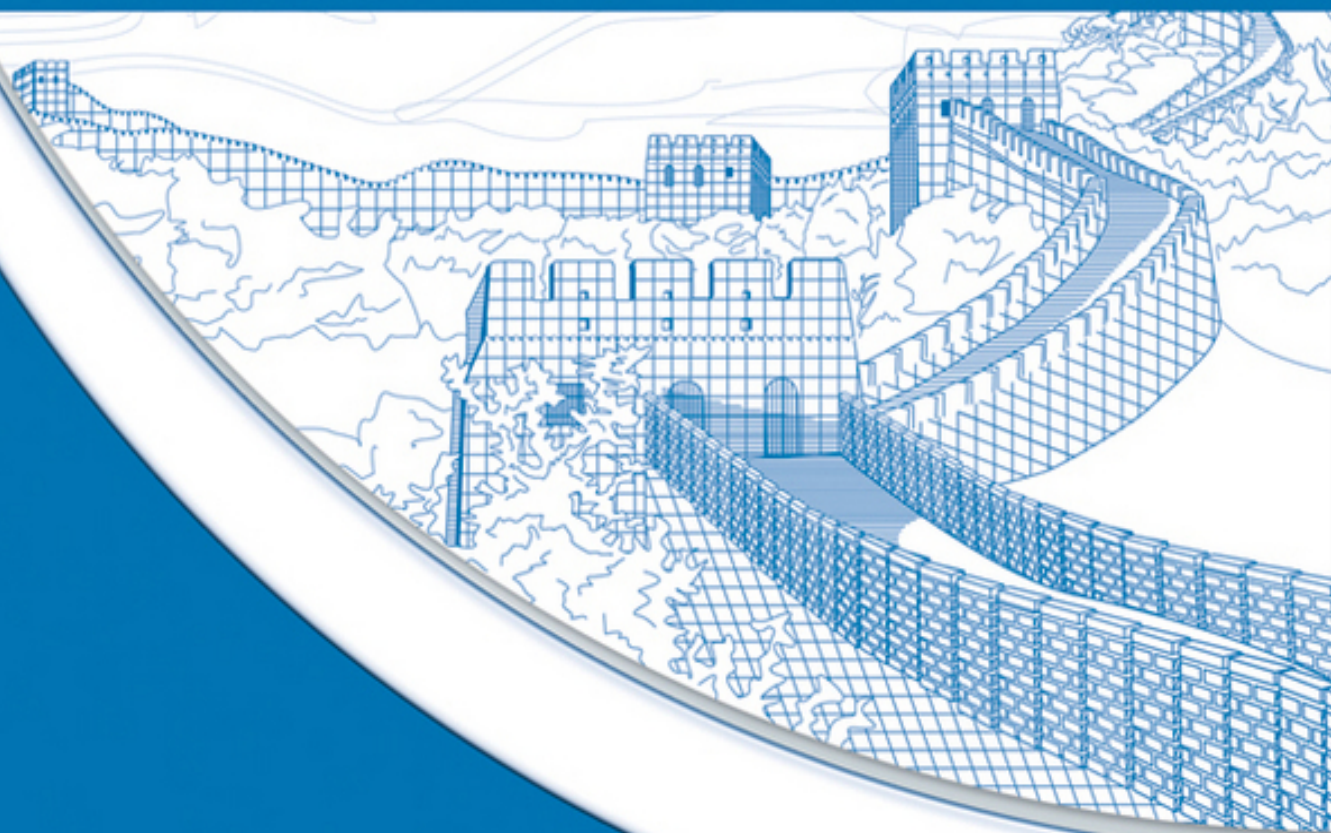




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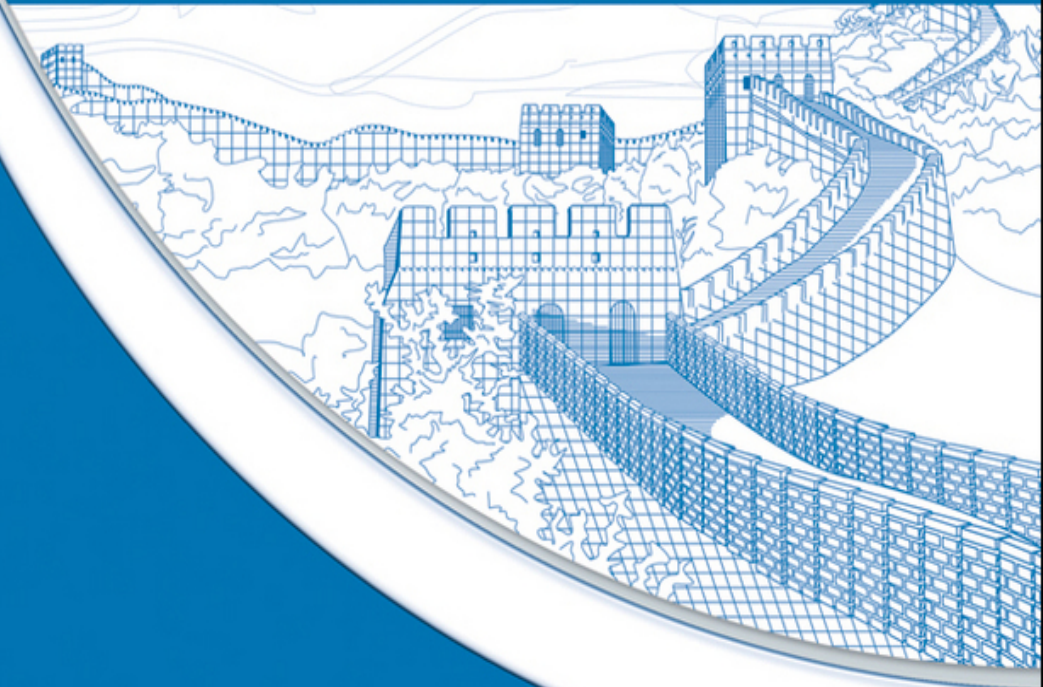
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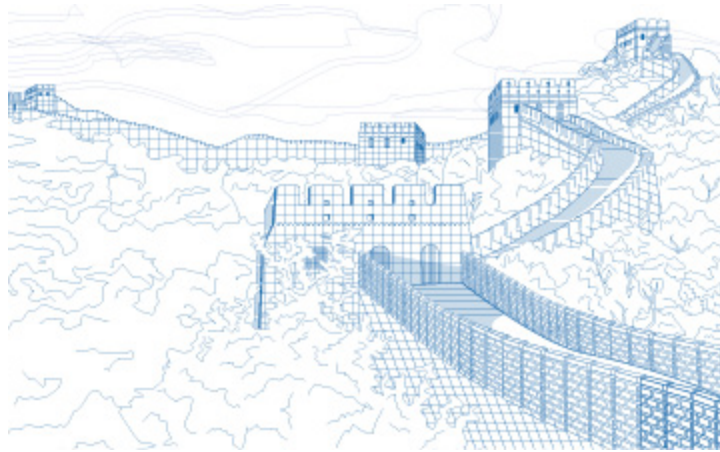
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Android™ Development with Flash®

*Your visual blueprint™ for
developing mobile apps*



By Julian Dolce



Wiley Publishing, Inc.

**Android™ Development with Flash®: Your
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Published by
Wiley Publishing, Inc.
10475 Crosspoint Boulevard
Indianapolis, IN 46256

www.wiley.com

Published simultaneously in Canada

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Library of Congress Control Number: 2010934750

ISBN: 978-1-118-03635-8

Manufactured in the United States of America

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Author's Acknowledgments

This book would not have been possible without the support of my close friends, Thomas, Elissa, Miles, Marco, Lori, Neil, and Sherisse. You guys put up with me for six months and made sure that I did not go insane. You are the best friends anyone could ask for.

Erin, your love, support and encouragement throughout my entire career has been a source of strength and inspiration. Your courage and determination has taught me that any dream, no matter how big, is never out of reach. You never

stopped believing in me, and I cannot thank you enough for it.

