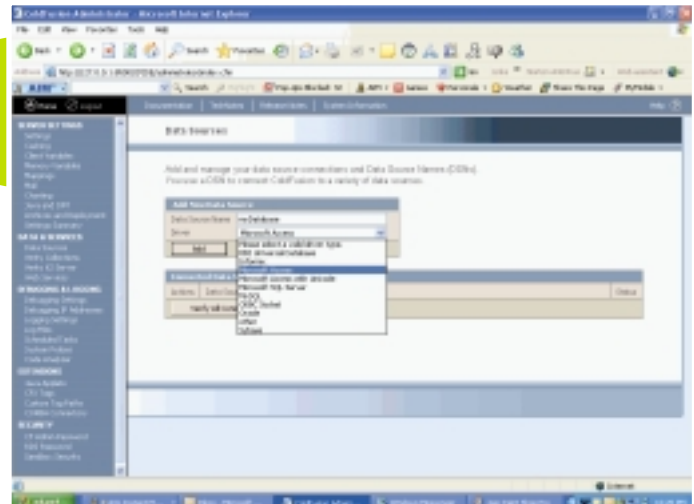
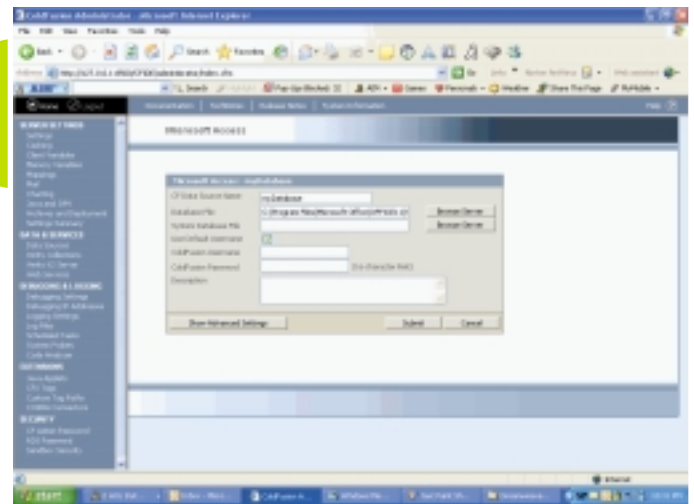


figure 2



with the database engine (see Figure 2).

After you click Submit, you will be returned to the original screen with the name of the connection in the Connected Data Sources grid. You should see the word OK in the last column to indicate that the connection was successful. If you do not see OK, click on the Verify All Connections button. If OK still does not appear, check the URL of your connection.

That is all that is needed to connect the database to the server. From here on in, Dreamweaver will be doing the work. (*Note:* Other database/server combinations will require different techniques. Unfortunately, a full discussion is beyond the scope of this article.) Fire up Dreamweaver and use the Manage Sites menu option to define the dynamic site.

Begin by giving the site an identification name. This name can be of your choosing and has no bearing whatsoever on the name or URL of the finished site. It is used only for identification purposes.

On the next screen you should identify the server model you will be using. Again, for the purpose of this article, I am using ColdFusion.

The next screen is a critical one. Here you have to be careful where you place your files. Each of the server technologies has a root directory that the server can recognize. For example, ColdFusion has a directory called wwwroot. The directory structure of your site should be installed there or the files may not be recognized by the server. (*Note:* If you use IIS, the root folder is located under Inetpub/wwwroot.) Dreamweaver should recognize the server's root directory and suggest the name and location of the directory structure for your site as shown in Figure 3.

For this article, I assume that we are not going to use a remote server and will be testing the files locally. When you get to the next screen, you will see something like <http://localhost/mysite>.

Most ColdFusion server installations

Extension of the Month

by dave mcfarland

run on port 8500. You may need to change the configuration to <http://localhost:8500/mysite>.

When you test the URL Dreamweaver should return a message saying that the URL prefix is correct. From here on in, just accept the defaults and complete the site definition.

In order for the connection with the database to activate, you must open a dynamic page for the server model. In our case, this will be a ColdFusion page (File > New > Dynamic Page > ColdFusion). Once the page is created, it is a good idea to save it with the appropriate file extension (.cfm for ColdFusion).

To access the database, you will need to go to the Database panel, which is part of the Application Panel Group. You might need to enter the password for the server. Once the connection is made, your Database Panel should show the full structure of the database as shown in Figure 4.

You can right-click on one of the tables and view the data inside the table. However, you cannot edit the data in this way.

While you can see the structure, you cannot use the database directly in a Web page. Instead, you must filter the data through a recordset. Essentially, this is a SQL (Structured Query Language) request for the data needed. Thanks to Dreamweaver, an extensive knowledge of SQL is not necessary; however, it is helpful.

In the Application Panel Group, click on the Bindings Panel. Click the + button and select Recordset (Query). Here is where you will set up the request. Dreamweaver will write the SQL code.

Begin by giving the recordset a name of your choosing. Then, from the dropdown list, select the database connection you want to use (the one we set up earlier in ColdFusion). If necessary, enter the user name and password for the database.

Once that is completed, you should see a list of tables in your database.

WA Validation Toolkit

Extension Developer: Web Assist

Developer Web Site: www.webassist.com

Price: \$99.99

massaging user input is one of those tedious jobs most Web developers would rather do without. But if someone leaves out important data while filling out a Web form, your Web application might not work – after all, how can you e-mail a user his weekly newsletter if he forgot to enter his e-mail address in the sign-up form? Even worse, bad data can bring a Web application to its knees. If you’ve ever tried to insert a word – “one” – into a database field meant to hold a number – 1 – you know what I mean.

WA Validation Toolkit is one extension that can make this job a lot easier. It lets you add both client- and server-side validation to your forms. Novices will like the simple wizard that makes adding validation

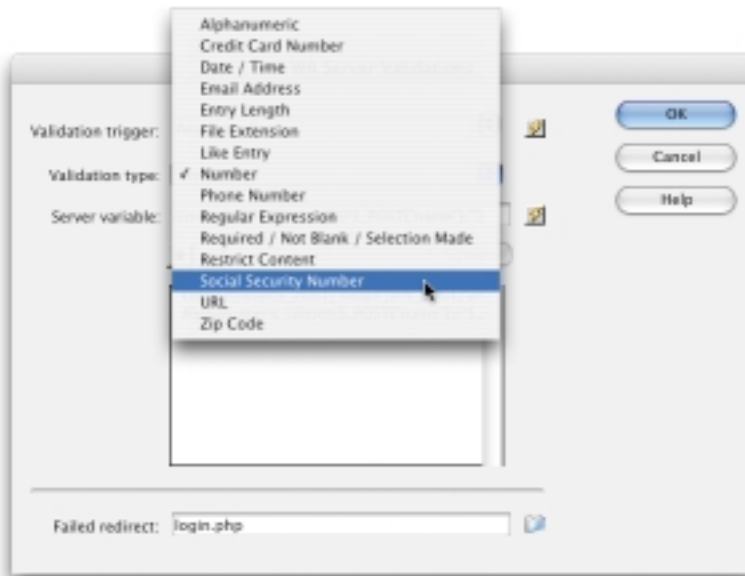
if none of the extension’s other validation types fits your data, you can create your own validation pattern with the extension’s regular expression support.

Using JavaScript, the client-side validation features can check for valid input as the user fills out the form – either triggering JavaScript error boxes explaining the problem, or making hidden layers visible. This last option lets you create more professional-looking error dialog boxes.

The server-side validation features support three server models – PHP, ASP, and ColdFusion – and let you validate data from a form after it’s been submitted to the server. This lets you validate forms even if the user has disabled JavaScript, and also lets you integrate your

error messages into your Web page, instead of through a JavaScript alert box or a pop-up layer. For example, if the user entered incorrect data, the form could reappear with the message “The information you submitted is incorrect” at the top of the page, and individual messages after each form field holding incorrect data. The extension can make sure the form “remembers” data that was properly entered, so the user doesn’t have to re-enter everything she typed.

The extension is very flexible with many options for validating data and presenting errors. If you find that your Web visitors consistently supply incorrect data – or no data at all – this extension can make sure they fill out your Web forms the right way.



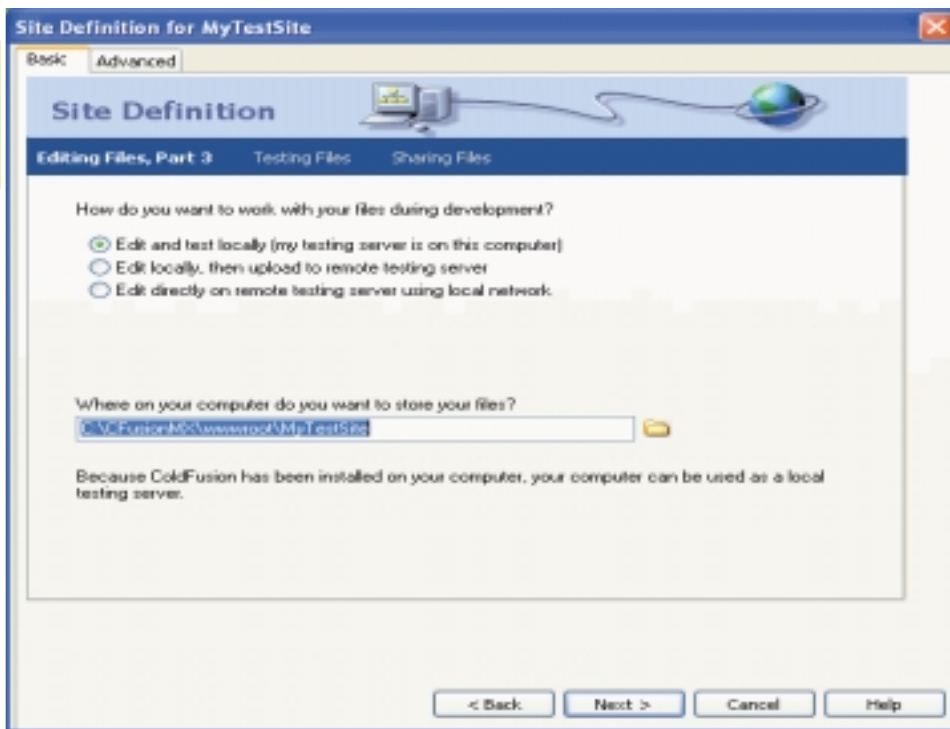
just a matter of filling out a few dialog boxes; while experienced developers can take advantage of Dreamweaver behaviors or server-side behaviors to create more complex validation options.

The extension provides 15 types of built-in validation methods that let you check for data that matches common patterns such as e-mail addresses, URLs, Social Security numbers, dates, ZIP codes, credit card numbers, and more. Of course, it performs the most basic validation – making sure a field isn’t empty – and

Have a favorite extension? Is there an extension you just couldn’t live with out? We’re always on the lookout for awesome extensions, so drop us a line at: DaveMcFarland@sys-con.com

Dave McFarland is the Dreamweaver editor of MX Developer’s Journal and author of Dreamweaver MX 2004: The Missing Manual. Find out about his latest projects at www.sawmac.com DaveMcFarland@sys-con.com

figure 3



Select the table you want, the columns you want to use from that table, how you want the data sorted, and any search criteria you might have (an extensive discussion of SQL code is beyond the scope of this article). It should look something like Figure 5. Note that you can select the columns you want to use by either selecting them randomly using Ctrl + click, or in groups using Shift + click. For this example, I just selected three columns.

As an interesting note, you can click on the Advanced... button and see the SQL code that will be used. If you know SQL, you can also make any adjustments you may want to make. Figure 6 shows an example of this screen. Finally, it is a good idea to test the recordset by using the Test button on the right side of the dialog box.

As an interesting aside, you can see the query code by going to Code View. It should be located near the top of the page. It will look something this:

```
<cfquery name="testSet"
datasource="myDatabase">
SELECT CustomerID, CompanyName,
ContactName
FROM Customers
ORDER BY CustomerID ASC
</cfquery>
```

Assuming all is working well, you should now see the recordset in the Bindings panel. You are now ready to

figure 4

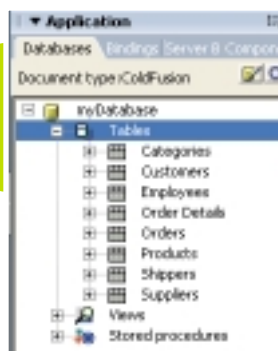
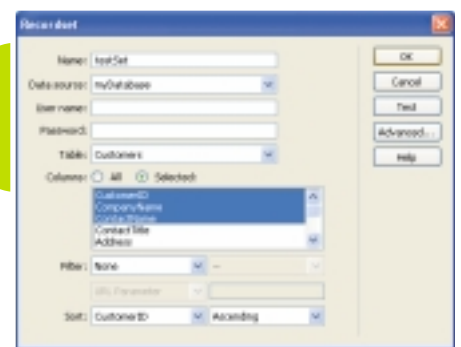


figure 5



insert the fields into the page. I am going to show the examples on a blank page, but in reality, you would use a page that had all of the graphics in place.

At this point, there are two ways you can approach this. By far, the Dynamic Table feature of Dreamweaver is the easiest. In Design View, select Insert > Application Objects > Dynamic Data > Dynamic Table. A dialog box will open asking you how many records you want displayed on a page. In most cases you will want to limit the number of records to 10 or so. You do not want to

throw too much information at the site's visitor at once. We will discuss how to insert navigation shortly. After you select OK, your page should look something like Figure 7.

Your page is ready to go. We can test it by saving the page and either previewing it in the browser or by selecting the Live Preview feature just above the document window (see Figure 8). If you wanted to, you could easily change the heading text

“Dreamweaver can build sophisticated dynamic pages by just filling in some simple information into a dialog box”

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figure 6

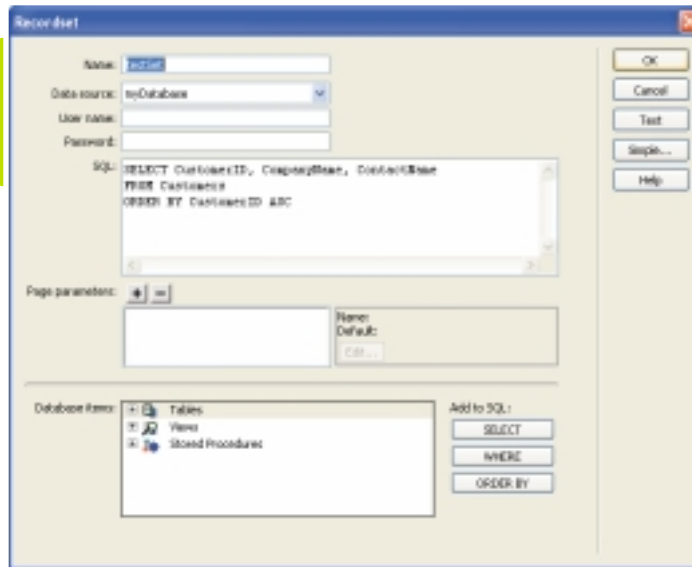


figure 7

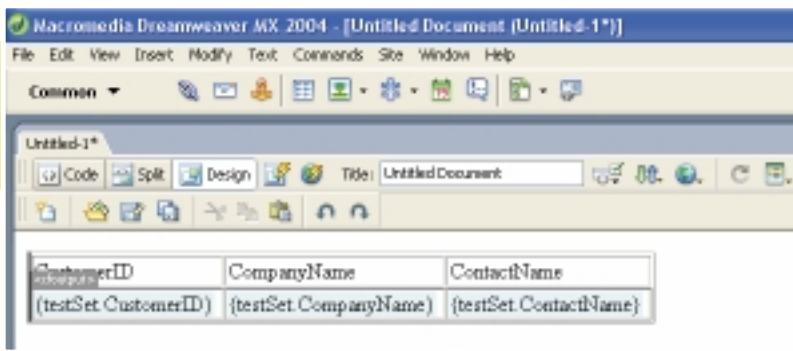


figure 8

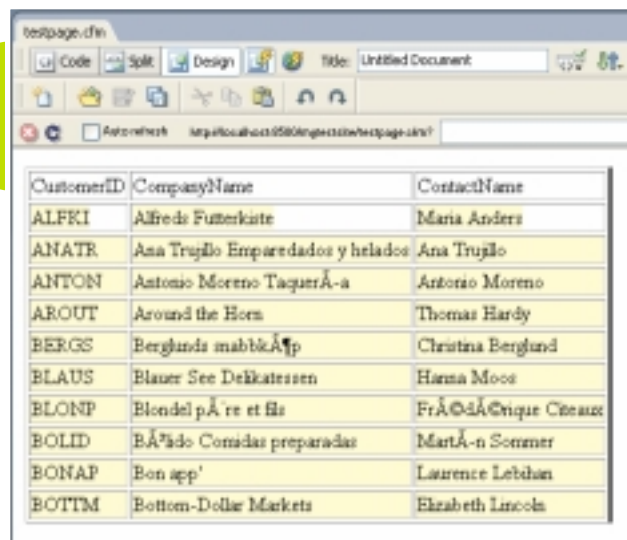


figure 9



of the table to whatever text you need.

