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- **Develop apps that run seamlessly online and offline**

Richard Wagner

Inventor and chief architect of the JavaScript tool NetObjects ScriptBuilder



***Adobe*® *AIR*™**
FOR
DUMMIES®

by Richard Wagner



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Contents at a Glance

.....

<i>Introduction</i>	1
<i>Part I: Airing It Out with Adobe AIR</i>	5
Chapter 1: Getting Started with Adobe AIR	7
Chapter 2: Building and Deploying Your First AIR Application with HTML and JavaScript	21
Chapter 3: The Air Feels Different: Building with Flex Builder and Flash	39
Chapter 4: Exploring the Adobe AIR API.....	55
<i>Part II: AIR Application Design</i>	75
Chapter 5: Using HTML and CSS as Building Blocks	77
Chapter 6: Anyone Listening? Working with Events	93
Chapter 7: Windows: Creating Native Application Shells.....	101
Chapter 8: Working with Menus and Tray and Dock Icons	129
<i>Part III: Programming the Adobe AIR API</i>	161
Chapter 9: Don't Be a Drag: Interacting with the Clipboard and Drag-and-Drop	163
Chapter 10: A New Developer Freedom: Working with the Local File System.....	193
Chapter 11: From AIRhead to Datahead: Working with Databases	227
Chapter 12: Surfing the AIRwaves: Net Connectivity	257
Chapter 13: Working with Audio.....	275
Chapter 14: Quick and Easy: Instant Downloading and Auto-Updating.....	285
<i>Part IV: The Part of Tens</i>	301
Chapter 15: Ten Tips for Successful AIR Debugging	303
Chapter 16: Ten Killer RIAs to Explore	315
<i>Index</i>	327

Table of Contents

<i>Introduction</i>	1
About This Book	1
Foolish Assumptions	2
Conventions Used in This Book	2
What You Don't Have to Read	2
How This Book Is Organized	3
Part I: Airing It Out with Adobe AIR	3
Part II: AIR Application Design	3
Part III: Programming the Adobe AIR API	3
Part IV: The Part of Tens	3
Icons Used in This Book	4
Where to Go from Here	4

Part I: Airing It Out with Adobe AIR..... **5**

Chapter 1: Getting Started with Adobe AIR **7**

Discovering Adobe AIR	8
Creating Internet-savvy apps	8
Peeking inside Adobe AIR runtime	9
Blurring the lines between HTML and Flash	11
Understanding the AIR Security Model	11
Playing in sandboxes	12
Additional restrictions within the application sandbox	12
Digitally Signing an Application	14
Setting Up Your AIR Development Environment	16
Installing the Adobe AIR runtime	16
Installing the Adobe AIR SDK	17
Prepping Dreamweaver and Flash for AIR	19

Chapter 2: Building and Deploying Your First AIR Application with HTML and JavaScript..... **21**

Overviewing Jot	22
Preparing the Application Folder	22
Creating the HTML-Based UI	23
Adding Styles	25
Adding the JavaScript Code	27
Creating the Application Descriptor File	32



Testing Your Application Using ADT 35
Creating a Self-Signed Certificate..... 36
Generating an AIR Installer File to Deploy Your Application..... 37

Chapter 3: The Air Feels Different: Building with Flex Builder and Flash 39

Developing an AIR Application with Flex Builder 3.0 39
 Creating the project 40
 Adding MXML and ActionScript source code 42
 Configuring the application descriptor file 45
 Testing the app 46
 Preparing the app for deployment 47
Creating an AIR Application with Flash CS4 49
 Designing the user interface 49
 Adding ActionScript code..... 51
 Configuring and compiling the AIR application 53

Chapter 4: Exploring the Adobe AIR API 55

Exploring the Relationship between AIR and JavaScript Environments 55
Calling the AIR API..... 57
 Calling from JavaScript 57
 Calling from ActionScript..... 58
Touring the Adobe AIR API 58
 Native OS windows 58
 Local files 60
 Menus 61
 Inter-application data exchange 64
 Multimedia..... 65
 Keyboard and mouse 66
 Database..... 68
 Communication..... 70