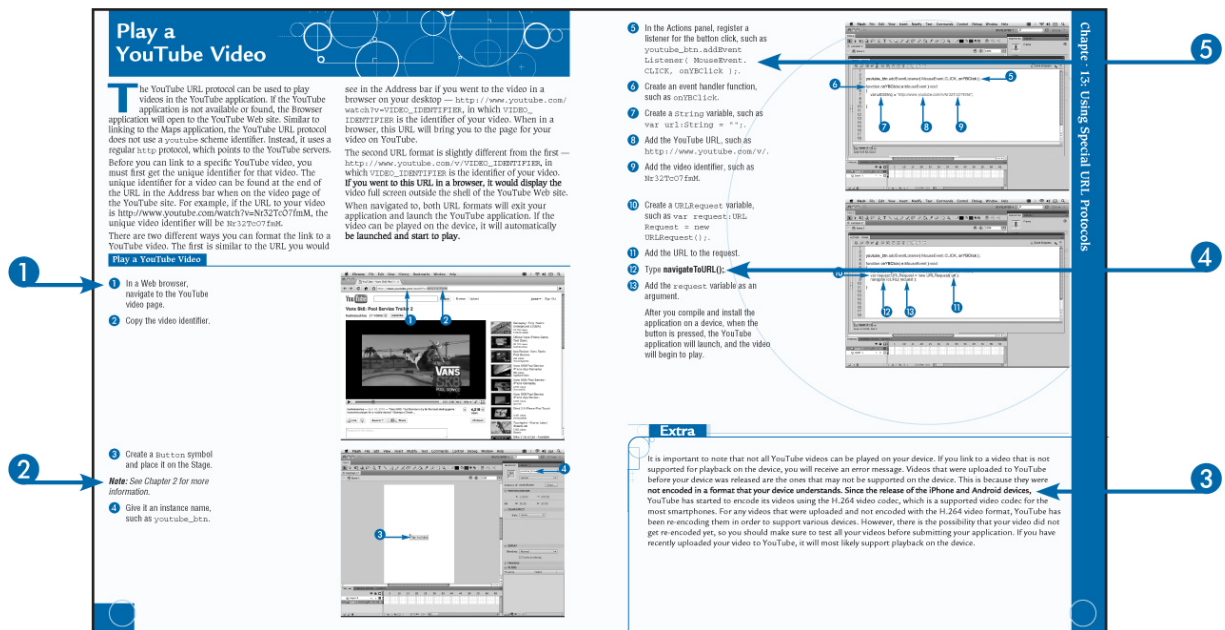
Finally, to my parents and the rest of my family. You have supported me throughout my entire life, and I could not have gotten to where I am today without you.

How to Use This Visual Blueprint Book

Who This Book Is For

This book is for intermediate-to-advanced Flash developers who want to use their knowledge of Flash and ActionScript to develop AIR Android applications. This book specifically focuses on the Android platform, but many of the topics and examples can be used to develop for any AIR mobile platform.

The Conventions in This Book



1 Steps

This book uses a step-by-step format to guide you easily through each task. Numbered steps are actions you must do; bulleted steps clarify a point, step, or optional feature; and indented steps give you the result.

2 Notes

Notes give additional information — special conditions that may occur during an operation, a situation that you want to avoid, or a cross-reference to a related area of the book.

3 Extra or Apply It

An Extra section provides additional information about the preceding task — insider information and tips for ease and efficiency. An Apply It section takes the code from the preceding task one step further and allows you to take full advantage of it.

4 Bold

Bold type shows text or numbers you must type.

5 Courier Font

Courier font indicates the use of scripting language code such as statements, operators, or functions, and code such as objects, methods, or properties.

- **Italics**

Italic type introduces and defines a new term.

Web Site

You can find the code samples throughout the book on the Wiley Web site, www.wiley.com. Search the site for this book's page; then you can find the code samples on the Downloads tab.

Chapter 1: Getting Started with Android Development

Introducing Android Devices

It is an exciting time to be a Flash developer. Adobe has taken big steps in making the Flash platform available on as many devices as possible. The Open Screen Project is an Adobe-led initiative whose goal is to “enable consumers to engage with rich Internet experiences seamlessly across any device, anywhere,” as it says on its Web site, at www.openscreenproject.org. Flash Player 10.1 will be available for multiple mobile platforms, such as Google Android, RIM’s BlackBerry, Palm Pre, and Nokia, as well as numerous other devices such as TVs, set top boxes, tablets, and netbooks. Adobe is working with these and over 50 other partners to optimize Flash Player 10.1 in order to work better with the different devices.

Flash Player 10.1

There are two very different parts to the Flash platform on mobile devices. Flash Player 10.1 has been optimized for use in mobile browsers. The intent is to have all the content that you would normally see on a desktop browser work just as you would expect on a mobile device. Flash Player 10.1 also takes advantage of some of the new mobile device APIs, such as multitouch and geolocation. If you currently have Flash content on the Web, it is a good idea to test it on an Android device with Flash Player 10.1 installed. Consider updating the content to better support mobile devices if possible. As mobile

devices become more popular, users will demand that content work seamlessly across all platforms. The Flash Player 10.1 plug-in is available now for supported Android 2.2 devices in the Android Market.