In the example shown in Figure 8, we are just displaying 10 records at a time. A navigation bar needs to be inserted that will allow the visitor to move forward and backward through the data. Dreamweaver can easily accomplish this.

Select the entire table that was just created. Once selected, select Insert > Application Objects > recordset Paging > Recordset Navigation Bar. You will see a dialog box that allows you to select the recordset you are connecting it with if you are using multiple recordsets. Since our example is only using a single Recordset, I have just clicked OK. Figure 9 shows the inserted Navigation Bar.

When you test the bar in the browser, notice that First – Previous – Next – Last turns on and off as needed. Dreamweaver accomplishes this by writing some tricky JavaScript code on the page.

Essentially, the job is done. You now have a dynamic page ready to roll. However, as I stated earlier, there is another way of doing it. In this second case, you may not want all the fields located in one place using a table format. This is easily accomplished by going to the Bindings Panel and dragging the recordset's fields to the position on the page where you want them. Dreamweaver handles all of the code in the background.

If, for some reason, you wanted to change the number of records shown per page, go to the Server Behaviors Panel located in the Application Panel Group (see Figure 10). If you double click on Repeat Region you will be returned to the dialog box you saw earlier for the navigation bar. Here you can change the number of records to be displayed for each page.

As you can see, Dreamweaver makes this whole process fairly simple and direct. However, it does not end there. We can take a brief view of a few other features to help facilitate your dynamic Web pages.

If you go to Insert > Application Objects, you will see that Dreamweaver has behaviors capable of building dynamic pages to update, delete, and insert records. In the background, this is essentially being done with the SQL code. However, the corresponding wizards can assist you in doing even more.

MXDJ Section Editors

One special behavior is the Master > Detail page. In Web parlance, we sometimes call this drilling down. Here the user can click on the record that they want to see the details on. Each record has a corresponding hyperlink that takes them to a page that will provide greater detail.

As an example, let's try a variation of the above page. In this case I set up the recordset with all of the fields. It is not necessary to drag any of the fields onto the page at this time. We are going to let Dreamweaver do all of the work.

Select Insert > Application Objects > Master Detail Page Set. This is shown, filled out, in Figure 11.

There are a few things you need to set up here. First of all, on the Master Page, you will just want a couple of fields for identification purposes. In Figure 11 I just selected Customer ID and Company Name. I used the – button to eliminate the other fields. In the Link to Detail From/Pass Unique Keys fields we can establish the connecting fields if we are using multiple database tables to obtain the information. In this case, since we are using the same table, the two fields are the same.

You must then establish the name of the Detail page. If it has not been created yet, Dreamweaver will create it for you. For this example, I called it test3.

The bottom part of the dialog box allows us to select the fields for the Detail page. In this particular example, I am just going to leave all of the fields selected.

Once the dialog box is all set up, press OK and Dreamweaver will do all of the work for you. As you can see, Dreamweaver set up the Dynamic Table, Repeating Region, and Recordset Navigation Bar in one shot. If I run the page, it will look something like Figure 12.

Notice that the Key field has a hyperlink to take us to the Detail page. As a small extra, Dreamweaver even shows you the numbering of the records on the page out of how many records in the recordset. If you then click on the hyperlink, you will be taken to the Detail page shown in Figure 13.

If you take a peek behind the scenes, you will see that Dreamweaver did a lot of coding for you.

Conclusion

As you have just seen, Dreamweaver can build sophisticated dynamic pages by just filling in some simple information in a dialog box. Admittedly, there are times when you may need to do a little hand-coding (especially with SQL). But, in most scenarios, Dreamweaver MX 2004 will do the job just fine. ☺

Dreamweaver Dave McFarland

Author of Dreamweaver MX 2004: The Missing Manual, Dave can be relied upon to bring Dreamweaver MX to life for MXDJ readers with clarity, authority, and good humor.

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Fireworks Joyce J. Evans

Joyce J. Evans is a training veteran with over 10 years of experience in educational teaching, tutorial development, and Web design. She has presented at conferences such as Macromedia MAX 2003 and TODCON. Joyce has authored books including Macromedia Studio MX 2004 Bible, Dreamweaver MX 2004 Complete Course, and others. Joyce is a Team Macromedia volunteer and her work is also featured in the Macromedia Design/Developer center. Her Web site is www.JoyceJEvans.com.

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Louis F. Cuffari

Cofounder and art director of *Insomnia Creations* (www.insomniacreations.com), Louis has spent most of his life as a studio artist, including mediums from charcoal portraits to oil/acrylic on canvas. In addition to studio art, he has been involved in several motion picture projects in the facility of directing, screenwriting, and art direction. Louis's creative works expand extensively into graphic design, and he has expertise in both Web and print media. He is deputy art director for SYS-CON Media and the designer of MX Developer's Journal.

ColdFusion Robert Diamond

Vice president of information systems for SYS-CON Media, Robert was named one of the "Top thirty magazine industry executives under the age of 30" in Folio magazine's November 2000 issue. He holds a BS degree in information management and technology from the School of Information Studies at Syracuse University. www.robertdiamond.com

Director Andrew Phelps

Andrew Phelps is an assistant professor in the B. Thomas Golisano College of Computing and Information Sciences at the Rochester Institute of Technology in Rochester, NY (<http://andysgi.rit.edu/http://andysgi.rit.edu>). He has an academic background in information technology, as well as traditional fine Aarts and computer animation. His work using Director has been featured at the Director-Online User's Group (DOUG) as well as the DevNet Center at Macromedia. He regularly teaches coursework in multimedia programming, game programming, and simulation/visualization.

figure 10

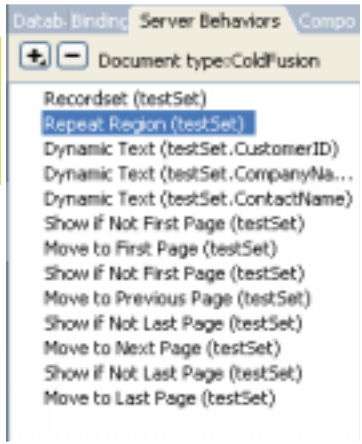


figure 11



figure 12

CustomerID	CompanyName
ALFKI	Alfreds Futterkiste
ANATE	Ana Trujillo Emparedados y helados
ANTON	Antonio Moreno Taquería
AROUT	Arsound the Horn
BERGS	Berglunds snabbköp
BLAUS	Blauer See Delikatessen
BLONP	Blaugel père et fils
BOLID	Bólido Comidas preparadas
BONAP	Bon app'
BOTIM	Bottem-Dollar Markets

figure 13

CustomerID	ALFKI
CompanyName	Alfreds Futterkiste
ContactName	Maria Anders
ContactTitle	Sales Representative
Address	Obere Str. 57
City	Berlin
Region	
PostalCode	12209
Country	Germany
Phone	030-0074321
Fax	030-0076545

Encode, Deliver, Design

Getting a grip on Flash Video
by craig goodman

It wasn't so long ago that video and the Web were at odds. Video was becoming more beautiful and entertaining through new post-production techniques. And with the proliferation of video editing software and high-speed buses like FireWire, creative videos started coming from all types of makers – from professionals to first-time home users. The Web, vast but slow, seemed to be stuck in a rut, resisting video's advances by confining it to small sizes and clunky, boxy players.

Flash Video is changing all of this. Now, as many of you either create or have access to great-looking video, you want to match that quality by wrapping it in a super online playback experience. The answer: use Flash Video (see Figure 1).

Getting Started

In this article, I will guide you through some of the steps you need to take to encode and deliver video on your Web site. If you'd like to drill down to more specific Flash Video topics, visit the Flash Video Developer Center.

Step 1: Create Your FLV File

A lot of folks get hung up on this very first step, but it's actually quite easy. Why

do they get stuck? Some may not understand that although Macromedia provides the FLV Exporter, you don't use that within Flash (although you do need to have Flash MX Professional 2004 installed to run it). You run the Flash Video Exporter using video editing tools that support standard QuickTime export.

With Flash, you can:

- Play back Flash Video on the Web using Flash Player
- Build custom video players that match your site design
- Integrate or layer your video with other elements in Flash, such as animation, text, or interactivity

Here are a few guidelines to point you in the right direction.

If You're Not a Video Editor...

Many of you may create or edit video at work or at home. However, if you don't, you may have video that is pre-encoded as QuickTime, Windows Media, or another type of video file. If this is the case, there are a couple of easy-to-use tools for you to convert your file to FLV.

Note: Compressing and recompressing video is not great for quality. It's always better to start with a version of the video that is closest to the original

source as possible – you'll really see a difference in the results.

- **Sorenson Squeeze:** The encoding folks over at Sorenson have produced a great tool in Sorenson Squeeze 4.0, which you can use to encode your FLV files (see Figure 2).

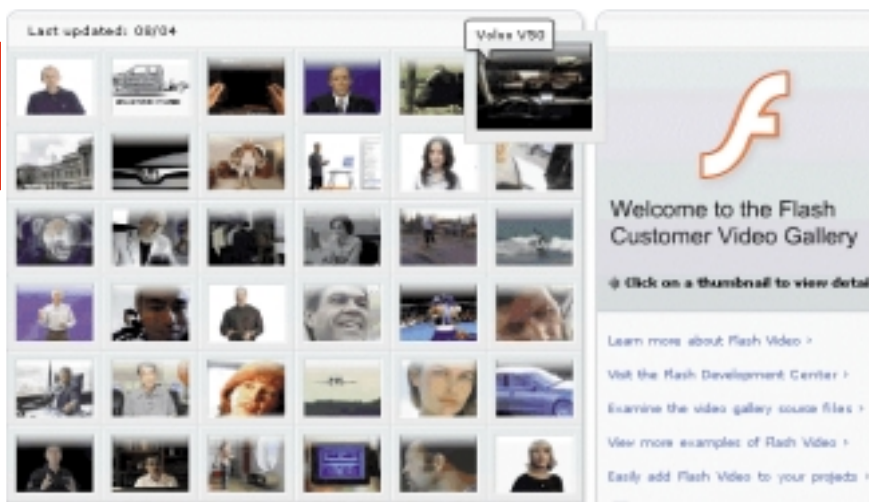
A special version of Sorenson Squeeze is included as part of the Macromedia Video Kit. The kit also has a Dreamweaver extension for adding Flash Video to your site. You can purchase the Macromedia Video Kit from the online store.

- **QuickTime Pro and Flash Video Exporter:** If you have Flash MX Professional 2004, you already have the Flash Video Exporter (see Figure 3). (It's included on the Flash CD. You can also download it from the Flash Support Center as part of the Flash Video Updater 1.2 [www.macromedia.com/support/flash/downloads.html#fmxpro_vid_up]. You need to have Flash MX Professional 2004 installed to run the Flash Video Exporter.) This exporter hooks into all QuickTime-based exporters that ship with popular video editing software including Final Cut Pro and Express; Avid Media Composer, Xpress DV, and Xpress Pro; and batch encoding applications such as Discreet Cleaner and Anystream Agility.

However, if you're not a video editor, but you do have Flash MX Professional 2004, a cheap and easy way to convert video files to FLV is by purchasing Apple's QuickTime Pro for Mac or Windows (www.apple.com/quicktime). Simply install the Flash Video Exporter, and your FLV export options will appear automatically in QuickTime Pro. You can save any video file that you can open in QuickTime Pro as an FLV file.

If You Are a Video Editor...

Many of you edit your own video with applications such as Final Cut Pro or Avid



Media Composer. Since the Flash Video Exporter works as a plugin to the QuickTime Export architecture, once you install it, it will show up as an export option in applications that support it, such as Final Cut Express/Pro and Avid Xpress DV/Pro.

For more information on how the FLV Exporter integrates with different applications and how to get the latest version, check out "Creating Flash Video Files with Flash Video Exporter." (www.macromedia.com/devnet/mx/flash/articles/flv_exporter.html)

Step 2: Choose How to Deliver Your Flash Video

So now that you've created your FLV file, the next step is to decide how you want it to play back in Flash. Here are your choices:

- Progressive download video, which you can do in two ways:
 - Embedding your video in your Flash (FLA) file
 - Storing your FLV files externally
- Streaming video

Progressive Download

Progressive Flash Video download, which first emerged in Flash Player 6, doesn't make you wait (and wait) for the whole video to download before it starts playing. The video starts its playback as it progressively downloads segments of the video, providing a smoother experience for your users. Many people call this streaming video, but there is a difference, as I will explain later.

There are a couple of ways to use progressively downloaded Flash Video (FLV) on your site; I'll start with the old way, which is importing and embedding the video in your Flash file, then enlighten you with the new one – playing your FLV files externally.

Embedding Your Video Within the SWF?

Think Again!

There's something I have to say, so I might as well get it out of the way right now. Don't embed your video in your Flash file unless it's less than 10 seconds long. Yes, you heard right. While Flash MX touted the coolness of being able to embed video right into the Flash file, I've got news for you – that's not so cool anymore. Here's why.

- **Differing Flash/video frame rates can hurt performance.** Embedding works best if your source video and your Flash movie have the same frame rate. If they don't, you need to adjust one of them, and your playback can suffer.
- **Long videos on the timeline can lose audio/video synch.** It's true – if you put a long video on the timeline, it's likely that you won't be able to keep its audio synched up after about 4000 frames. Also, a single timeline is limited to 16,000 frames.
- **Stopping the timeline stops your video.** If you embed your video on the Timeline, every time you stop the video, you need to stop the playhead on the Timeline. This is not a very flexible authoring scenario.
- **Download performance can vary.** Some developers place embedded video in movie clips to get around the Timeline start/stop issue mentioned above. However, if you put your video into a movie clip, that movie clip (and the video in it) has to download completely before it will play. This eliminates the progressive download benefit and is a common pitfall for many developers.
- **SWF publishing time goes up.** If you embed your video, you have to republish the SWF file for posting to your website, leading to problems:
 - It takes a long time to publish a SWF with video.
 - You can't alter video content without having to republish the SWF.

Using External FLVs

In the Developer Center, most of the articles recommend placing your FLV files external to your Flash (FLA) file. This method, new in Flash Player 7, is fast, efficient, and flexible, and it doesn't require any additional software. Here are some more reasons:

- **Flash media components are easy-to-use.** The media components make it super-easy to create a video controller and playback bar in Flash. Just enter the URL of your external FLV file in the Component Inspector panel, and you're good to go.
- **You avoid all of the issues that come with embedded video.** Just take a look at the list of possible embedded video

performance and development issues I described above. Use external FLV files instead, and you can check those off of things you have to worry about.

- **To play external FLVs, simply upload your FLV files to your Web site.** Then, in Flash MX 2004 Professional, drag a media component onto the Stage, select it, and then define the URL of the FLV file in the Component Inspector panel. That's pretty much it; you now have a controller that will play your video on your site.

Streaming

You might be thinking, "That progressive download sure sounded like streaming to me." Well, they are similar – both start playing before the video fully downloads and a lot of people use the terms interchangeably – but they are not identical.

True streaming video comes from playing your FLV files using Flash Communication Server MX. Is the quality higher? Well actually, if you're talking strictly about how the video looks (its colors and sharpness), progressive download and streaming are the same – a 300 Kbps-encoded FLV file is a 300 Kbps-encoded FLV file – no matter how it's delivered.

So How Is Streaming Different?