Part II: AIR Application Design 75

Chapter 5: Using HTML and CSS as Building Blocks 77

Working with HTMLLoader 77
 Accessing and sizing the HTMLLoader 78
 Loading HTML content 78
 Setting the transparency of a window 79
 Launching a URL in the default system browser 79
 History, HTML history that is, can teach you something..... 80
Taking Advantage of WebKit Extensions..... 81
 Creating rounded rectangles..... 82
 Making links into push buttons..... 83
 Setting alpha values..... 84

Handling Menu Events	142
Responding to menu selections	142
Updating menus before they display	143
Enabling Your App for the Windows System Tray and Mac OS X Dock.....	145
Enabling your app for the Windows system tray	145
Enabling your app for the Mac OS X dock.....	146
Putting It All Together with MenuAIR	146
MenuAIR: The HTML Edition.....	147
MenuAIR: The Flex Edition	152

Part III: Programming the Adobe AIR API..... 161

Chapter 9: Don't Be a Drag: Interacting with the Clipboard and Drag-and-Drop 163

Working with the Clipboard	163
Adding basic cut, copy and paste functionality.....	164
Using an alternate Clipboard method in HTML environments	166
Copying and pasting images using ActionScript	167
Don't Be a Drag: Adding Drag-and-Drop	169
Adding drag-and-drop in Flex and Flash	170
Adding drag-and-drop functionality in HTML apps.....	181

Chapter 10: A New Developer Freedom: Working with the Local File System 193

Identifying the File Classes.....	193
Working with Files and Directories	194
Working with paths	194
Pointing to a directory	196
Pointing to a file	198
Allowing Users to Browse For a Directory and Files	199
Displaying a Choose Directory dialog box	199
Displaying a File Open and File Save dialog box.....	200
Displaying a Select Multiple Files dialog box	203
Performing Directory and File Operations	206
Creating a directory	206
Creating a temporary directory or file	207
Copying and moving directories and files	207
Deleting and moving to trash	209
Reading and Writing to Files	210
Read from a file	210
Write to a file	211

AIRWrite: Creating a Simple Text Editor	212
HTML version	212
Flex version	220
Chapter 11: From AIRhead to Datahead: Working with Databases	227
Working with Local Databases	227
Introducing the Basics of SQL	228
Handpicking records with SELECT	229
Adding conditions with WHERE	230
Sorting with ORDER BY	231
Adding records with INSERT INTO	232
Modifying records with UPDATE	232
Getting rid of records with DELETE	233
Creating a table with CREATE TABLE	233
Opening a Database Connection	235
Performing Database Operations with SQLStatement	237
Creating a Database Table	238
Inserting a Record	240
Requesting Data from a Table	251
Chapter 12: Surfing the AIRwaves: Net Connectivity	257
Detecting Network Connectivity	257
Monitoring Remote Network Services	258
Enabling HTML apps for service monitoring	259
Monitoring connectivity to a Web site	259
Monitoring socket connections	261
Making an XML Socket Connection	262
Creating a basic socket server	262
Adding a socket connection	265
Creating a “Server Push” Socket Connection	268
Chapter 13: Working with Audio	275
Working with Sounds	275
Playing a sound file	276
Pausing and resuming playback	279
Adding sound effects	281
Mike Me Up: Working with the Microphone	283
Chapter 14: Quick and Easy: Instant Downloading and Auto-Updating	285
Seamlessly Installing an AIR App with badge.swf	286
Auto-Updating Your AIR Application	289
Adding the AIR update framework	290
Creating the updater descriptor file	291
Adding the updater to your source code	292