AIR for Mobile Devices

The other piece of the Flash platform mobile story is AIR for mobile devices. AIR (Adobe Integrated Runtime) was originally designed and developed for the desktop, and some features do not translate well to mobile platforms. To help with this, Adobe has created the mobile profile for AIR, which is a subset set of AIR. To find out which APIs are available, see the sections “Introducing the Available APIs” and “Check What APIs Are Not Available” later in this chapter.

Currently, the AIR mobile profile is available for iPhone OS and Android devices. However, because of the new terms of use by Apple, you can no longer use Flash CS5 to create and submit applications to the Apple iTunes App Store. The AIR Runtime is available on Android devices and needs to be installed on the device in order to run any AIR applications. Similarly to the desktop runtime, the mobile runtime will be installed if the user tries to install an AIR for Android application without the runtime.

The AIR Runtime is currently supported on Android devices with Android 2.2, also known as Froyo, installed or higher. It also is currently supported only on Android devices with an ARMv7 processor. Most new devices should support the AIR Runtime; however, you will want to double check before you purchase a device.

Because the Android platform is open source, many device manufacturers ship their devices with custom Android skins. As Google releases new versions of Android, each manufacturer must convert its skins to the new version before the device can be updated. Because of this, it is a good idea to stay away from devices that have highly customized skins, such as the Sony Ericsson Xperia X10, which is capable of running AIR except that it currently ships with Android 1.6.

Android AIR Devices

The following are a few of the devices that are currently available that support the AIR Runtime and Android AIR applications. You may still need to update them to Android 2.2, but after they are updated, they should run all applications.

Google Nexus One

The Nexus One is manufactured by HTC for Google and can be purchased from Google unlocked. Being able to purchase an unlocked device is attractive for developers, as they are not restricted to a specific network provider. This also means that you can purchase one if you plan to use it only as a development device and not as an everyday mobile phone. There are two versions available that support the different cell network providers and can be purchased for the United States, Canada, and Europe.

The Nexus One ships with Android 2.1, a 1GHz Snapdragon processor, and 512MB of memory. It also has 512MB of Flash memory storage and a 4GB microSD card. The SD card can be upgraded to a 32GB card. The Nexus One has a screen resolution of 480 x 800 pixels

and has a 5.0 megapixel camera, which can shoot 720 x 480 video at 20fps or higher.

Motorola Droid

Outside of the United States, the Motorola Droid is referred to as the Motorola Milestone. Both devices currently support Android 2.1. There are two big differences between the Droid and the Nexus One: The Droid has a slide-out keyboard and a screen resolution of 480 x 854 pixels.

HTC Desire

The HTC Desire is one of the more popular Android phones on the market today, and it is very similar to the Nexus One. The biggest difference between the two devices is the Desire's HTC Sense Android user interface. The Desire also has tactile buttons across the bottom as opposed to the Nexus One's touch-sensitive buttons.

Android Tablets

There are a number of Android tablet devices that are set to release in the last half of 2010, and there are too many to discuss here. However, the most important thing to understand is the difference in screen resolution. 1024 x 768, 1366 x 768, 800 x 600, and 1024 x 600 are just some of the different screen resolutions for tablets that will support AIR Android applications. Testing how your application will look and respond on these different screen resolutions will ensure that users have a good user experience across devices.

Test for Multiple Devices

As you can see, there are many differences between all the different models, and the tablets are a game changer. There are lots of tips and things to think about in this book when developing your applications to support multiple platforms. It is a good exercise to try and take all of these into consideration early on in development. Some things to ask yourself are, “What does my application look like in multiple resolutions?” and “How does a user interact with my application on a non-touch-enabled device?.” Even if you ever plan to support only one device today, allowing for multiple platforms in the future will prove to be worthwhile. The iPad is a great example of developers never planning for a different resolution or platform. When the iPhone SDK first came out, developers were fortunate and had to design for only one screen size and resolution. Now with the release of the iPad and the fourth generation iPhone, developers have to redesign and even rewrite their applications in order to support these new platforms.

Introducing the Development Tools

If you have developed Flash applications before, you will already be familiar with some of the tools that will be explored throughout this book. However, some of them may be new to you. The following are all the different tools that are discussed throughout the book.

Flash CS5 Professional

Flash CS5 is the main integrated development environment (IDE) for developing Flash applications for the Web, desktop, and Flash Lite-enabled mobile devices.