- **Streaming video files start playback**

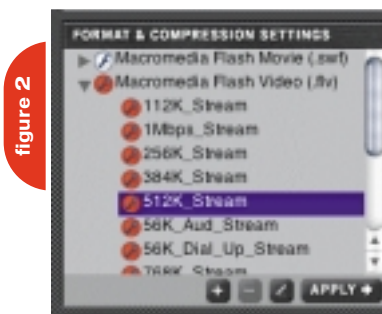


figure 2



figure 3



almost immediately, at any point in the video. While progressive download is a big leap from completely downloading a video file and then playing, streaming takes it one step further. Very little of the video needs to be present in RAM to begin playback. This lets users scrub the video randomly (even frantically) and still, the video plays back almost immediately.

- **Streaming video plays without ever fully downloading to disk.** Streaming FLV doesn't save to disk; there is never a file copy on a user's hard drive. This is an advantage to developers who want to make extra sure that no one can replay their video files.
- **Streaming video only requires Flash Player 6.** This may not be a big deal to you, however, remember that Flash Communication server came out before Flash Player 7, so, you can stream video to users who have only Flash Player 6 installed.
- **Wait, that's not exactly true.** You need to have access to a version of Flash Communication Server in order to stream video. Now, you can do that through a hosted solution called Flash Video Streaming Service.

Step 3: Get Creative: Customize How You Play Video on Your Site

Now that you've decided how you will encode and deliver your video, you're ready for the creative part – building your Flash Video player for your Web site. This isn't too hard, as Flash MX Professional 2004 has prebuilt media components that you can simply drag to the Stage and configure in a dialog box. And on top of that, you can now even use a handy Dreamweaver extension (included in the Macromedia Video Kit) to put your

FLV in your page – without even going into Flash.

However, many of you will want to do much more. For example, you may want to create custom video players that integrate with your site. You may also want to synch the appearance of other graphics with your video, make your video play borderless within a scene, or overlay your video with interactive hotspots. To get these more customized effects, you need Flash MX Professional 2004.

If You Are a Flash User...

Flash MX Professional 2004 users get the best of both worlds when creating Flash files that host Flash Video. You can use the Flash media components to quickly get video into a Flash movie, then you just publish the SWF and the FLV files on your Web site.

If you want to start creating more complex video presentations, check out the Flash Video Templates, which you can download and modify for your own design and usage. The templates (see Figure 4) include model sites for playing personal video, corporate video presentation, a live video Webcast, and more.

Finally, if you're a real expert with Flash, we've provided the source code (FLA) and documentation for our Flash Video Gallery application on www.macromedia.com.

If You Are a Dreamweaver User...

Some folks who have Dreamweaver (or even Studio MX 2004) may not be that familiar with Flash, but want to get started quickly (and learn Flash later). The Macromedia Video Kit gives Dreamweaver users an easy way to place Flash Video in a Web page – without ever opening Flash.

The Macromedia Video Kit includes two very important components: the Flash Video extension for Dreamweaver MX 2004, and that special version of Sorenson Squeeze 4.0 that I mentioned earlier. With the kit, you can convert and encode any video on your computer to FLV using Sorenson Squeeze; then, with the extension, you can place that video on your HTML page – the extension

takes care of building and configuring the video player for you.

Where To Go from Here

For more information on how to use Flash Video, visit the Flash Video Developer Center (www.macromedia.com/devnet/mx/flash/video.html), where you will find the most up-to-date information, as well as tutorials, and templates for making the most of Flash Video. You'll also find articles, including:

- *Flash Video Learner's Guide:* www.macromedia.com/devnet/mx/flash/articles/video_primer.html

Capturing and Encoding

- *Best practices for encoded pre-recorded Flash Video:* www.macromedia.com/devnet/mx/flash/articles/flv_encoding.html

Putting Flash Video on Your Web site

- *Macromedia Video Kit Tutorials:* www.macromedia.com/software/studio/flashvideokit/index.html?promoid=devcenter_flvkit_090204 – *Presenting Video with the Flash Video Extension for Dreamweaver MX 2004:* www.macromedia.com/devnet/mx/flash/articles/flv_tutorial.html – *Creating Custom Flash Video Skins for Dreamweaver MX 2004:* www.macromedia.com/devnet/mx/flash/articles/flv_tutorial_pt2.html
- *Flash Video Templates:* www.macromedia.com/devnet/mx/flash/video_templates.html
- *Building a Video Presentation with Macromedia Flash MX 2004 Media Components:* www.macromedia.com/devnet/mx/flash/articles/media_components.html

Delivering Flash Video

- *Delivering High-Quality Video with Flash Video Streaming Server* www.macromedia.com/devnet/mx/flash/articles/fvss.html

For Advanced Flash Video Developers

- *Flash Video Gallery Source FLA File:* www.macromedia.com/devnet/mx/flash/articles/video_gallery.html

Craig Goodman is the executive editor of the Macromedia Developer Center. He and his team work with Macromedia developers to publish the Developer Center tutorials and articles. Craig joined Macromedia in 1995. Before the creation of the Developer Center, he had various roles, including managing Web support, supervising product technical support for Macromedia Flash and Dreamweaver, and providing one-to-one technical support for Director and Extreme 3D. cgoodman@macromedia.com

figure 4





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FLEX & Flash

Communication SERVER

by peter ent

t

*he challenge of enterprise-level collaboration is to
make data sharing effective and keep costs down.*

Applications built with C++ or Java must be delivered

*to the end-users' desktops along with some piece of the collabo-
ration software. That can be a headache for IT departments*

because it is another set of files to deploy, upgrade, and test.

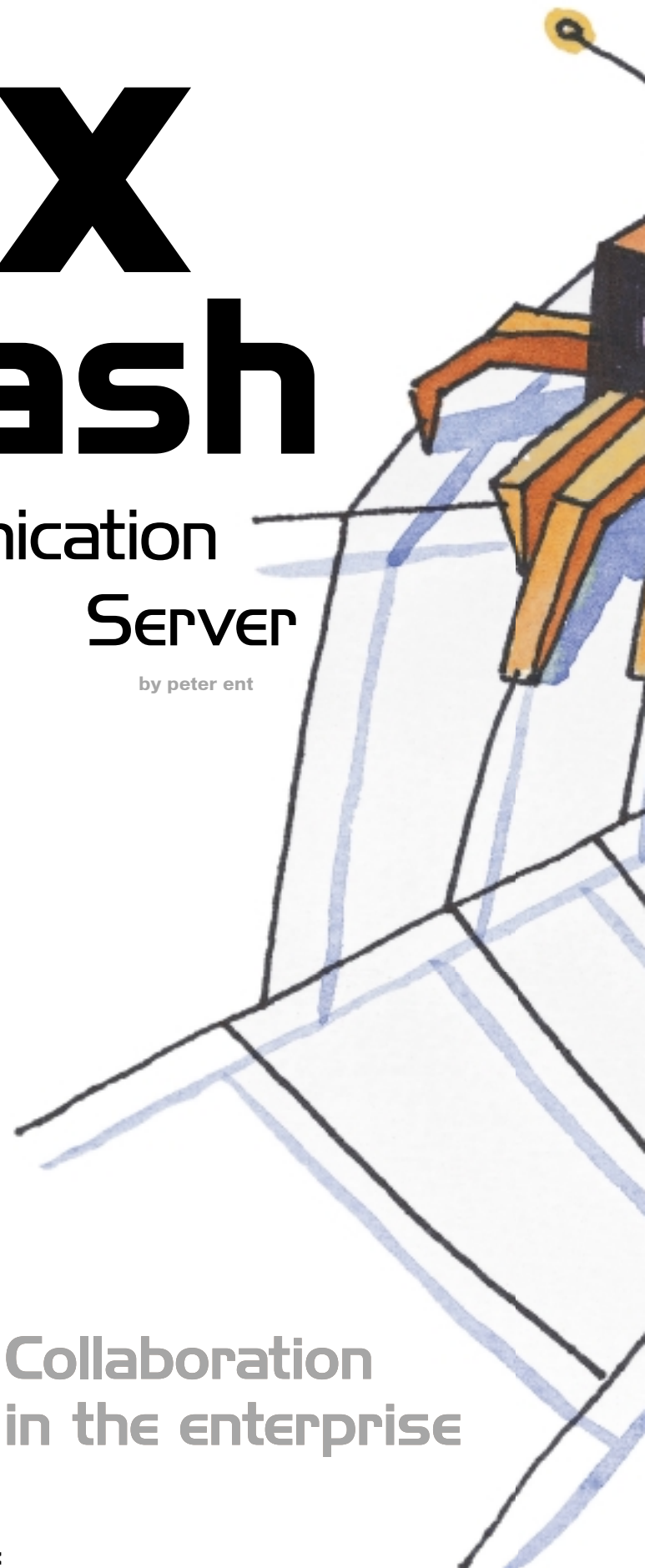
For me, collaboration has a broad meaning: two or more applications running on distinct computers sharing data. There is usually some sort of middleware connecting them: software that moves the data from one location to another.

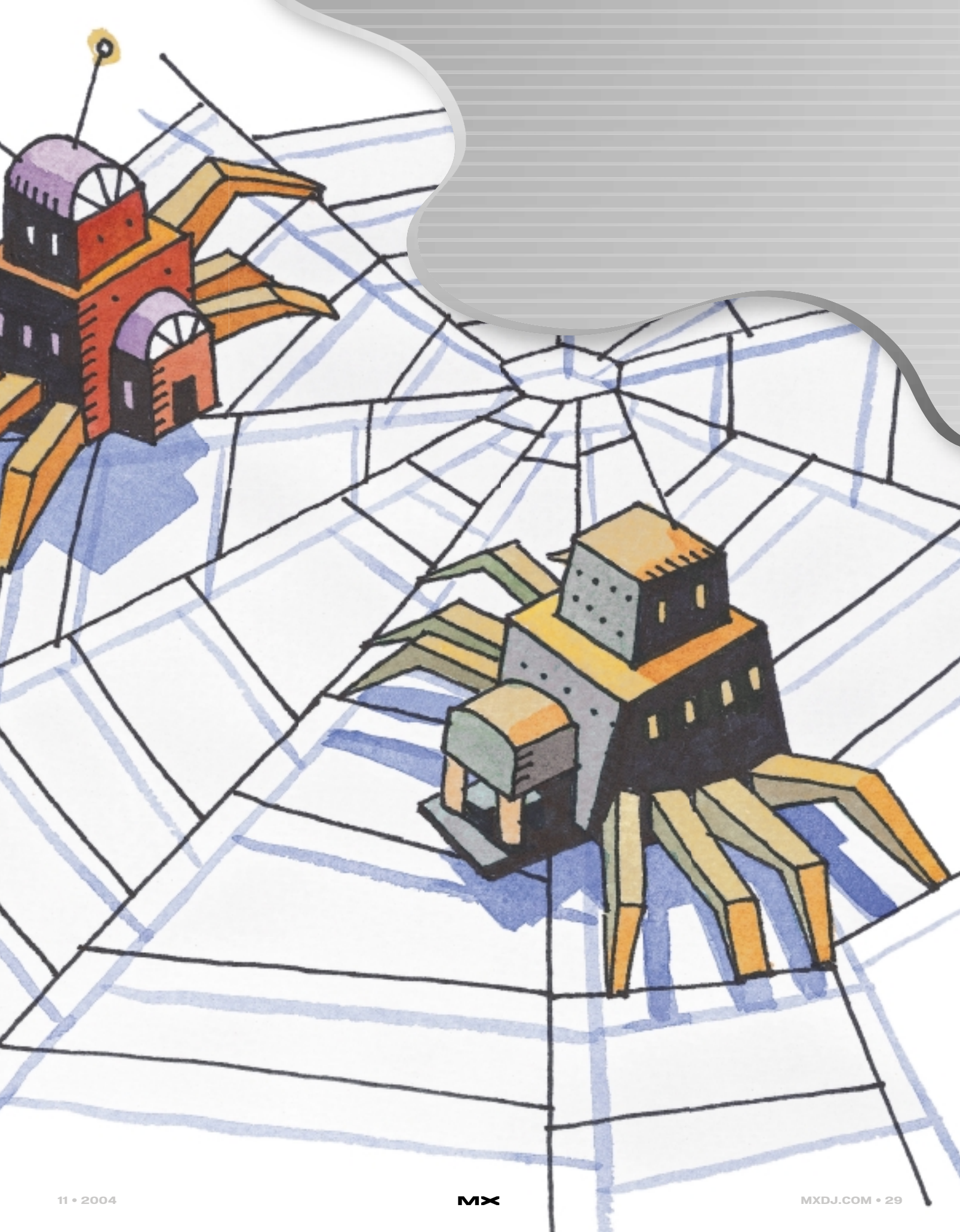
After spending nearly 10 years in the financial services arena, I can tell you that enterprise applications are highly collaborative affairs. Traders need to know current stock prices, orders for buying and selling equities flow across the Internet, and conversations between counter parties take place in real time around the world 24x7.

IT departments in the financial services industry have been reluctant to place their bread-and-butter applications onto the Web because the means to push information onto the end-user's desktop has not been practical. Java applets, which can use Java Messaging Services, have appeared from time to time. However, their large downloads and browser-compatibility issues have dissuaded IT from heavy investment.

Now the combination of Macromedia Flex and Macromedia Flash Communication Server (FCS) make it possible for a new generation of Web applications to take on the collaborative mantle and challenge traditional desktop applications. IT departments

Collaboration in the enterprise







“the most powerful aspect of FCS isn’t its ability to share data. The real power is the fact that it can be programmed or scripted so its behavior supplements the application”

finally have the combination that they have long sought of rapid development, simple deployment, small download, and integrated collaboration. After all, most PCs already have the Flash Player and that’s all you need. There is no additional software required. IT departments can deploy their collaborative applications to their Web and application servers, and the users’ browsers do the rest.

This article shows you how to build a simple collaborative application in Flex that uses FCS’s shared remote objects.

FCS

Most IT departments have heard of FCS. They see it as a way to stream video and audio with ease from a central server to end-user’s desktops. Nonetheless, many fail to see that beneath the glitz of those high-bandwidth applications lies a useful nugget: shared remote objects. Easy to develop, FCS-based applications can share data across the enterprise or around the globe in real-time. Sending blotters of stock trades, or simply chatting between counter parties, is nearly effortless for FCS.

Note that Java has its version called Java Messaging Service (JMS) that has a number of implementations. CORBA (Common Object Request Broker Architecture) often underpins many middleware systems.

FCS is a piece of software (usually run on its own machine) tasked with moving information from one Flash Player to another Flash Player. Macromedia typically markets FCS as a way to stream video and audio to and from the Flash Player. Proprietary software within FCS makes it possible not only to broadcast video to many users simultaneously, but to receive video as well.

One example application is an online conference with an interactive whiteboard. Each participant has a camera and the program provides a virtual whiteboard. The current speaker’s image is transmitted to all members of the conference. As the speaker draws on the whiteboard, everyone sees the diagram taking shape.

In my opinion, the most powerful aspect of FCS isn’t its ability to share data. The real power is the fact that it can be programmed or scripted so its behavior supplements the application.

I have written Java- and C++-based applications that use software to share data with remotely connected users. The middleware (i.e., JMS or CORBA) is normally a black box. That is, you can install and configure it, but you cannot make it perform any functions that its creators did not intend.

This is not true for FCS. As with Flash and Flex, FCS uses ActionScript as its lan-

guage. Each FCS actually runs multiple applications (see Figure 1). A single FCS can run a video conference application as well as a stock price ticker.

For example, if an FCS application is acting as a chat room, the FCS application can save the messages to a database (using Flash Remoting and a J2EE server). The FCS application can also authorize each user that attempts to connect to the application by allowing or rejecting the connection.

Flex

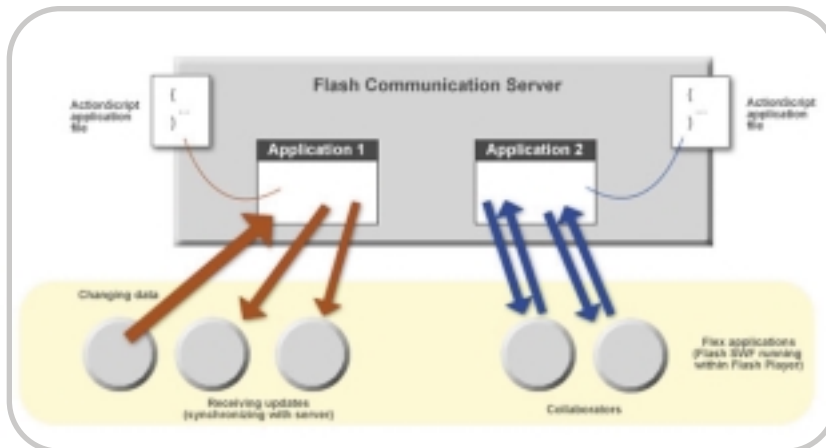
Because FCS connects Flash Player to Flash Player, you must write the user interface portion in Flash. However, IT departments have been reluctant to use Flash because of its reputation as a Web designer and artist tool. Macromedia Flex is a new and easier way to write Flash applications. Flex is ideal for enterprise development because it uses tools with which you are already familiar: Dreamweaver, text editors, and your favorite J2EE application server (with .NET on the horizon). Flex application files are compiled into Flash SWF files and downloaded into your browser’s Flash Player plug-in.