Part IV: The Part of Tens	301
Chapter 15: Ten Tips for Successful AIR Debugging	303
Use ADL (AIR Debug Launcher) as the Starting Point	304
Make Aptana Studio Your Home Base for HTML-Based Apps	304
Quick and Easy Debugging: Use the alert Command	306
Better Yet: Use the trace() Method Instead of alert()	307
Create Your Own Debug Window	308
Outputting to a Log File with AIRLogger	309
Debug HTML-Based Apps with the AIR HTML Introspector	310
Debug with Flex Builder	312
Test on Multiple Platforms	312
View Source Code	312
Chapter 16: Ten Killer RIAs to Explore	315
Pure Usefulness: Google Analytics Reporting Suite	316
Pure Power: eBay Desktop	317
Innovative Use of Media: AOL Music — Top 100 Videos	318
Web App Upgrades: twirl and Snitter	319
Business Use: AgileAgenda	320
For the Niche Crowd: RichFLV	321
The Cool Factor: Snackr	322
For the Geek Crowd: Snippely	323
Groundbreaking Look and Feel: uvLayer	324
Index	327

Introduction

Although Adobe AIR is a still new product release, it's already proving to be one of those technologies that is changing the rules of the game. Until AIR was introduced, the runtime environments of the desktop and Web were cleanly divided and clearly distinct from each other. Sure, you had Web-enabled desktop apps and technologies, such as Google Gears, that allowed Web apps some local capabilities. But by and large, the desktop was a stuffy world inhabited by the C++ and Objective-C programmers.

Enter Adobe AIR. It has become a breath of fresh air to Web developers. For the first time, developers can now use Web technologies — such as HTML, JavaScript, Flash, or Flex — to create rich Internet applications (RIAs) that run on desktops and across multiple operating systems. These apps need not be mere “widgets” or “applets” but can be full-fledged, professional, and perhaps even “air-cooled” applications.

About This Book

Adobe AIR For Dummies serves as your friendly, no-nonsense guide to designing and developing Adobe AIR applications. Throughout the book, I focus on covering the essentials you need to successfully deploy your own AIR applications. Using this book, you can

- ✔ Get a solid understanding of the Adobe AIR API
- ✔ Build AIR apps in three different ways: HTML/Ajax, Flex, and Flash
- ✔ Design apps using HTML and CSS
- ✔ Work with local file systems and databases
- ✔ Make sense of application sandboxing and security

You can create Adobe AIR apps using standard Web technologies (HTML, CSS, JavaScript, and Ajax), Flex, or Flash. It would take a book three times as thick as this one to fully cover AIR development equally across these technologies. Consequently, although I give some coverage to Flex and Flash, the book focuses primarily on HTML, CSS, JavaScript, and Ajax. However, because the AIR runtime environment is independent of technologies used to develop the app, Flex and Flash developers can also be able to follow along to better their understanding of AIR. You can find source code for many of this book's examples at www.dummies.com/go/adobeairfd.

Foolish Assumptions

In *Adobe AIR For Dummies*, I don't expect you to have any previous experience with Adobe AIR, Flex Builder, or Flash. I do, however, assume that you have at least a working knowledge of HTML, CSS, JavaScript, and Ajax. Oh, yeah, I also assume that you understand the word *arroyo*. (Not that I talk about a deep gully, mind you.)

Conventions Used in This Book

Keep in mind the following conventions, or typographical rules, which I use throughout the book:

- ✔ **Text formatting:** I *italicize* new terms that I define. **Bold text** is used to indicate specific commands that you are to perform. Source code and URLs stand out from normal text with a monospaced font.
- ✔ **Markup terminology:** When working with Adobe AIR, you often work with markup style languages, including Hypertext Markup Language (HTML) and Extensible Markup Language (XML). A markup language consists of many *elements* (also called *tags*), each of which has a *start tag*, *end tag*, and *content* in between. For example:

```
<h1>Are you an AIRhead?</h1>
```

The `<h1>` is the start tag, `</h1>` is the end tag, and `Are you an AIRhead?` is the content. The entire piece of code is called the h1 element or tag.

What You Don't Have to Read

Before you begin the book, let me point out a couple of "optional" modules that you can feel free to avoid without missing the information you absolutely need to know:

- ✔ **Text marked with a Technical Stuff icon:** Paragraphs with this icon beside them let you know that this "techie" material provides additional details to round out your understanding. But it is not required reading.
- ✔ **Sidebar:** Once or twice, I stick some info in a shaded sidebar, which gives you some "ancillary info" but isn't critical to your understanding of the chapter.