In this 11th version of Flash, Flash CS5 introduced us to the ability to publish Flash applications to native iPhone applications, which ships with the product. In the fall of 2010, Adobe released an update for Flash CS5 and AIR, which enables you to develop and publish applications for Android devices. The update can be downloaded through the Adobe CS5 Updater application or from the Adobe Web site. If you are not sure if you have the latest version, select Updates from the Help menu in Flash CS5.

Flash Builder

Flash Builder, formerly known as Flex Builder, is an Eclipse-based IDE for creating Flex and AS3 projects. Flash Builder is Adobe's main ActionScript coding application. Flash CS5 does have the capability to write separate ActionScript code and classes; however, Flash Builder provides a much more feature-rich development environment. With the newest version of Flash Builder, Adobe has also integrated a better workflow between it and Flash CS5. You are now able to publish .fla files directly from Flash Builder without having to switch between applications. One of the benefits of Flash Builder is that it is built on top of Eclipse, a popular open source IDE. This enables you to take advantage of the many plug-ins built for Eclipse, which provide additional functionality that you do not get in Flash CS5. There are many plug-ins for managing source control, build integration, and support for other programming languages.

FDT

FDT (Flash Development Tool) is an Eclipse-based IDE similar to Flash Builder. FDT provides many features that speed up development, such as code templates, quick fixes, quick assist, and organized imports — just to name a few. FDT 4 is currently in beta and is quickly becoming one of the most popular ActionScript editors among many of the best Flash developers in the community. FDT 4 gives developers the ability to create their own plug-ins for FDT. This allows community members and developers to create a workflow that is best suited for them. It is only a matter of time before a FDT Android plug-in is released to help with publishing and installing Android applications.

Android SDK

The Android SDK is developed and released by Google, and it enables developers to create native Android applications. There are several tools that come with the Android SDK that are extremely helpful in developing Android applications. Before you begin to develop your application, make sure to download this SDK from the Google Web site. For more details, see the section “Get the Android SDK” later in this chapter.

Android Emulator

The Android emulator comes included in the Android SDK and can be used to test your AIR Android applications on your development computer. The emulator can be configured in a number of different ways, which is extremely useful for testing your application on multiple types of devices. You can also simulate a number of device-specific actions that would normally be available

only on a device, such as a voice call, SMS message, and geolocation events.

AIR Runtime for Android

In order for your AIR Android applications to run on an Android device, you must first have the AIR Runtime installed. If an AIR Android application attempts to install without the runtime, it will prompt the user to download the runtime first. This process is very similar to the process of installing an AIR application on the desktop. Having the runtime installed is true for both Android devices and any Android emulators you have created. The AIR Runtime is installed the same way as any other Android application.

Android adb Tool

The Android Debug Bridge (adb) is a tool that comes with the Android SDK. It enables you to manage the state of an Android emulator instance or a connected device. It can be found in the tools folder of the Android SDK and is used by the Flash IDE to install applications onto your connected devices. If you are comfortable with using the command line, you can use adb to drop into a remote shell on an emulator or device instance, and you can issue shell commands on these instances. You can also use the adb tool to push or pull files from your device. This can be extremely useful if you want to better examine a file that your application has created on the device. For more details and other adb commands, check out the adb page on the Android Developers site, <http://developer.android.com/guide/developing/tools/adb.html>.

Adobe ADT Tool

The AIR Developer Tool (ADT) is used to compile your Android applications from your Flash and AIR applications. The ADT tool can be found in the bin directory of the AIR SDK, as well as the AIK2.5/bin folder in the Adobe Flash CS5 directory. ADT can be used by the command line to package your applications. For more details on compiling Android applications with the command line, see Chapter 3, “Developing Your First Application.” You can also create a self-signed certificate, which can be used to digitally sign your AIR Android applications. It is important to note that applications uploaded to the Android Market must be signed with a certificate that have a validity period ending after October 22, 2033.

Android Market

The Android Market is a place where you can download and install applications to your Android device. It is similar to the iTunes App Store for the iPhone, except it does not have a desktop version and is available only on your device. If you want to submit your application to the Android Market, you need to register with Google for an Android developer account, which costs \$25 US. After registration, you will be able to submit applications through the Android Market Web site. For more details on preparing and submitting your applications, see Chapter 17, “Deploying Your Application.” Both the Flash Player 10.1 plug-in for browsers and the AIR Runtime can be downloaded from the Android Market, and you should install them on your device if they are not already.