Flex applications are written in a form of XML called MXML (Macromedia’s XML) that defines the content and placement of the user interface. There are lots of controls from which to choose: button, label, data grid, tree, slider, and so forth. There are also layout containers to help manage the placement of the controls. Of course, placing controls on a page would be useless without program code to control them. Flex uses Flash’s ActionScript language to provide the necessary event handling and data management.

Example: Drag and Drop

I’ve chosen a fairly simple example to demonstrate how Flex applications can use FCS to collaborate with one another.

figure 1



This example shows off some of Flex's capabilities and it shows how easy it is to send data between applications. My example uses the same application for sending and receiving data.

Figure 2 shows the application in use. The user peter has entered several orders directly into the DataGrid component. Below the grid is a list of the users currently online, represented by an image. These images not only tell you who is online, they are also drop zones – a place where you can drag one or more orders (rows in the data grid) to send them to another user. User peter's image is dimmed to indicate that his own drop zone is off limits.

In Figure 3, user peter is dragging two orders over the drop zone for user joseph. Notice how the drop zone highlights to indicate that it will accept the data. If user peter were to try to drop the orders over his own icon, the drop zone would not highlight. It would not make sense to send orders to yourself.

When user peter releases the mouse over the drop zone, Flex animates the graphics to show the data falling into the drop zone. If user peter moves out of the drop zone and releases the mouse, Flex animates the data to show it returning to its point of origin.

When the user releases the mouse over a highlighted drop zone, the Flex application extracts the orders from the data grid and sends them to FCS along with the name of the target user (i.e., user joseph). FCS then takes those orders and pushes them to user joseph's Flex application, which in turn, updates its data grid.

How FCS knows what to do and how the Flex application sends and receives the data is discussed in the section, Connecting Flex to FCS.

Figure 4 shows user joseph's grid after receiving the orders. At this point user joseph could modify one of the orders and send it back to user peter by dragging it over user peter's drop zone. The application is written such that it examines the data being received and replaces orders it already has (using the order code). It adds new rows to the grid for orders it does not have.

Note that the example illustrates just how easy it is to implement data sharing. Flex and FCS not only do the job of col-

figure 2

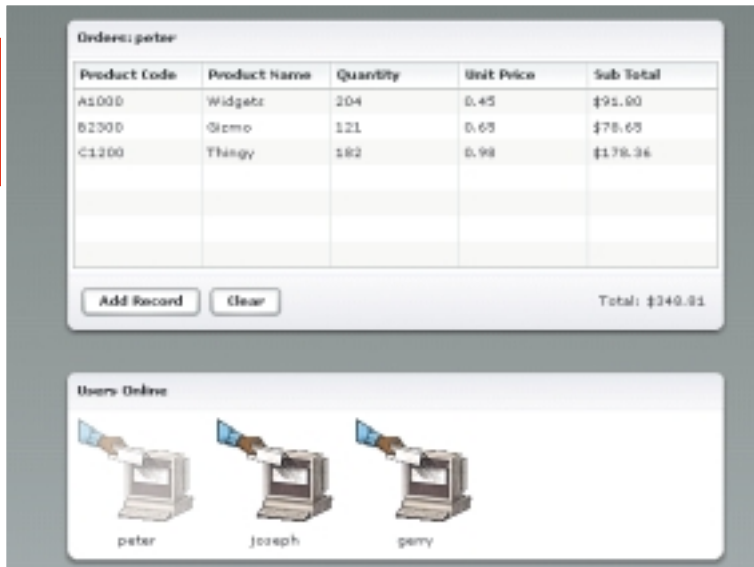


figure 3

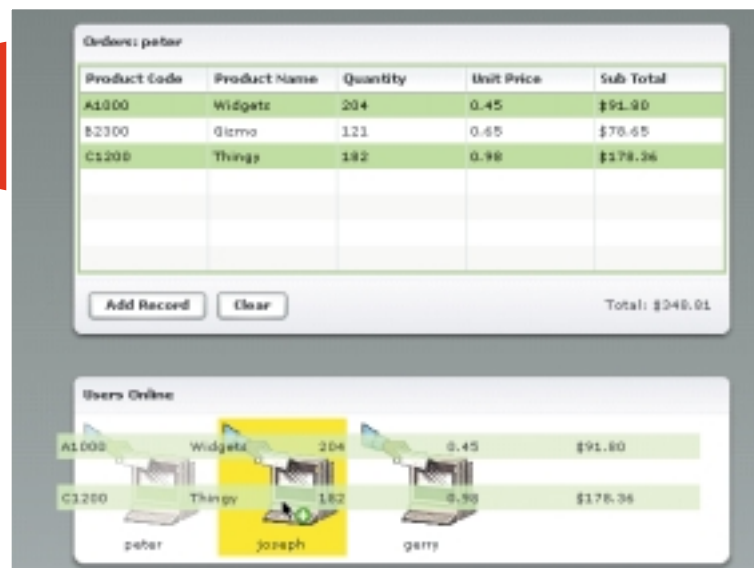
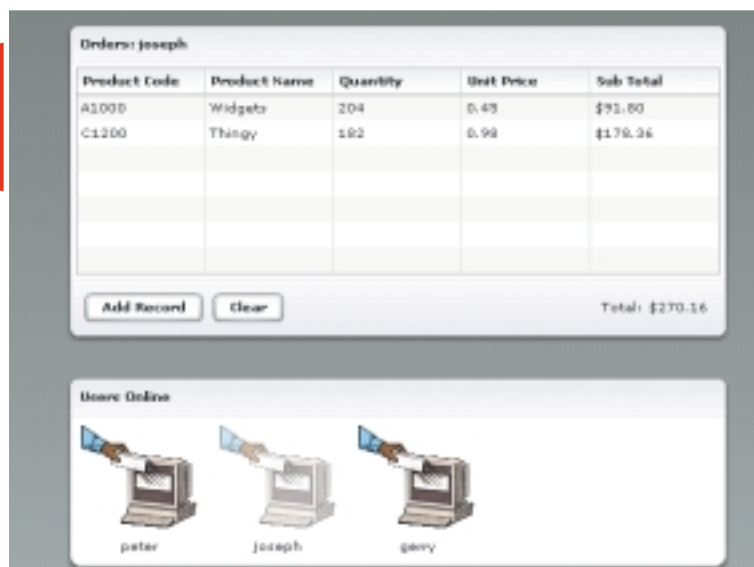


figure 4





laboration, they make it easy to do the job.

The sample application provides you with a glimpse of what is possible. If you choose to download the program code, make sure you run at least two separate instances of the application on different computers to get the full effect. Although the sample uses fairly simple data (and an array of order objects), you can send more complex structures. In fact nearly anything you can build with ActionScript you can share.

More Examples

For Example 2, I'll use the ubiquitous chat or instant message application. In this collaboration example, two or more people exchange messages. Figure 5 shows a multiroom chat application. All of the users signed on to the application are shown in the upper-left panel; below that are the available rooms. To the right, in the largest space, is the chat dialog with a tab for each room in which the user is participating. Below the dialog area is the input line for entering the text.

Example 3 is one of the most common applications seen in financial data systems: real-time price updates. This is often seen as a band of stock symbols; prices streaming around the screen; or as a table of symbols, prices, and other information.

Figure 6 shows a Flex DataGrid with currency exchange rates and volumes.

The application works with FCS to bring real-time information directly to your desktop.

Connecting Flex to the FCS

Shared Objects

Flex (and Flash) applications use shared objects to communicate with FCS. An instance of a shared object lives within FCS, whereas proxies for it are present within the Flex application.

In Example 1 there is a list of active users. I describe the list by labeled images. When a user signs on to the application, an image automatically appears. Similarly, when a user signs off (closes their browser), their corresponding icon automatically disappears.

To achieve this, I created a shared object called users (see Figure 7) for the sole purpose of conveying who is currently using the application. Within the FCS application code, I add a new user to the list whenever an application connects. Because this is a shared object, FCS automatically synchronizes its list with those of all of the attached Flex applications. I coded the Flex applications to display a labeled icon.

1. Client 1 connects to FCS and attaches to the shared object, users. This causes a proxy for the shared object to be created in the Flash Player running the Client 1 application.
2. Later, Client 2 connects to FCS and attaches to the users' shared object. A

proxy is created in the Flash Player running the Client 2 application.

3. The FCS application now synchronizes all applications attached to the users shared object. Both applications now know about each other.

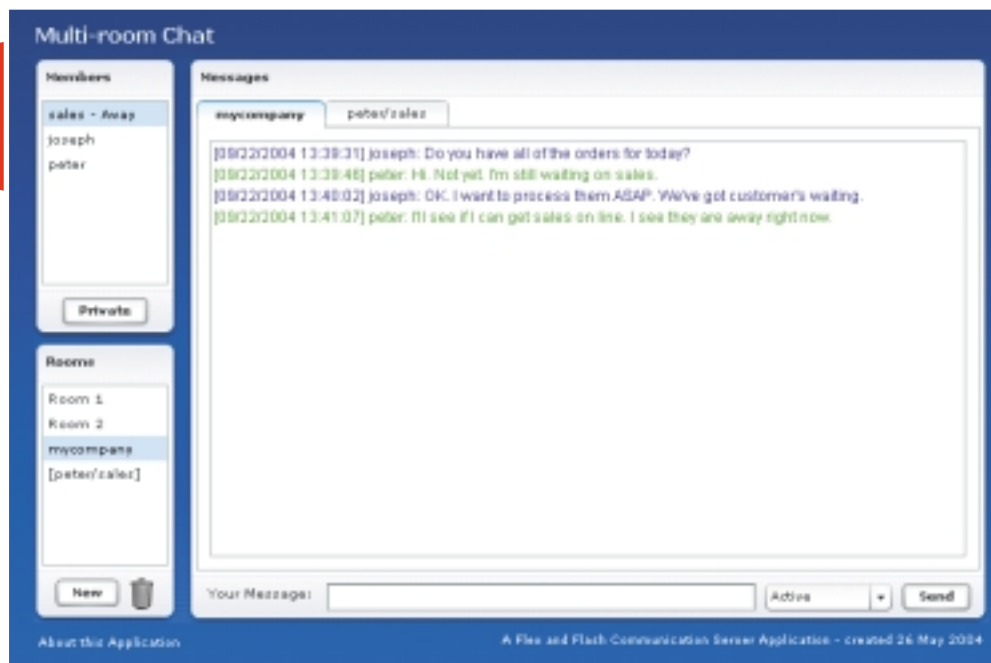
Shared objects can do more than just share data. You can define functions on a shared object and have those functions called by FCS. In the first example, every user that signs on gets their own unique shared object. I wanted to define a function in the sample Flex application that would be called whenever there was data to be displayed in the grid. When one Flex application user drops their orders onto another Flex application user's image, FCS is given the orders, finds the shared object associated with the recipient, and invokes the function I defined.

Making the Connection

I created an ActionScript class to make it easy to use FCS from Flex applications called FlashComm. As this class is available to download, I will just point out some of the more interesting aspects. Following the suggested guidelines for Flex classes, my FlashComm class uses events to announce changes in its state.

- **Closed, Failed, Rejected:** The connection to FCS can be in one of these states. My FlashComm class dispatches a corresponding event rather than displaying an error message. This allows the overall application to do what is best at that point.
- **Success:** The connection to FCS has successfully connected. Now my FlashComm class can connect to the shared objects: users and one specific to my application instance (users peter, joseph, etc.).
- **Change:** FCS has sent some orders. My FlashComm class dispatches a change event to inform the application. This causes the orders to be added to the DataGrid.
- **Users:** FCS has resynchronized the users shared object because someone has signed on or signed off. My FlashComm class dispatches a users event that causes the application to add or remove user icons on the display.

figure 5



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Flex

Listing 1 shows the instantiation of my FlashComm class within the application's MXML file and some of the events it handles.

1. The change event is dispatched when data is being received from the FCS. The showNewData method either replaces existing records in the DataGrid (if the order codes match) or adds the order to the end of the grid.
2. The list of users is updated whenever it changes.
3. A dialog box is presented to the user should the connection fail.

Listing 2 shows the Flex definition for the list of users. This is defined with a Repeater tag that generates the items defined within it for each record in its data provider. In this case, it would be the list of users.

The boldfaced lines are the event handlers for the drag-and-drop operation. The doDragDrop method is shown here:

```
function doDragDrop(event) {
    flashComm.sendOrders(dataGrid.selectedItems, event.target.label);
}
```

figure 6

Streaming Prices	Currency	Rate	Volume
	YTL	0.011	▲ 759
	USD	7.958	▼ 206
	RRP	6.073	▼ 739
	JPY	4.601	▼ 539
	ITL	7.027	▲ 812
	GBP	2.950	▲ 1,002
	FFR	3.346	▲ 978
	CAR	3.071	▼ 709
	AUD	0.257	▲ 498

These are not real values.

“FCS is surprisingly easy to use. The ability to tailor each FCS application with your own code opens the door to great possibilities”

```
restoreDragTarget(event);
}
```

Whenever the user releases the mouse, the selected items (orders) from the data grid are given to my FlashComm class to be sent to FCS along with the name (the icon's label) of the intended recipient. FCS then invokes the receiveOrders method defined on the recipient's unique shared object.

FCS Application

The last part of the example is the code that is run by FCS itself (see Listing 3). This is the application instance that makes the example work.

1. When the FCS application starts, it creates the orders shared object (if it already exists, the application attaches to it). Note that shared objects can be also be persistent. FCS will write their contents to a local file on the server and reload them whenever necessary.
2. When a client connects, a function is defined on the client connection that the client can invoke. This function takes the orders from the client and calls the receiveOrders method defined on the shared object. This is a powerful concept. What appears to be a single method invocation is actually many method invocations – one for each client connected to the same shared object.

If you have used other types of middleware (e.g., a CORBA-based system or a JMS system), imagine having the ability to place code in the heart of the data switch. In this example, FCS is distributing the data to everyone. However, it is possible to filter the data, sort it, save it, or augment it. You could, for example, see if the user about to receive the data is privileged to see all of the data and, if not, remove those bits not allowed. Or

the FCS application could send the data to a J2EE server for storage.

To Collaborate Is Human

We have a need to work together; businesses thrive on this interaction. Traditional methods of sending data between applications, whether it be via serial line or Internet (using protocols from FTP to CORBA), have been complex to implement and deploy. I have tried to show the potential of combining FCS with Flex: powerful data collaboration coupled with sophisticated user interface controls delivered within a Web browser. FCS is surprisingly easy to use. The ability to tailor each FCS application with your own code opens the door to great possibilities. I used the drag-and-drop capabilities of Flex to illustrate how easy it is to adopt a new paradigm for a common goal.

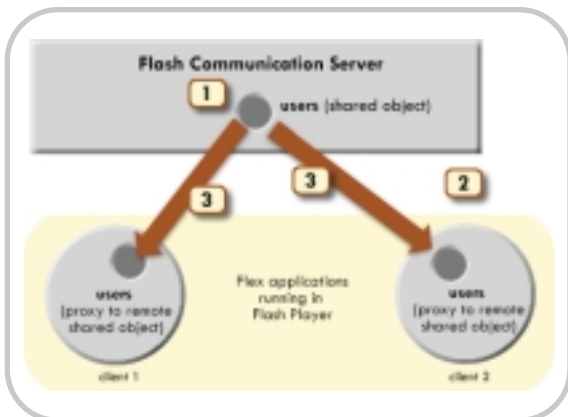
I have developed similar Java-based applications using Swing for the user interface and an implementation of the Java Message Service as the middleware. Flex and FCS are, in my opinion, a tonic for the developer's soul.