How This Book Is Organized

This book is carved up neatly and cleanly into four distinct parts, like so:

Part I: Airing It Out with Adobe AIR

You begin soaring with AIR after you read Part I. In this part, discover the essentials of the AIR runtime environment and its Web-based framework. Adobe AIR apps can be created using three different Web technologies — standard HTML and Ajax, Flex, and Flash. In this section, I also show you how you can use each of these to build AIR apps. Even if you're familiar with just one of these technologies, you can still find it helpful to work with the other development environments because each has certain advantages and disadvantages over the other.

Part II: AIR Application Design

In Part II, you begin to get deeper into the design of AIR applications using HTML and JavaScript. You will explore how to create HTML/CSS-based user interfaces and add native operating system windows, menus, and icons.

Part III: Programming the Adobe AIR API

Part III is the heart of the book. It is where you discover all aspects of the AIR API. You explore how to interact with the operating system and the file system. If you're developing a database application, this is where you can find out how to work with both local and remote databases. This part also covers deploying your app.

Part IV: The Part of Tens

Part IV is the traditional close to every *For Dummies* book — The Part of Tens. In this action-packed part, you explore ten strategies for security and sandboxing of your application, followed by ten tips to keep in mind for successful AIR debugging. Finally, I close out the book with a survey of ten killer RIAs.

Icons Used in This Book

For Dummies books aren't content with just plain, ordinary pages with ordinary paragraphs. No, we like to make things more interesting and helpful by providing a few icons to point out material of special interest. These are the following



The Remember icon indicates a paragraph that is particularly significant to your understanding of Adobe AIR development.



The Tip icon points out key development tips and techniques that you want to be sure and take note of.



The Warning icon acts as your early warning system, alerting you to potential pitfalls that you may encounter along the way.



As I mention in the “What You Don't Have to Read” section, the Technical Stuff icon points out technical but not required info.

Where to Go from Here

Although you can read this book from cover to cover like a John Grisham novel, it's structured so that you don't have to. Here's a roadmap that will get you going to exactly where you want to go:

- ✓ To explore Adobe AIR and its components, turn the page over and begin reading Chapters 1.
- ✓ To create your first Adobe AIR application using HTML, skip over to Chapter 2.
- ✓ If you're a Flex or Flash developer, you may want to begin with Chapter 3.
- ✓ To dive head first into AIR app design, head over to Part II.
- ✓ To explore the local file and database storage capabilities of AIR, read Chapters 10 and 11.

Part I

Airing It Out with Adobe AIR

The 5th Wave

By Rich Tennant



"We're here to clean the code."

In this part . . .

perhaps you're a Web developer and the idea of the desktop environment of Adobe AIR seems foreign. Or perhaps you're a desktop programmer but are unfamiliar with Web technologies such as Ajax, Flex, or Flash. If so, then start here. You explore the Adobe AIR environment and the structure of an AIR application. Finally, you roll up your sleeves and develop your first AIR app.

Chapter 1

Getting Started with Adobe AIR

.....

In This Chapter

- ▶ Understanding exactly what Adobe AIR is
 - ▶ Discovering the significance of a new acronym — RIA
 - ▶ Exploring the AIR security and signing model
 - ▶ Setting up your development environment for Adobe AIR
-

Web developers, unite! For all too long, Web developers have been oppressed by the shackles of the browser window, their creativity stifled by cross-browser compatibility issues, their self-image hurt by the scoffs of desktop app programmers who trivialize browser-based solutions. . .

But that was then; this is now. Or, to mimic the voiceover from an overly dramatic movie trailer, *Everything you know about Web development is about to change. Introducing Adobe AIR. . .*

Adobe AIR promises to liberate developers from the snares, toils, and oppression of their browser-based prisons and enable them to create “rich Internet applications” (RIAs) for the desktop. In true *Braveheart* fashion, maybe you will find yourself shouting from your office or cubicle, “You can take my life, but you can never take my Adobe AIR!”