Resources

- The source files for this application are available in ZIP format from my Web site at www.keaura.com/flex.
- More information about FCS can found on Macromedia's Web site at www.macromedia.com/software/flash-com.
- Macromedia Breeze is another example of collaboration. Find out more at www.macromedia.com/software/breeze.

Peter Ent is a Web application developer specializing in Rich Internet Applications. He has more than 20 years of experience ranging from keypunches to wireless PCs. peter.ent@keaura.com

figure 7



listing 1

```

<!-- Instance of the FlashComm object. Note how the events
declared in the
ActionScript file are named here and processed.
-->
<FlashComm id="flashComm"
change="showNewData(event)"
users="updateUsers(event.data)"
failed="mx.core.Application.alert('Failed to connect to the serv-
er','Alert')" />

```

listing 2

```

<mx:Repeater id="dropZones" dataProvider="{userList}"
recycleChildren="true">
<mx:VBox width="100" label="{dropZones.currentItem.name}"
dragEnter="doDragEnter(event)"
dragOver="highlightDragTarget(event)"
dragExit="restoreDragTarget(event)"
dragDrop="doDragDrop(event);
dataGrid.selectedIndices=null;" >
<mx:Image source="@Embed('computer_mail.gif')" />
<mx:Label text="{dropZones.currentItem.name}" widthFlex="1"
textAlign="center" />
</mx:VBox>
</mx:Repeater>

```

listing 3

```

/* onAppStart is invoked when the application is initially
loaded.
*/
application.onAppStart = function()

```

```

{
// Get the server shared object 'orders'
application.rowData_so = SharedObject.get("orders", false);
}

/*
* onConnect is invoked every time a client connects. The
newClient
* object is created automatically by the Flash Comm Server to
represent
* the client connection. The name parameter was passed from the
client.
*/
application.onConnect = function(newClient, name)
{
// Make this new client's name the user's name
newClient.name = name;

// Accept the client's connection. You could also reject this
// connection if appropriate.
application.acceptConnection(newClient);

// The client will call this function to get the server
// to broadcast the orders to everyone. The 'receiveOrders'
// method being remote invoked has been defined by each client.
newClient.sendOrders = function(orderData) {

application.rowData_so.send("receiveOrders", this.name, orderData);
}
}
}

```

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XML

Another way to run your Flash application
by art phillips

What does data look like? To a stockbroker, data might appear as a stream of company names and stock values. A database administrator probably sees data as a series of tables. A developer working in XML might see data as a tree like structure.

This article is all about data. We will look at data, data structures, data transformations, and data bindings and examine their role in the Flash MX 2004 component framework. We'll use this information to build our first RAD App in Flash,

figure 1

myVariable	"Some value"
myOtherVar	3.14

figure 2

productObject	
description	"Skateboard"
name	"Midnight Special"
price	"78.85"

figure 3

myArray	
0	"Student"
1	3.14

figure 4

myArrayOfObjects	
0	
description	"Shower Curtain"
id	"385"
name	"Devil Duckies"
price	"19.95"
1	
description	"Skateboard"
id	"276"
name	"Midnight Special"
price	"78.85"

an XML-driven data consumer.

Variables are the most basic abstraction of data (see Figure 1). Some symbol is assigned to represent some value. Just like in a stock ticker, a name is associated with a value. This works great for simple things such as stocks, names or ids, but is not very useful when dealing with more complex data models. Variables are not a good tool to organize the multiple pieces of information that are needed to represent a student, an employee, or a product.

Object-based data modeling employs the concept of special variables, called objects, which are able to hold multiple values called properties (see Figure 2). (Objects also have specific functionality associated with them, things that they can do, called methods. This discussion is limited to object properties.) Properties are like a variable inside a variable. With properties, a single variable can hold all of the values we need to represent something from the real world. A student object can have names, ids, courses, and grades. Products can have names, ids, descriptions, suppliers, prices, etc. Properties provide an intuitive way of accessing data by simply using object and property names. One variable can

encapsulate all of the values needed to define a specific item. Now, how do we handle working with many items?

Arrays provide a handy storage container when we're working with many related things. Arrays are nothing more than special variables that allow us to store multiple values at different positions, indexed by number. This allows us to gather like things together into one easily manipulated collection. Arrays (see Figure 3) are the filing cabinets and shopping carts of the developer's world.

Objects are the things we need to collect and store. Arrays are where we store things. Put the two together and we get: arrays of objects. While there are many other data structures out there, arrays of objects are a key building block for data-driven applications in Flash. Data from SQL queries and XML structures will appear as arrays of objects in Flash (see Figure 4).

The ComboBox, List, and DataGrid components all use arrays of objects as their data providers. While the DataGrid is happy using any array of objects as a data provider, the List and the ComboBox can take advantage of special data providers, which use an array of specially formatted objects. List and ComboBox components like data providers where the array's objects have only two properties; label and data (see Figure 5).

The objects returned in arrays from SQL queries and XML structures can be rearranged into objects having label and data properties.

Programmatically, this is done by looping over the source array and using the properties of the source array's objects to create a new array. Properties of the source array's objects are used to build the special objects that have label and data properties.

figure 5

someDataProvider	
0	
data	
description	"Shower Curtain"
id	"385"
name	"Devil Duckies"
price	"19.95"
label	"Devil Duckies"
1	
data	
description	"Skateboard"
id	"276"
name	"Midnight Special"
price	"78.85"
label	"Midnight Special"

While this transformation of objects is not very difficult, Flash's component framework makes it even simpler. The component binding interface provides a simple formatter that rearranges the properties of a source array's objects into data provider objects with label and data properties. This is the process shown in Figure 6. We will use this technique when we build our XML-based application.

XML provides a simple markup that describes data and its structure. It is very flexible, allowing developers to create their own data structures. The rules for forming the structures are contained in the document's schema. XML's flexibility makes it an important part of Web services and will be examined in a later article. XML has the additional advantage of being simple, uncompiled text. No special programs are needed to read or write XML documents and no special servers are required if the XML exists as text documents.

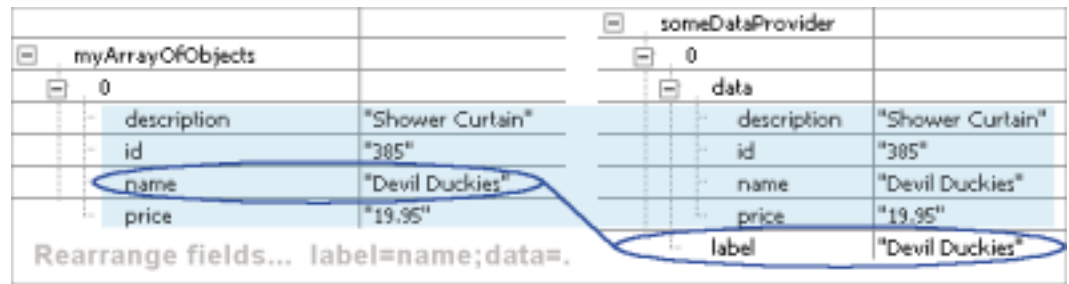
With XML, tabular data (see Figure 7) can be represented as a simple tree-like structure. As with HTML, line breaks and white space can be used to make the files more readable. While a visual examination of an XML document may clearly reveal the document's structure (see Figure 8), navigating that XML structure in Flash is slightly less than intuitive.

Navigating XML structures programmatically in Flash requires the use of hierarchical syntax. While the syntax is not overly difficult it lacks the intuitiveness of working with the numbered elements of an array and the named values of an object's properties. Even examining XML in Flash's debugger can be awkward.

Flash simplifies things for developers by making XML appear as an array of objects in the component interfaces (see Figure 9). The XML connector's results displays XML's characteristic structure, but the same XML in the bindings or schema tabs of the component inspector appears as an array of objects (see Figure 10). Visualizing the data this way makes working with XML much more intuitive.

Putting It Into Practice

Let's put all this into practice and build our XML-driven Flash application. We will load XML representing a catalog



of products into Flash, build a master-detail view, and do a little custom formatting and coding.

Remember, all component-based data integration in Flash follows the same basic steps:

1. Add a data connector
2. Provide connection information
3. Add UI components
4. Bind UI components to data and each other
5. Trigger the data connector

We'll start with a new Flash document. (We're supposed to call them Flash documents these days, but they'll always be Flash movies to me.) Save the document into a directory that has the data source, products.xml in it.

Step 1

Add an XMLConnector from the components panel to the document. The XMLConnector does not render, it is invisible in the final application. It is usually placed just off of the stage. Give the XMLConnector an instance name of cxn (see Figure 11). Next we provide the connection information.

Step 2

With the XMLConnector selected on stage, go to the Parameters tab of the Component Inspector. Set the URL to products.xml, and direction to receive. Leave the other parameters at their defaults. It is especially important to leave ignoreWhite set to true. This prevents Flash from trying to interpret spaces in the XML as data (see Figure 12). Move over to the Schema tab of the Component Inspector. Here, we provide the connector with a sample of our XML. From that sample, Flash will figure out the document's schema, the structure of the data. This will allow us to bind UI components to the XML data by the properties names. First be sure you select

figure 7

price	description	name	id
19.95	Shower curtain	Devil Duckies	385
78.85	Skateboard	Midnight Special	276

the results property, not the param property. Then, use the Import schema button to open products.xml. Notice that the XML is displayed as an array of objects after importing (see Figure 13).

Step 3

For the UI components we will use a List component and two Label components. We will give the List an instance name of myList and the two Labels instance names of price_lbl and description_lbl. We are ready to bind the results of the XML connector to our List.

Step 4

Select the XMLConnector on the stage and move to the Bindings tab of the Component Inspector. Click the plus sign (+) to add a new binding. Select the product : Array in the Add Binding window, then click OK. Back in the bindings tab, move down to the bound to field and bind to the myList List component as a DataProvider array. The final binding will look like Figure 14.

Step 5

We want our data to load as soon as our application opens. The best way to do this is with some actionScript in the first frame of our application. Add an actions layer and select frame 1. We will use a behavior to trigger our data connector. Flash behaviors, like Dreamweaver behaviors, are code snippets that have been prebuilt for us. Move to the Behavior Inspector and click the plus sign (+) to add a new behavior. Choose Data > Trigger Data Source and then select the XMLConnector: cxn (see Figure 15). Our application is ready for the first test.



Test the application; compile and open the SWF. If all has gone well, the list is populated with data. If the list isn't populated, go back over the steps. Be sure the XML and SWF are in the same directory, check names, bindings, etc. Sometimes it is quicker and easier to just start over again and rebuild the application from the beginning.

If the list populated, you may be surprised at the results. Each list item shows all of the properties for that object in a single comma-separated line. To control how the results are displayed in the List, we need to change how the results are bound to the List's data provider. We need to transform properties of the XMLConnector's results into label and data properties in the data provider for the list. Flash provides a simple way to accomplish that transformation.

figure 8

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <catalog>
3   <product>
4     <id>385</id>
5     <name>Devil Duckies</name>
6     <description>Shower curtain</description>
7     <price>19.95</price>
8   </product>
9   <product>
10    <id>276</id>
11    <name>Midnight Special</name>
12    <description>Stateboard</description>
13    <price>78.85</price>
14  </product>
15 </catalog>

```

figure 9

Name	Value
results	
attributes	
childNodes	
0	
1	
attributes	
childNodes	
0	
1	
2	
3	
attributes	
childNodes	
firstChild	
lastChild	
localName	"price"
namespaceURI	""
nextSibling	null
nodeName	"price"
nodeType	1
nodeValue	null
parentNode	""
prefix	""
previousSibling	
firstChild	
lastChild	

With the XMLConnector selected, in the Bindings tab of the Component Inspector select the results.catalog.product binding. From the formatter field choose Rearrange Fields. The Rearrange Fields formatter provides an easy way to use simple statements to perform data transformations.

Enter label=name;data=. into the formatter options exactly as written, with no extra spaces. Now, let's pick that statement apart.

The label=name assignment says: take the name property from the source object and assign it to the label property of the data provider object. The semicolon is used to separate assignments. The data=. assignment says: take all of the properties of the source objects and assign them to the data property of the data provider objects. The period (.) represents all of the current data or all of the data at this point. The data property of the data provider objects now holds all the properties of the source object.

By using rearrange fields we have created a useful data provider for our List. The label property of the data provider objects will automatically show up as labels in our list. The data properties of the data provider objects hold all of the original data for that object. In this example the object represents our XML values. In future examples, the data provider's data property will be a record from a database and the data properties will be the fields from a record.

XML and Flash

This concept of labels and data is a step ahead of normal form objects in HTML. Normal HTML form objects have labels and values. HTML drop-down boxes and list objects show a label to the user that represents some simple value. With Flash components the label can represent complex data. In a Flash List, the data provider object's label property is shown to the user. We can then access that item's data property to get any value we need for that object. This provides a simple means of creating data drill downs in master-detail views. Details can be easily retrieved from a selected item's data property. We will use this as we bind our remaining components.

We will bind the List component to the Labels. When the user selects a list

figure 10

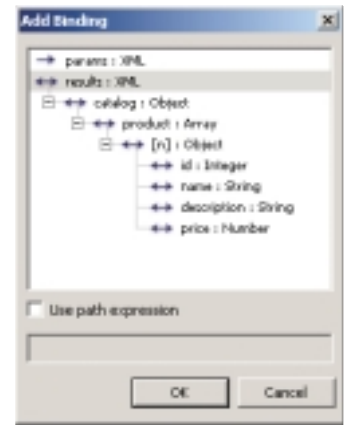


figure 11

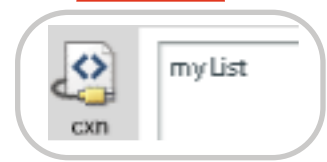


figure 12

Name	Value
URL	products.xml
direction	receive
ignoreWhite	true
multipleStream	true
suppressInvis...	false

item they will see details about the selected item in the Labels. I like to work with data in Flash in the direction it is traveling. When we connected the XMLConnector to the List we started by selecting the XMLConnector. To bind the List to our Labels we start by selecting the List.

With the List selected, go to the Bindings tab of the Component Inspector. The binding from the XMLConnector is already listed. Click the plus sign (+) to add another binding. The Add Binding window opens with a number of different choices. Remember, we need to bind to a property of the selected item's data. The Add Binding window provides a binding to

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selectedItem : Object but it does not expose the selected object's data property. The Use path expression check box provides a way to bind to data that is not exposed in the list.

Check the Use path expression check box at the bottom of the Add Binding window. In the field below it enter data.price (see Figure 16). This creates a binding to the price property of the selected object's data property. Click the OK button to close the Add Binding window.

Use the bound to field of the component inspector to complete the binding. Select price_lbl as text : String to be the end point of this binding.

Click the plus sign (+) and repeat the binding process. Add a new binding from the selected object's data.description property (Remember to turn on Use path expression.) bound to description_lbl's text : String.

During testing, clicking on an item in the List now reveals details in our Labels. We have a basic model for data drill down interfaces but there are two small issues.

When the data loads into the list it is not sorted; it comes in ordered the way it is written to the XML. It may be useful to sort the List alphabetically for the user. The other issue is that it would be nice to put a \$ in front of the price in the Label. We'll take care of that first by using a new formatter; Compose string.

Select the List on stage and go to the Bindings tab of the Component Inspector. Choose the selectedItem.data.price binding from the list. Below, in the formatter's field, select the Compose string formatter. From the formatter options field open the Compose String window. The String template field will let us mix literals such as the \$ sign with data. Literals are put in the String template field without markup. Data must be enclosed in <>.

Enter \$<> in the String template field. The \$ sign is literal and <> says use the data at this point. The data at this point in the binding is the price. Close the Compose String window and our price formatting is finished. Now to sort the List.

Sorting the List takes just a little bit of code, which can be put into many places in a Flash movie. There are many good

reasons to keep all of a project's code in one place such as frame 1 or external files. However, placing code directly on an object provides a very direct method and allows for the use of a simpler syntax for the event handlers. To sort the list we will use this simpler, more rapid method of placing the code directly on an object. The XMLConnector will be the object we place the code on.

Select the XMLConnector on stage, open the actions window, and enter the following code:

```
on(result)
{
    this._parent.myList.sortItemsBy("label", "ASC")
}
```

This code says: when we get results from our call for XML, sort myList using the label property.

That finishes the application for this article. In upcoming articles we will build applications using information returned from a database via Web services and Flash Remoting.

Summary

In my next article we will build the data sources we will use in those future applications. Even though data can be supplied to Flash by many back ends, our data sources will be implemented using ColdFusion components (CFCs). CFCs provide a wonderfully simple way to create Web-based data sources. Next time I will show you how eight simple lines of code can create both a Web service and a Flash Remoting data source. ☺

Arthur Phillips has been delivering cutting edge training solutions since 1984 and has developed instructional materials for George Washington University, the Federal Reserve Board, the U.S. Graduate School, and many others. Art has an extensive background in video, multimedia, electronic graphics, Web development, and e-Learning. He holds too many certifications as a Macromedia instructor, designer and developer to list. His Web site (www.artwebsites.com) is a well-known resource in the Macromedia community. art@artwebsites.com

figure 13

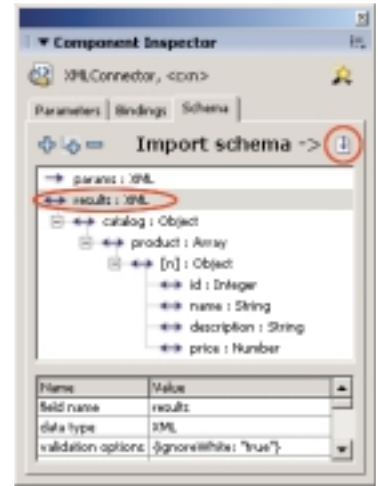


figure 14

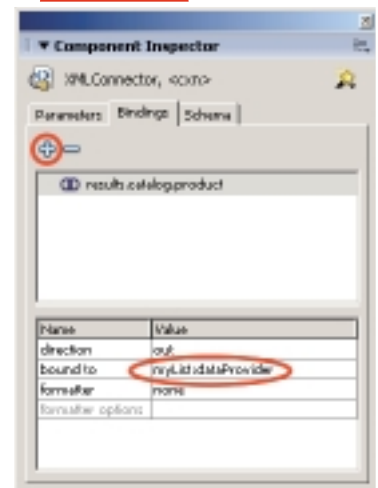


figure 15

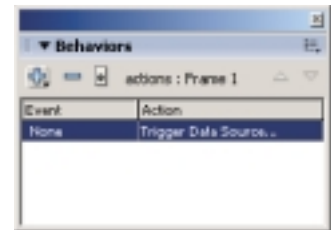
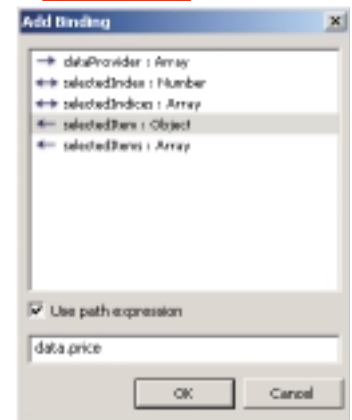


figure 16



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using a

BATCH PROCESS

A timesaving system

by joyce j. evans

A lot of tasks required to develop a Web site are repetitious and tedious. Have you ever had a folder full of images that you needed to add a border to? Or perhaps you want to reduce the size of every image. You'll probably even need to optimize each image as well. Well you can do all these tasks and more by running one batch process in Fireworks! What a timesaver, and it's so easy to do!

To run a batch process, follow these steps:

1. Select File @> Batch Process. You do not need to have a document open to use batch process.
2. The Batch dialog box opens. Navigate to the folder containing the images you want to use in the batch process.
3. Select each image you want in the batch and click the Add button. If you want all the images, simply click Add All. You can also navigate to other folders and add images as well (see Figure 1).
4. Once the images are added, click on Next.
5. If you want to export the images and choose optimization settings, click Export in the Batch Options window on the left. Click the Add button and it will appear on the right in the Include in Batch area.
6. The Export settings field becomes available. Choose JPEG smaller file (or whatever you'd like). If you want to customize the settings, click the Edit button and choose your settings. Note: The image shown here shows the Scale options. This is the same area in which you'll see the export options appear.
6. If you want to scale the images, select Scale then click Add. Once you add the Scale option there will be a drop-down

menu with options to scale to a specific size, area, or percentage. Fill in your specifics.

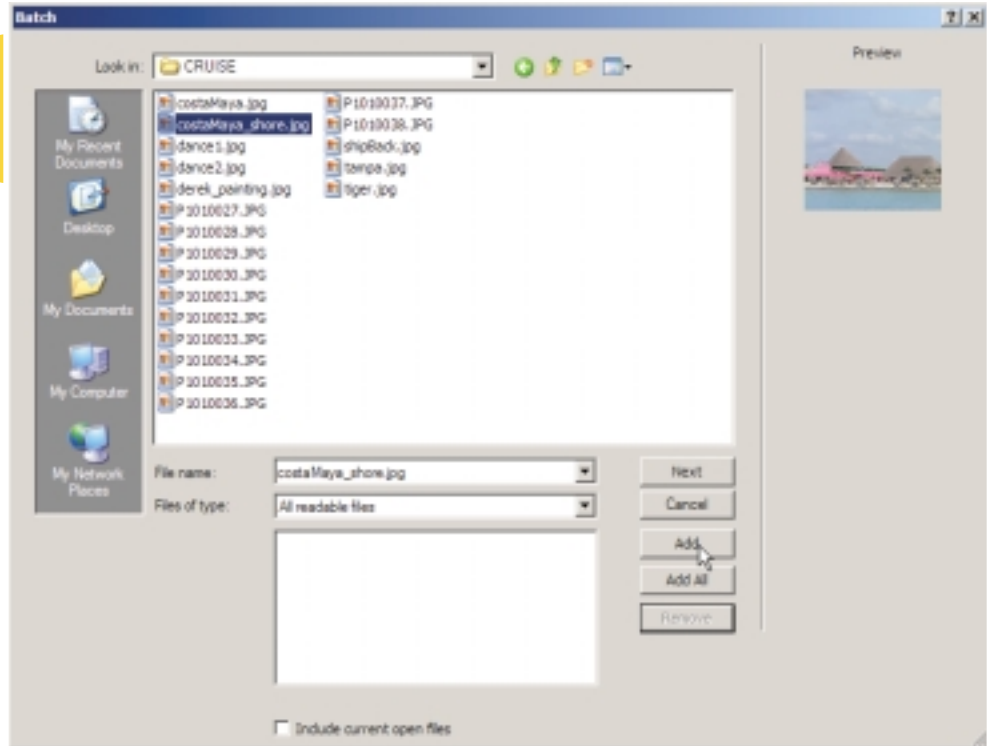
Tip: If your images are not all the same size you may want to use a percentage scale. A specific size works great for thumbnails and other images only if all the images are the same size.

7. If you want to run a command in the batch, then click the plus (+) sign next to Commands and select the command you want to use. The commands shown are the same as the commands in the Command menu. Even your custom commands will be shown here and available to use (see Figure 2).

“What a timesaver,
and it's so easy to do!”

Tip: One command I use frequently for photo galleries is a border command. I simply open a photo, and add a glow effect. Select the image, Click the plus sign in the Effects panel area of the Property inspector and select Shadow and Glow/Glow. The settings used are 1 (or whatever border size you want), softness of 0, and opacity of 100%. Open the History panel, select "Set Effect", then from the History options popup menu select Save Command and name it. It will be available immediately in the Commands menu.

figure 1



8. Click the Add button.
9. After you finish setting the batch options, click Next.
10. The last Export Options dialog box lets you pick how and where to save the processed files. The options are as follows:

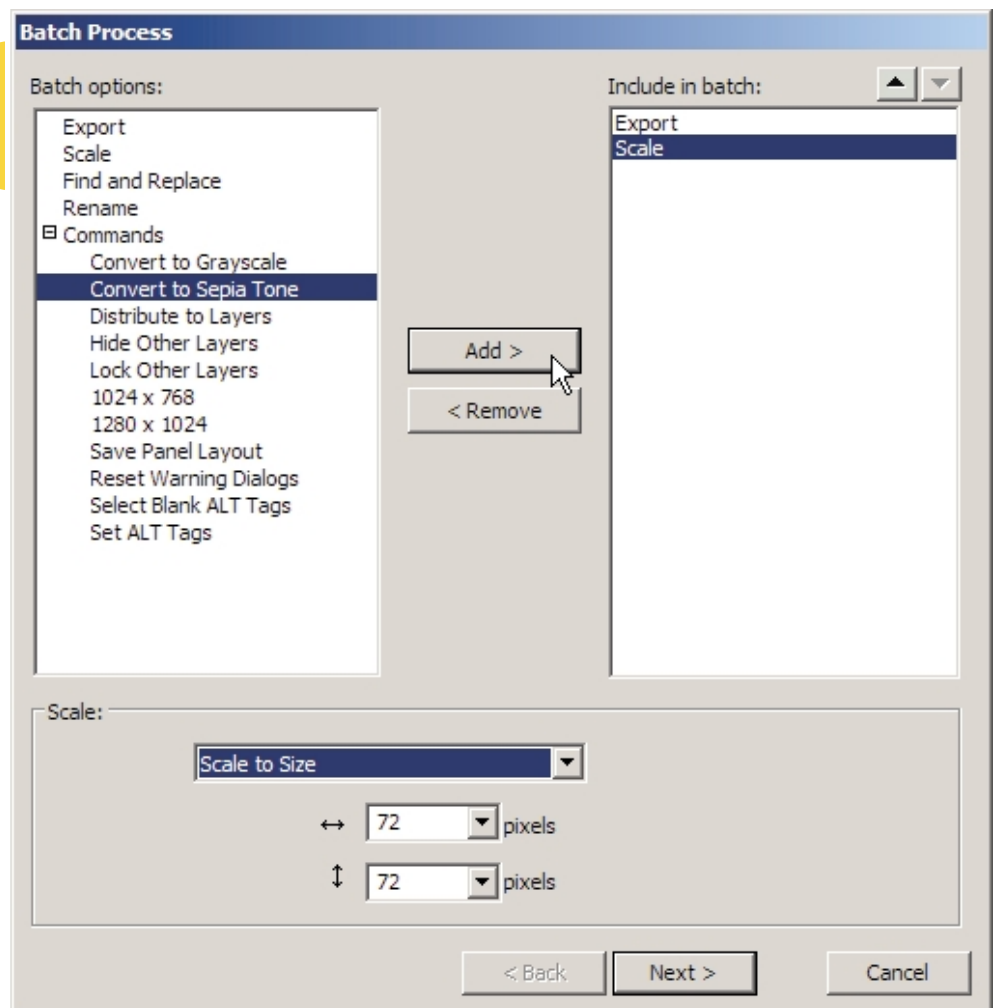
- Save in the same location as the originals. (If you do, a new folder is generated.)
- Choose Custom location so that you can then browse to select.
- Backups, if selected, give you the options of overwriting existing or making incremental backups.
- Save Script enables you to save the batch configuration you just set up. The script will be saved in the Fireworks /Commands folder.

11. Once your settings are complete, click on Batch. When it's complete, click OK.
12. Check out your changes by opening one of your batched images from the location in which you saved it.

Now wasn't that easy? And you just saved a ton of time. ☺

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figure 2





FREEHAND TIPS

A T I P O F T H E H A N D

T H E R E A R E D O Z E N S
A N D D O Z E N S O F
T I M E - S A V I N G
T H I N G S Y O U C A N
D O I N F R E E H A N D .
F O L L O W I N G I S
J U S T A B R I E F
S E L E C T I O N .

by ron rockwell

1. Create a custom default page.

Set up a page the way you like it (fonts, styles, colors, page size, guides) and save it as a FreeHand template in FreeHand's Settings folder. While in FreeHand, open the Preferences/Document panel and choose your new template.

2. Create personal keyboard shortcuts.

FreeHand allows you to make your own keyboard shortcuts for virtually every tool and function (Edit>Keyboard Shortcuts). You can start with shortcuts from other programs such as Illustrator, QuarkXPress, CorelDRAW, Fontographer, Photoshop, and more. Almost all my shortcuts involve the use of my left hand exclusively, leaving my right hand free for my digital tablet's pen.

3. Create symbols of commonly used objects.

Make logos, address lines, and other objects that you use on a regular basis into symbols. Make the library part of your default (startup) page so that they're available all the time (such as the one seen in Figure 1). Export a library of them to use in older documents or to share with other team members.

4. Make a Custom Styles Panel.

If you do a lot of line drawings, create a style for each line weight you use all the time, and a duplicate of that style with a white fill so you can spend your time drawing instead of running through the Object panel.

5. Use the Transform panel to scale several objects at once.

Select any number of objects and enter the scaling percentage into the entry fields. Click the Scale button and all objects will be scaled relative to the common center point as if they were grouped.

6. Use Find and Replace to resize objects.

If you choose Scale in the F&R panel, objects will be scaled relative to their own center points – they stay in place.

7. Customize your toolbars.

By placing useful tools in your toolbars and removing tools you don't use, you can speed up your productivity by saving trips through menus. You can place the tools in the Main Toolbar which runs horizontally across the screen, or in the Tools Panel which is reshapable and can be placed wherever you want on the screen.

8. Use multiple views while you're working.

Select Window>New Window to create a duplicate window of the current window. Then you can change the view – say zoom in for an extreme close-up of a detail – in one window, while seeing an overall view in another window. Anything that is done in either window occurs live in other windows, allowing you to see the forest and the trees! Figure 2 shows three separate views of the same page; look closely and you can see that the gray rectangle is selected in all three windows. On a Windows machine, you can have FreeHand arrange the windows automatically by choosing Window>Tile Horizontally or Window>Tile Vertically.

9. Colorize your layers.

Okay, some programs do this automatically, but you can make the selection points and paths a different color on each layer to make object selection visu-

ally easier. Just drag a color onto the blue square next to the layer's name in the Layers panel.

10. Select all objects on a layer at once.

Hold down the Option/Alt key as you click on a layer's name in the Layers panel. All objects on that layer will be selected. Add the Shift key and click on another layer to add those objects to the selection.

11. Attach text to an ellipse.

Draw an ellipse and type some text. Use the Pointer tool to drag a selection box around both (or Shift-select both objects). Choose Text>Attach to Path. The text will flow completely around the ellipse in a clockwise direction, becoming upside down on the bottom of the ellipse.



figure 1

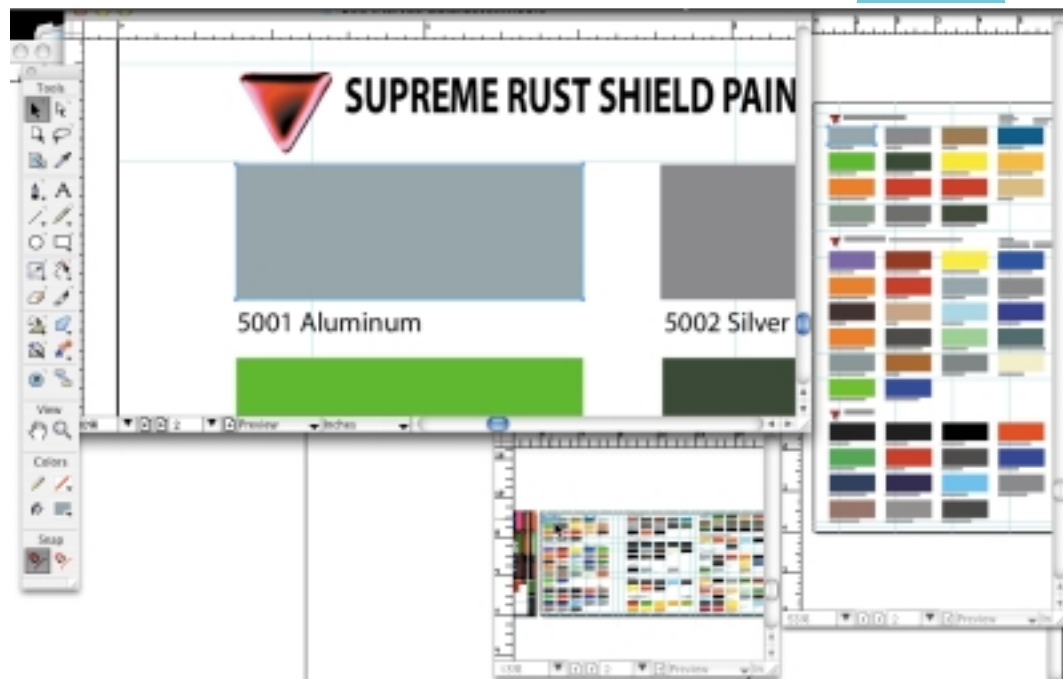


figure 2



12. Place text on the bottom of a circle.

To have right-reading text at the top and at the bottom of an ellipse, type the text that goes at the top, followed by Return/Enter, and the text you want at the bottom. To get text at the bottom only (as shown in Figure 3), just press Return/Enter before entering the text you want on the bottom. The action creates a blank line on the top of the ellipse, and places the text at the bottom. The center point of the text will be at the top of the ellipse.

13. Move text along a path.

Whenever you choose Text>Attach to Path, a tiny triangle appears at the center of the text, regardless of any text alignment you may have chosen. Click and drag the triangle to move the text along the path. In the case of an ellipse, the text will run upside down.

14. Get coffee while you're waiting for overlapping Lens fills to redraw.

It's not a good idea to have many overlapping Lens fills – your computer hates it, and the printer will probably choke. Instead, simplify your design so the overlaps are not needed, or use Modify>Combine>Divide to create smaller, more easily manageable areas that you can fill without using the Lens fill.

15. Check the Document Resolution when you're using Raster Effects.

FreeHand sets any Raster Effects to a 72-dpi resolution. That means when the document window is at 100% viewing size, everything will look fine and dandy. Zoom in, and you can see that everything is bitmapped (see Figure 4). It will print that way. In case you weren't paying attention: IT WILL PRINT THAT WAY! You can change the resolution of that object only by going to the Object panel, opening the Options fly-out menu, and changing the resolution in the Object Resolution window. At this point, you can also opt to "Use document Raster Effects Resolution" by clicking the box. On the other hand, you can go to File>Document Settings>Raster Effects Settings and change the resolution of the entire document. It's best to work in the default 72-dpi mode until you're ready to print. Then change your settings to 300-dpi to print because the hi-res effects take longer to redraw onscreen.

16. Think twice about using Raster Effects.

I know, it seems like a lot of cool features, but there are two major problems. First, colors in the affected object are converted to RGB. That means the printer has to reconvert them to CMYK when printing. You have no control over that

figure 3



figure 4



process, so results may vary from what you expect. Second, these graphics are surrounded by a rectangular bounding box. If that box overlaps a similarly effected object or a colored area, the bounding box shows up as if you had applied a Lighten Lens fill to the rectangle. It will print that way. So, working illustrators build these effects the old fashioned way – as vectors, or from a bitmap editing program such as Photoshop.

17. Don't expect to edit a photo in FreeHand.

FreeHand is a vector drawing program, and largely ignores bitmap objects. You can import a grayscale TIFF file and adjust the contrast and brightness, but you can't do any retouching. You can change the color of that image from black to any color you wish however. Just select it, and choose a color – this only works with grayscale images, though.

18. Change text color the easy way.

It's easiest to change the text color while it's live text. Select the text with the Text tool and choose a color. But if you've converted the text to paths, it's not that easy – in fact, that method only makes you emit loud painful noises. Instead, you must subselect the text by one of three methods: Select the text/object and double-click Contents in the Object panel. Repeat until you see the correct text



Trace problematic fonts.

On a Mac, some Multiple Master fonts look fine on screen, but change to another font weight when converted to paths (see Figure 6). To retain the on-screen image, trace the text with the Trace tool.

figure 6

ITC Motter Corpus MM
On-screen view of text
ITCMotter Corpus MM
Text converted to paths

color appear in the color well in the Tools panel. Then change the color. (see Figure 5) Another method is to select the text/object and choose Edit>Select>Subselect until you can make the change. The best way is to use a custom keyboard shortcut for Subselect (I use Command+Option+X or Control+Alt+X) to quickly burrow down to the nitty gritty.

19. Use Master Pages for layout approval.

If you have to create the look for a Web page or brochure and you're down to color choices, make a Master Page of all the elements that could have their colors change. Then set up a page with elements that won't change. Make duplicates of the Master Page, and edit them for color. With the common element page open, apply one or another of the Master Pages to it and see the effects immediately. Yes, you could simply duplicate the pages, make color changes, and then click between pages, but using Master Pages means you can make global changes somewhere down the line.

20. Import tables directly from Excel.

Just save the Excel file as a Tab Delimited file and it will import fine. Each cell's information will be intact. No, it will not "function." Any formulas or cell references will be inactive, but the resulting data is there.

21. Use custom views.

If it's common for you to create a similar layout for many jobs – such as product labels – create a template that contains custom views. Zoom in on the product name area and save a custom view (View>Custom>New), then go to the directions or application area and do the same. Make a view for every instance that you usually need; then save the document as a template (or Master Page). Then you can choose the working view you need from the View menu in the

figure 5

Toolbar, or from the



Power do a lot of things.

You can create a clone of an object, rotate it, scale it, skew it, and move it. Then choose Edit>Duplicate as many times as you want to keep the process going. It's an easy way to create a path of objects getting smaller or larger on a spiral (see Figure 7).

Magnification menu at the bottom left corner of the application window.

23. Instead of Copy and Paste, use Clone.

Artists coming from the "other side" will spend a long time trying to find "paste in front/back." In FreeHand, clone the object and it's automatically copied and pasted directly in front of the original object and remains selected.

24. Use the Option/Alt key for copies.