Okay, perhaps I am guilty of being just a wee bit over-the-top as I introduce Adobe AIR, but I hope the melodrama does serve a purpose. It helps show you that AIR really is not just another flavor of the week. AIR really does provide a greater freedom to do things that HTML/Ajax, Flash, and Flex developers can’t do inside the browser.

In this chapter, I introduce you to this “breath of fresh AIR” and get you started working with it. *Viva la RIAs!*

Discovering Adobe AIR

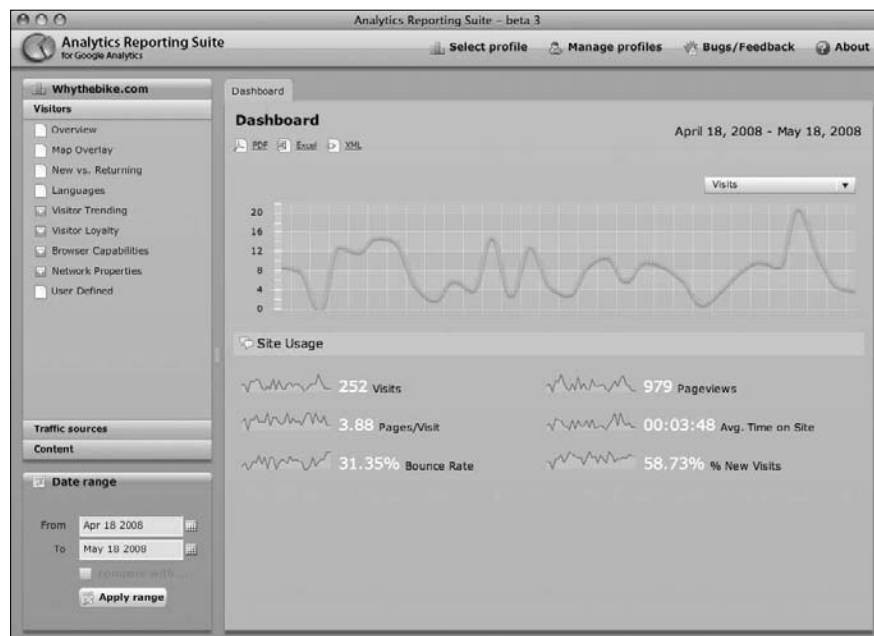
Adobe AIR enables Web developers to create cross-platform desktop applications using and combining familiar Web technologies that they are already skilled in — such as HTML, JavaScript, Ajax, Flash, and Flex.

Even though the technologies used to create it are Web based, an AIR application looks and feels like a normal Windows or Mac OS X program. It runs in its own window, has its own icon, and integrates with the menu system or taskbar. And it generally has the performance you would expect from a native operating system application. In fact, users will interact with an AIR app (see Figure 1-1) just the same as they do with any other application on their desktop.

Creating Internet-savvy apps

An AIR application is technically not standalone. It is actually “powered by” the Adobe AIR runtime that must be installed on any computer in order to run the application. Therefore, when an AIR app is launched, the AIR runtime is automatically loaded behind the scenes prior to the loading of the app.

Figure 1-1: Analytics Reporting Suite delivers a traditional Web application to the desktop.



When you create an AIR application, you build the app using Adobe Dreamweaver, Adobe Flex, Adobe Flash, or any text editor. (In Chapter 2, I show you how to create a basic HTML-based app in a text editor and Dreamweaver. Chapter 3 shows you how to create a basic app in Flex and Flash.)

As you can see, many parts of the application use Web techniques and technologies that you're already used to working with. However, core to Adobe AIR is an application programming interface (API) that you can tap into to do real "desktop stuff," such as get access to local files, open native UI windows, create menus, and so on. I walk you through the API in Chapter 4.

As you begin to explore the AIR API, you will see that the key strength of Adobe AIR is not in creating word processors or spreadsheets (although you can), but rather in enabling Web developers to shed the browser and safely deploy Internet-savvy apps onto the desktop.

An AIR application is easily delivered to users with a single downloadable installer (which has an `.air` extension) regardless of the operating system. (See Chapter 14 for more on deployment.)

Developers can create Internet-based desktop apps to some extent through widgets and Java, but both of these technologies have restrictions or limitations that have kept them as niche players. Widgets are intended for limited single screen, display-oriented purposes (such as a stock ticker). Cross-platform applications using Java runtime have traditionally suffered in comparison to native OS apps — in terms of both performance and "look and feel" issues. Also, both widgets and Java apps are much weaker in working with rich media than Flash has been.

In fact, you may want to jump over to Chapter 16 to take a quick look at ten great AIR applications that help demonstrate the power of the platform.

Peeking inside Adobe AIR runtime

The Adobe AIR runtime may be a relatively new platform, but it actually embeds three highly mature and stable cross-platform technologies to power AIR applications. These are the following:



✔ **WebKit:** Used for rendering HTML content inside an AIR app. WebKit is an open source, cross-platform browser and is the underlying rendering engine on which Apple's Safari browser is built.

WebKit is known for its strong support of W3C standards, such as HTML, XHTML, Document Object Model (DOM), Cascading Style Sheets (CSS), and ECMAScript. However, it also provides support for enhanced functionality — enabling the creation of cool stuff such as rounded corners using CSS. Because you're developing solely for WebKit and not for every



browser under the sun, you're free to take advantage of these nonstandard extensions.

For more info on WebKit, go to www.webkit.org.

- ✔ **Adobe Flash Player:** Used for playing Flash media (SWF files). Flash Player is a cross-platform virtual machine used to run media created in the Adobe Flash authoring environment and full SWF-based applications created using Adobe Flex. Flash Player has an embedded JavaScript-like scripting language called ActionScript 3.

Inside your app, you can access existing Flash Player API calls as well as some enhanced functionality for vector-based drawing, multimedia support (see Chapter 13), and a full networking stack (see Chapter 12).

- ✔ **SQLite:** A database engine for enabling local database access. It's an extremely lightweight, open source, cross-platform SQL database engine that is embedded in many desktop and mobile products. In contrast to most SQL databases, it doesn't require a separate server process, and it uses a standard file to store an entire database (tables, indexes, and so on). If you'd like to explore how to work with SQLite to create database apps, see Chapter 11.

For more info on SQLite, go to www.sqlite.org.

Figure 1-2 shows an overview of the AIR runtime architecture.

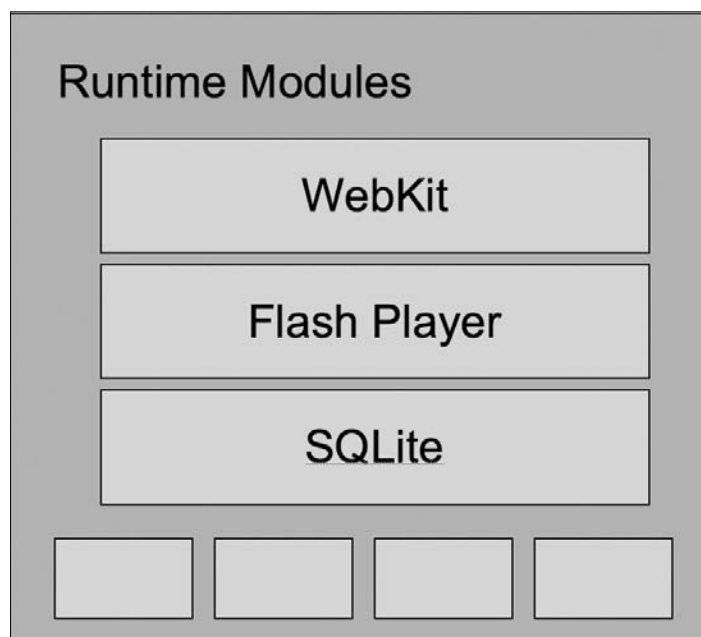


Figure 1-2:
Simplistic
view of
Adobe AIR
runtime.

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