Select a text block on an object. While the mouse is down, depress the Option/Alt key and drag the mouse. A clone of the object will be moved.

25. Power duplicate.

Most people don't take advantage of the power duplication feature in FreeHand. Select an object, and either clone it and move it, or use the previous tip to Option/Alt+drag to move the clone to a new location. Then choose Edit>Duplicate to move a new clone exactly as the previous object was moved. That includes horizontally and vertically, so you can place objects on an angled line if you want.

27. Time heavy extrusions just before lunch.

If you have an object that contains a lot of smaller objects or compound paths (read:

figure 7



text) and you apply an extrusion to it, time will be a minor factor. But it becomes a monstrous factor if you apply a bevel to the extrusion. Increase shading or bevel steps above the default of 5, and you have an even more time consuming process. Moving such an object a pixel or two can cause a wait-time of several minutes or even more than an hour. When it happens, Force Quit FreeHand and start again with a less vigorous extrusion.

28. You've heard it before: Vote Early and Vote Often.

Oops, wrong saying. What I meant was SAVE early and often. Especially before doing a memory-intensive task such as extrusions, tracing, switching to other documents or applications, and even printing. You'll breathe a lot easier knowing that you won't have to start from scratch if the computer hangs.

29. Option/Alt+drag guides.

Instead of traveling back and forth to the top and left of the screen to create

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multiple guidelines, power-drag them. Save time and exercise by creating one guideline for horizontal or vertical, then press and hold the Option/Alt key as you drag multiple guides from the original.

30. Place Guidelines accurately.

We often overlook the precision FreeHand offers us. If you open a new document and go to Guides>Edit menu, you can select the Add button. That opens a new dialog box where you can choose from horizontal or vertical guides, and then enter numbers that put guides exactly where you want them – you don't have to try to make the guides snap to the rulers! In fact, you can create a grid very quickly by using "Add

by" count or increment. Note that the guideline grid you create will not act the same as a true Grid, also found in the View menu. You won't have the same snap-to attribute, and the guides are moveable – unless you lock them (View>Guides>Lock or lock the Guides layer in the Layers panel).

32. Create vector shadows with Contour Gradient Fills.

Start as in #31, and make the outer shadow shape. Then apply a Contour Gradient Fill, using the appropriate shadow and background colors. Adjust the contour ramp until the shadow looks right.

33. Can't open an EPS file?

FreeHand doesn't have a PostScript interpreter. Therefore, you can't work "inside" an EPS file. If you've exported a document as an EPS and checked the "Include FreeHand Document" box, then you will be able to work with the file. If not, you must open the file in Adobe Illustrator. At that point you may be tempted to just do the job there, but fight those urges! Be Strong! Persevere! Export the document from Illustrator as an Illustrator 8 or 9 file. Then open that document in FreeHand.

34. Consistent color.

Pick just about any color from the Pantone Swatch list, and drag it to the Mixer panel. Note the CMYK color breakdown. Now go to Adobe Photoshop or Illustrator and select the same Pantone color and note its CMYK values. Who do you trust? It's a tough question. I rely on printed sample books from Pantone because I'm looking at actual printed examples of CMYK on paper. Trust the numbers. If I'm matching colors in a Photoshop image, I use Photoshop's eyedropper tool to get the color breakdown, and create a custom color in FreeHand using those values. Or I create my color in FreeHand and use those values in the Photoshop document – it works both ways. The Pantone books are not cheap, but it's a pretty inexpensive investment compared to reprinting an entire print job!

35. Create quickie Web page navigation with the Action tool.

The Action tool is so easy to use it should be illegal! Choose the Action tool,

and click the "button" on the current page. Then click on the page you want the button to link to. Continue through the entire layout. Finished results can be seen in Figure 9. It takes seconds, and there's no code to write! Choose File>Publish as HTML, and sit back. The screen redraws and partially redraws for a few seconds and becomes still again. Go to the folder you've created (pay attention to the location as you're publishing), and double-click the first page. It will open in your selected browser. Click the buttons and amaze your boss! Keep all the files in the folder intact, and don't be tempted to rename them. FreeHand has a very specific way of creating the HTML files and doesn't play nice – if at all – when you tinker with them.

36. PDF exports are a pain!

Speaking from a Mac standpoint, don't use the obvious Export as PDF routine. You'll have one problem or another sooner or later. Just give up and accept the most common approach. Choose Print, then change your printer selection to Adobe PDF and choose Output Options. Put a check mark in the Save As File box, and then choose PostScript from the Format drop-down menu. Please try to ignore the PDF choice, and the large "Save As PDF" button at the bottom. Now, choose FreeHand MX from the main drop-down menu and make sure that everything is in order here – whether you want separations or a composite print, printers' marks, colors, page size, and so on. Then click Save. A PostScript file will be created. When it's done, you must run the file through Adobe Acrobat Distiller, and there you can select the degree of quality for the file. Note that you must have the "full" version of Adobe Acrobat to have access to Distiller – but it's more than worth the investment cost.

37. Use a digital tablet.

If you're a more traditional artist, you will fall in love with a digital tablet. Some have more features than others, and costs vary from \$50 to over \$2,000, but they're priceless. Look for a review in an upcoming issue of MXDJ.

38. Change the end points of the Connector tool arrows.

The Connector tool is great for organization charts and flow charts, but by



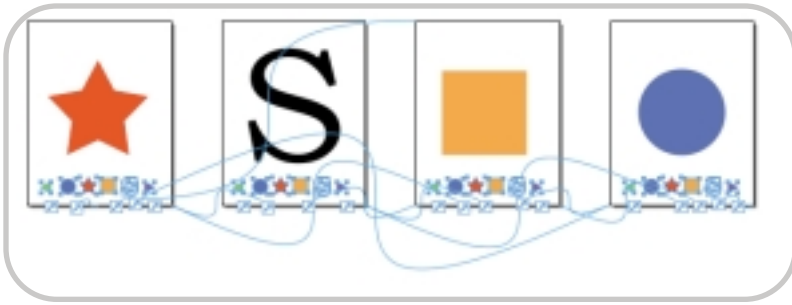
Create vector shadows with blends.

To bypass the possible problems you may incur with Raster Effects, create drop shadows the old fashioned way (see Figure 8). One way is to clone the object that you want to have a shadow, and use Modify>Combine>Union or Join if necessary to create a single object. Then distort that object with an Envelope or the 3D Rotation tool so that the object is the shape of the outer edge of the shadow. Fill that with the background color (subselect if necessary to do so), and clone the object. Reshape/resize the form directly beneath the original object, and give it the darkest color the shadow should have. This could be a gray, or a combination of the background color it complements. Then blend the two shadow objects. It takes very little time, and you don't have to worry about resolution or RGB/CMYK conversion issues.

figure 8



figure 9



default the arrows always go from the center of the object's bounding box. Working with rectangles or ellipses doesn't present a problem, but other shapes (stars, triangles and so on) are inconvenient. To trick the viewer, create a small decoy – say a pixel or two square – without a fill or stroke. Zoom in and place the decoy above the target image, where you want the arrowhead to point, or the connecting path to begin. Then use the Connector point to create the path to the decoy. If the path wants to select the target, hide it (View>Hide Object) until you've made the Connector-connection.

39. Apply bitmaps on the Perspective Grid.

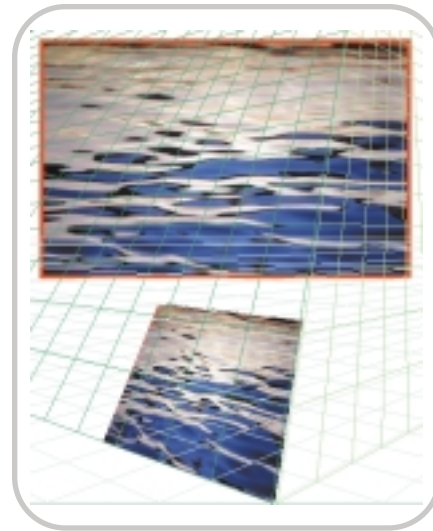
Can't do it, right? Instead, in FreeHand

import the image you want to have in perspective, and draw an outline of the image (shown in red in Figure 10). Apply the outline to the Perspective grid, then copy that path (Edit>Special>Copy Special) and choose EPS for Photoshop 4/5 from the menu. Then open a copy of the image in Photoshop and Paste the outline as pixels (on a new layer). Select the image layer and choose Edit>Transform>Distort. Using just the corner points, adjust the image to fit the FreeHand path. Hide or delete the FreeHand path, then save the image with a clipping path, import it into FreeHand, and place it on the grid.

40. Distort bitmaps with the 3D Rotation tool.

Can't do it, right? Heard that before?

figure 10



You can proceed as described above, or you can use the Trace tool to create a vector drawing of the bitmap. Be mindful that the more accurate the tracing is, the more points and objects it has created. You can make a tracing that is larger and more complicated than the original bitmap. But if you can use a minimum number of colors, just trace the bitmap and distort away with the 3D Rotation tool, Fisheye Lens tool, Envelope tool, and Perspective grid. ∞

Forty Tips and Tricks: There are dozens and dozens of time-saving things you can do in FreeHand. If you want more, let us know. For the time being, run through the FreeHand help files and you'll be surprised at how many things the program can do that you didn't even know about.

		<p>Learn FreeHand MX Create graphics for print and the Web. Work at your own pace with interactive course. This introductory price won't last long - order now. www.brainstormer.org</p>			

Price will increase 1/1/2005. FreeHand MX® is a registered trademark of Macromedia. ©2004 Nidus Corp.





Don't Squander Your Inheritance

Just get the job done – right

by kerry thompson

“Hi, my name is Kerry,
and I'm a programmer.”

I looked around the room as people murmured “Hello, Kerry.” Most of them were what you would expect – some shaggy long hairs, a couple of women with buzz cuts, a pony tail here and there, some middle-aged guys with even less hair than I have. A lot of the people were generic American white, but there was a Chinese couple, a clean-cut man with a yarmulke, a couple of guys who looked Indian, and one lone, sad-looking black woman. Most of them tended toward middle age, probably because most of the youngsters are still out there chasing the next bug-fix high, or on deadline binges.



I took a deep breath and continued. "I've done it all, pretty much. FORTRAN, COBOL, Turbo Pascal, Assembler, RPG, Lingo, JavaScript, XSLT, Lingo, ActionScript, HTML..." People were nodding, thinking of their own lost years. "Basic..." I could see a couple of people purse their lips and shake their heads, but I pushed ahead. I wanted to come clean. "...and, in a lot of programs, I use inheritance."

There was a stunned silence. Apparently, some things were too much, even for the hard-core programmers here tonight. After a moment, the moderator said, "Emm, yes, inheritance." I could hear the Dublin accent in his voice. "Right, then." He collected himself. "What drove you to that?"

I shrugged my shoulders. "I told myself it was productivity. In truth, I think I had been doing Lingo so long, I just didn't get the rush any more. So I had to do more programs. To do more programs, I had to do OOP and, inevitably, inheritance."

One of the Indian guys spoke up. "Didn't your boss say anything?"

"I'm a freelancer. My clients never knew. They just saw me whipping out the programs in record time. They loved it, and never asked. They became enablers, sending me more and more work." I paused. "And now I'm here."

The Backslider

After the meeting, as we were standing around drinking caffeine-free cola, one of the pony tails drifted over, looking a bit nervous. "So, this inheritance stuff." He glanced over his shoulder and lowered his voice. "It really works like they say?"

"Pretty much," I said. "I thought it would be hard, but once I started, well, it was like a curtain parted and the secrets of the universe were revealed." A bit of hyperbole, maybe, but it's hard to put a programming high into words.

Pony Tail looked over his shoulder again, and I could see a group of people watching us. He leaned closer to me and whispered, "I've got a laptop in the car." He nodded at the group. "Maybe you could show us some of this inheritance stuff." I must have looked dubious, because he quickly added, "You know, just so we'd know what it's like." I knew I shouldn't, but I nodded. Okay.

Pony Tail looked at the group, larger now, jerked his head at the door, and started walking out. I followed, and, by ones and twos, people from inside drifted out onto the side-

walk. Pony Tail disappeared into his car for a moment, and then emerged with a Dell laptop. "Pentium," he said proudly as he cracked it open and the glow from the LCD lit the faces around us. "Two-point-eight, a gig of RAM, 80 gigs..."

"Hey, put that away!" We all looked at the shaggy, bearish man who had spoken. He glanced at the door to the room we had all come from. The moderator was in earnest conversation with one of the buzz-cut women. As far as I could tell, the room was empty except for them. It wouldn't be long before the moderator noticed the gaggle on the sidewalk. "My place is just across the street," The Bear said urgently. "Dual processor G-5, Cinema display, XP 2004."

The Bear's Den

It took five minutes, but soon everybody was crowded around the Bear's computer. Jolt Colas came out, and I could smell coffee brewing as I fired up Director.

"Programming by difference," I said, somewhat self-importantly, but they were listening. I stuck a CD in the drive. "Not my phrase. Irv Kalb taught me that." A murmur went through the room. Everybody had heard of the legendary Irv Kalb, but no one here except me had actually met him. "That was Irv's thinking when he used ancestors. With a group of related objects, he'd build one base class with all the common stuff, and build separate objects that have the differences."

"You actually know Irv?" the Chinese man asked.

"Yeah, sure. Look, here's a sprite manager he wrote. I use it all the time." I opened a movie on the CD I had put in, double-clicked a cast member, and the code appeared on the screen (see Listing 1).

I heard a couple of soft whistles. "Elegant," somebody said. "I could use that in my programs." A pause, then the inevitable. "All of my programs!" A murmur of assent went around the room as people realized the implications of what I was showing them.

"Hold on," I said. "We're getting ahead of ourselves. You have to use this stuff right, or you can get in real trouble. Look – see that icon? That means it's a parent script. Ya gotta do that."

"Why?" somebody asked. "What happens if you don't?"

"No telling," I shot back. "I know a guy who spent three days trying to debug some code. It turned out the code was okay, but he

had it in a movie script. Try to instantiate an object from a movie script, boom! There goes your schedule, your deadline, your bonus." People were nodding. They had all been there, one way or another.

"Okay, basics," I said. "I do a lot of educational stuff, so here's one way I use inheritance. Say I want to teach Spanish, or maybe math, or reading. I'm going to have a lot of activities – fill in the blank, drag-and-drop, stuff like that.

"They're all different activities, but they all have a lot in common. I make them frame scripts, so they all have to handle setFrame, and maybe beginSprite and endSprite." I started typing. "Here's the frame script for the first activity."

```
property ancestor
```

```
on new me  
    ancestor = script ("Activity  
parent").new()
```

"All you have to do is declare an ancestor property, then assign a script to it. That makes the 'Activity parent' script part of your object. I'll create that in a second, but first I'll name this one 'Activity Script 1.'" I named it, used the property inspector to make it a parent script, and saved the movie (I do that a lot).

"Here's the ancestor. It's pretty simple." I clicked the '+' on the script window to create a new parent script, named it 'Activity parent', and typed in a short handler.

```
on exitFrame  
    go the frame  
end
```

"That's the activity parent, the one you declared in the activity script. I'll name it 'Activity parent', since that's what the activity script is expecting to use as an ancestor.

"Now watch this." I copied and pasted the "Activity Script 1" cast member, and renamed the copy to "Activity Script 2". "Now you have a start on two activities. They both use the ancestor 'Activity Parent'."

"So, you've made two objects," somebody said from the back of the group. You've saved, what, three lines of typing? What's the big deal?"

"Fair enough," I said. "Only three lines. But what if you have fifteen activities? You would save nearly fifty lines of typing. Plus, you can do this." I opened the "Activity Parent" script and changed it to this:

```

on exitFrame
  go the frame
end

on beginSprite
  -- do your initialization here
end

on endSprite
  -- do your cleanup here
end

```

"Imagine what it would be like if your beginSprite and endSprite routines were 10 or 15 lines long. You would save a few hundred lines of typing. For me, that's a few hundred lines of potential typos. Plus, you'd have everything in one place for any changes.

"I know what's coming next, too. What if your activities have their own initialization and cleanup routines, and there are differences from activity to activity?

"I go back to what Irv said – 'program for differences.' Let's change the activity parent." I hit the keyboard again, and a few seconds later had Listing 2 in "Activity Script 1".

"See, you can override the ancestor's methods. You can even override the method, and still call the ancestor's code. That way you can do activity-specific stuff in the activity code, and use the ancestor's code for things that are common to all the activities.

"Here's another example. You want your activities to handle and filter keystrokes. At the same time, you want to have standard keystrokes, stuff that doesn't change from activity to activity. Navigation, for example. Let's say you're going to use a keystroke to cycle through the activities – maybe F1."

"That's reserved. Brings up help."

"Oh, yeah. Okay, how about Ctrl-F1? Director doesn't use that, does it?" Shrugs and blank looks. Nobody knows all the Director shortcuts. "We'll try it.

"While we're at it, we need a couple of activities that use different keystrokes. Let's make Activity 1 a simple text editor, and in Activity 2 we'll move a ball around the screen with arrow keys. Simple stuff, but it's good enough to give you the idea. And anyway, we don't want to be here all night, do we?" I grinned. I knew most of them would happily spend all night programming. We'd gripe about it, but mostly for effect (and to try to get a raise).

"So, we need to change the Activity parents." I brought up the code for activity 1 and made a few quick changes.

Advertiser	URL	Phone	Page
ActivePDF	www.activePDF.com		21
CF_Underground VI	www.cfconf.org/cf_underground6/	301-424-3903	C3
CFDynamics	www.cfdynamics.com	866-233-9626	6
HostMySite.com	www.hostmysite.com/mxdj	877-248-4678	27
Interakt	www.interaktonline.com		9
Intermedia.net	www.intermedia.net	800-379-7729	31
ISSJ	www.ISSJournal.com	888-303-5282	41
IT Solutions Guide	www.sys-con.com	201-802-3021	45
Macromedia	www.macromedia.com/go/volvo		C2 & 3
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```

property pKeyHandler
property ancestor

```

```

on new me
  ancestor = script ("Activity parent").new()
  pKeyHandler = script("Activity 1 Key Handler").new(me)
end

```

Similar changes went into the Activity 2 code. Then I clicked the "+" sign again to create a new script, and named it "Activity 1 Key Handler". This one took me a little longer, but within a couple of minutes, with some help from the group, I had the code in Listing 3.

I made a copy of the script and called it "Activity 2 Key Handler". I went in and changed it to look for arrow keys:

```

on mDoKey me, keyID
  case keyID of
    28, 29, 30, 31: -- arrow keys
      pOwnerActivity.mActOnKey(keyID)
    otherwise -- send the keyDown to my ancestor.
      ancestor.mDoKey(keyID)
  end case
end

```

"So, now we need to handle the keys in the activities. I'll just add Listing 4 to 'Activity Script 1'; and Listing 5 to 'Activity Script 2'.

"You guys all know how to make a text sprite and put it on screen, don't you?" Nods all around. "And a ball to move around? I'll leave the initialization of those up to you.

That's the activity-specific keys. Now we just need to create a key handler parent to handle Ctrl-F1. That's a little more complicated, but I have one on this CD here." I rummaged about in my collection of scripts and found the one I was looking for. With a few changes, we soon had a new script called "Key Handler Parent" (see Listing 6).

"And here's a bonus – the ancestor with the function keys defined, the 'Key Definitions' ancestor used in the key handler parent." (See Listing 7.)

I swiveled around in the Bear's Aeron chair. "That's about it. Any questions?"

There was a silence for a moment, then, from the back of the group, "Can we have a copy," in our moderator's unmistakable Dublin accent. Looking sheepish, the Bear handed me a spindle of CD-ROMs. I handed a printout to the group and got to work on burning 20 CDs. ☺

Kerry Thompson is a Boston-area freelance developer specializing in multimedia and multi-lingual projects. He has been programming since 1981, working in languages such as Basic, FORTRAN, COBOL, 6502 and 8088 Assembler, C/C++, JavaScript, XSLT, and HTML. He first came to the Macromedia world in the early '90s with Director 4 and, a few years later, Flash. He devotes much of his spare time to music, playing French Horn in several Boston area groups, including holding the principal spot in the Boston Civic Orchestra.
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```
-- Sprite Manager by Irv Kalb
-- Copyright Furry Pants Productions
-- Used with permission of Irv Kalb, OOP expert
-- extraordinaire and author of LOOPE
-- (Lingo Object Oriented Programming Environment)
-- Visit him at www.furypants.com

property plAllocation -- property which is a list of allocations
property pchLow -- channel of the first sprite to manage
property pchHigh -- channel of the last sprite to manage

on new me, chLow, chHigh
    pchLow = chLow
    pchHigh = chHigh
    me.mInit()
    return me
end

on mInit me
    plAllocation = []
    repeat with ch = pchLow to pchHigh
        -- initialize all to FALSE (unallocated)
        addProp(plAllocation, ch, FALSE)
    end repeat
end

on mAllocateChannel me
    -- find the first empty channel
    repeat with ch = pchLow to pchHigh
        fAllocated = getAProp(plAllocation, ch)
        if not(fAllocated) then -- found one
            setProp(plAllocation, ch, TRUE) -- now mark it as allocated
            return ch -- and return it to the user
        end if
    end repeat
    alert("Attempting to allocate a channel, but there are none
left")
end

on mDeallocateChannel me, chToDeallocate
    if (chToDeallocate < pchLow) or (chToDeallocate > pchHigh) then
        alert("Trying to deallocate" && chToDeallocate && "but it is
not being managed.")
        return
    end if
    fAllocated = getProp(plAllocation, chToDeallocate)
    if not(fAllocated) then
        alert("Trying to deallocate" && chToDeallocate && "but it has
not been allocated")
        return
    end if
    -- set the allocation back to false
    setProp(plAllocation, chToDeallocate, FALSE)
end

on mDebug me
    put "Channel Allocation:"
    repeat with ch = pchLow to pchHigh
        fAllocated = getProp(plAllocation, ch)
        if fAllocated then
            put ch && ": Allocated"
        else
            put ch && ": Not allocated"
        end if
    end repeat
end

on mCleanup me
```

```
    plAllocation = []
end

property ancestor

on new me
    ancestor = script ("Activity parent").new()
end

on beginSprite
    -- do your activity-specific initialization here
    -- and call the same routine in the ancestor
    call ancestor.beginSprite()
end

on endSprite
    -- do your activity-specific cleanup here
    -- and call the same routine in the ancestor
    call ancestor.endSprite()
end

-- Activity 1 Key Handler
..*****
--* This object handles keystrokes for activity 1.
--* Any keys not specifically handled by the activity are
--* sent to the ancestor object.
..*****

property ancestor
property pOwnerActivity

on new me, ownerActivity
    ancestor = script ("Key Handler Parent").new(ownerActivity, me)
    pOwnerActivity = ownerActivity
    return me
end

--* mDoKey gets the keystroke from the ancestor code
--* and processes keys specific to the activity. If
--* the key isn't used by the activity, the keystroke
--* is passed back to the ancestor for handling.
on mDoKey me, keyID
    -- If the key is a backspace, valid English letter, numeral,
    -- or punctuation mark, act on it
    if ((keyID > 31) and (keyID < 127)) or (keyID = 8) then
        pOwnerActivity.mActOnKey(keyID)
    else -- send the keyDown to my ancestor.
        ancestor.mDoKey(keyID)
    end if
end
```

```
property pTextMember

on mActOnKey me, whatKey
    if (whatKey = 8) and pTextMember.text.length > 0 then
        delete pTextMember.char[pTextMember.text.length]
    else
        if pTextMember.text.length = 0 then
            put numToChar(whatKey) into pTextMember.char[1]
        else
            put numToChar(whatKey) after
pTextMember.char[pTextMember.text.length]
        end if
    end if
end
```

```

property pBallSprite

on mActOnKey me, whatKey, cntlDown, cmdDown, optDown
  case whatKey of
    28: -- left arrow
      if pBallSprite.locH > 16 then
        pBallSprite.locH = pBallSprite.locH - 2
      end if
    29: -- right arrow
      if pBallSprite.locH < 622 then
        pBallSprite.locH = pBallSprite.locH + 2
      end if
    30: -- up arrow
      if pBallSprite.locV > 18 then
        pBallSprite.locV = pBallSprite.locV - 2
      end if
    31: -- down arrow
      if pBallSprite.locV < 462 then
        pBallSprite.locV = pBallSprite.locV + 2
      end if
  end case
end

```

```

-- Key Handler Parent
-- *****
-- * This handles keystroke response that span activities.
-- *
-- * Its descendant will be an activity key handler that handles
-- * activity-specific keystrokes
-- *
-- * This is a parent script that will be instantiated by the key
-- * handler for each activity. It will check the keystroke and
-- * hand it off to its descendant. When the descendant has
-- * had a chance to process the key, it will then pass it
-- * back to me.
-- *****
property pKey
property pKeyCode
property ancestor
property pCntlDown
property pCmdDown
property pOptDown
property pOwnerActivity
property pMasterObject
property pDescendant

on new me, ownerActivity, descendant, masterObject
  -- this ancestor contains key code definitions
  ancestor = script ("Key Definitions").new(me)
  pOwnerActivity = ownerActivity
  pMasterObject = masterObject
  pDescendant = descendant
  return me
end

-- *****
-- process the key down event
-- *****
on keyDown me
  pKey = chartonum(the key)
  -- check for control keys, function keys, etc.
  keyID = mDefineKey(me)
  -- pass it to the descendant first
  if objectP (pDescendant) then
    pDescendant.mDoKey (keyID, pCntlDown, pCmdDown, pOptDown)
  else
    mDoKey

```

```

end if
end

-- *****
-- Do additional key definition here
-- This could be used to handle control, command,
-- or option/Alt key combinations
-- *****
on mDefineKey me
  -- initialize properties in case the modifier keys are released
  -- before the key can be processed
  pCntlDown = the controlDown
  -- check for function keys
  -- function keys have key codes between 96 (f5) and 122 (f1)
  if (pKeyCode > 96) and (pKeyCode < 123) then
    pKeyCode = pKeyCode + 256
    return pKeyCode
  else
    return pKey
  end if
end

-- *****
-- Here is where the parent handles the universal
-- keystrokes. In this example, for simplicity, it
-- only handles f1. In practice,
-- it could call special events for each key that it handles
-- *****
on mDoKey me, keyID
  if keyID = ancestor.pF1 then
    -- a movie-level handler that switches activities
    mSwitchActivities()
  end if
end

```

```

property pF1
property pF2
property pF3
property pF4
property pF5
property pF6
property pF7
property pF8
property pF9
property pF10
property pF11
property pHomeKey
property pEndKey

on new me
  pF1 = 122 + 256
  pF2 = 120 + 256
  pF3 = 99 + 256
  pF4 = 118 + 256
  pF5 = 96 + 256
  pF6 = 97 + 256
  pF7 = 98 + 256
  pF8 = 100 + 256
  pF9 = 101 + 256
  pF10 = 109 + 256
  pF11 = 103 + 256
  pHomeKey = 115 + 256
  pEndKey = 119 + 256
  return me
end

```




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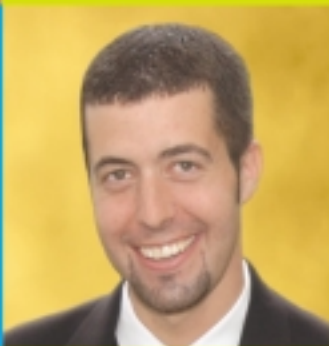
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