

AdvancED Flash on Devices

Mobile Development with Flash Lite and Flash 10

Elad Elrom, Scott Janousek, Thomas Joos



AdvancED Flash on Devices: Mobile Development with Flash Lite and Flash 10

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I would like to dedicate this book to my wife Jordana, who motivated, inspired, and accommodated me—while taking care of our seventeen-month-old baby girl—as I worked long nights to create this book. I also would like to dedicate the book to my mother Elena and brother Lior; I am lucky to have them in my life and to receive their love and support.

—Elad Elrom

This book is dedicated to my mother and father, who take an interest in my life even though they might not always understand all the technology and geeky stuff. I love you. Thanks also to my older brothers Jeff and Paul for always giving good, sound, real-life advice to a younger sibling.

—Scott Janousek

I would like to dedicate this book to my parents, who are always there for me—whether I'm playing in a soccer game or writing a nerdy book. Thanks for always believing in me. Also, I would like to thank my younger brother Brecht, who is doing a great job of becoming a sports teacher. I hope you finish college soon, so you can get all those young people in good shape. I am proud to have you by my side, together with Mom and Dad. I love you all.

—Thomas Joos

CONTENTS AT A GLANCE

Foreword	xxi
About the Authors	xxiii
About the Technical Reviewer	xxiv
About the Cover Image Designer	xxv
Acknowledgments	xxvi
Introduction	xxviii

PART ONE MOBILE DEVELOPMENT LANDSCAPE

Chapter 1 The Mobile and Device Landscape	3
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PART TWO FLASH LITE PLATFORM OVERVIEW

Chapter 2 Flash Lite Platform Fundamentals	29
Chapter 3 Flash Lite 3	101
Chapter 4 Tips and Tricks for Developing Flash Mobile Applications	149
Chapter 5 Mobile and Device Widget Platforms with Flash	173
Chapter 6 Flash Lite User Interface Components and Frameworks	241
Chapter 7 Extending Flash on Mobile and Devices Using OEM-Based Solutions	279
Chapter 8 Porting Flash Lite Applications to the iPhone using Third-Party Tools	315

PART THREE AIR APPLICATIONS FOR MULTIPLE SCREENS AND MOBILE INTERNET DEVICES

Chapter 9 Adobe Integrated Runtime on Mobile Devices	329
Chapter 10 Adopting AIR for Mobile Devices	385
Chapter 11 Developing Cross-Platform Air Applications	431

PART FOUR FLEX APPLICATION RUNNING FLASH 10 ON MOBILE DEVICES

Chapter 12 Mobile Applications and Development Strategies	483
with Flex 4 and Flash Catalyst	
Chapter 13 Adopting Flex for Multiple Devices	525
Chapter 14 Building Mobile Applications Using	561
Test-Driven Development	
Chapter 15 Creating a Cross-Platform Video Player	619
and Optimizing Content	
Index	699

CONTENTS

Foreword	xxi
About the Authors	xxiii
About the Technical Reviewer	xxiv
About the Cover Image Designer	xxv
Acknowledgments	xxvi
Introduction	xxviii

PART ONE MOBILE DEVELOPMENT LANDSCAPE

Chapter 1 The Mobile and Device Landscape	3
Addressing fragmentation	4
Getting to know the devices	6
Mobile phones	6
Navigating the mobile phone development ecosystem	7
Preparing for the future in the mobile ecosystem	8
MID and UMPC devices	9
Digital home consumer electronics	10
Integrating Flash onto Intel chips	10
Integrating Flash onto Broadcom chips	10
ARM-based devices	10
Getting to know the operating systems and platforms	11
Natively compiled vs. interpreted development languages	11
Understanding the Flash platform	12
Working with Flash Lite	12
Extending Flash Lite	13
Using the Flash Player and Adobe AIR on smart phones	14
Understanding the Java ME platform	14
Exploring the relationship between Java ME and Flash	16
Understanding the Symbian operating system	16
Exploring the relationship between Symbian and Flash	17
Understanding Windows Mobile	17
Exploring the relationship between Windows Mobile and Flash	17
Understanding the Adobe Mobile Platform	18
Understanding BREW	19

Exploring the relationship between BREW and Flash	20
Understanding the iPhone SDK	21
Exploring the relationship between the iPhone and Flash	22
Understanding the AOL Open Mobile Platform	22
Exploring the relationship between the AOL Open Mobile Platform and Flash	23
Using Research In Motion (RIM) on the Blackberry	23
Exploring the relationship between the Blackberry and Flash	23
Understanding Android	23
Exploring the relationship between Android and Flash	24
Understanding Palm Pre	24
Exploring the relationship between Palm Pre and Flash	24
Summary	25

PART TWO FLASH LITE PLATFORM OVERVIEW

Chapter 2 Flash Lite Platform Fundamentals 29

Realizing multiscreen user experiences	29
Getting up to speed with Flash Lite	30
The Flash platform	31
Understanding the importance of the Open Screen Project	32
Exploring the Flash Lite platform	32
Flash Lite penetration statistics	33
Evaluating Flash Lite player pros and cons	34
Flash Lite player architecture	35
Introducing Flash Lite products, tools, and services	36
Adobe Creative Suite 3 and 4	36
Flash CS3 and CS4	37
Device Central CS4	37
Adobe Captivate CS4	37
Flash Cast	37
Flash Home	38
Adobe Mobile Application Builder	38
Adobe Mobile Application Packager	39
Adobe Flash Lite 3.1 Distributable Player	39
Working with the SWF file format	39
Publishing SWFs	40
Deploying SWFs	41
Exploring Flash Lite content types	42
Primary content types	42
OEM-specific content types	44
Learning the building blocks of Flash-based content	46
Symbols	46
The Flash timeline	47
Frames	48
Layers	48
Animating the timeline	49
Animating text	50
Working with sound	50
Working with video	51

Understanding the Flash Lite versions	53
Introducing the Flash Lite runtime versions	53
Exploring Flash Lite 1.1	54
Working with Flash Lite 1.1 variables, function clips, and pseudo arrays	54
Variables	54
Functions and function clips	55
Pseudo arrays	55
Reviewing Flash Lite 1.1 ActionScript syntax	56
Global variables	56
MovieClip properties	57
Operators	59
Keywords and built-in functions	60
Using the fscommand2 API	65
Accessing the Flash Lite 1.1 syntax reference sheet	66
Knowing the Flash Lite error codes	67
Exploring Flash Lite 2.0	68
Handling text and fonts	68
Supporting compressed SWF formats	68
Incorporating XML support	69
Loading and playing back dynamic media	69
Persisting data	69
Playing device video	69
Accessing the Drawing API	70
Using the fscommand2 additions	70
Introducing the Flash Lite 2.0 error codes	71
Exploring Flash Lite 2.1	72
Exploring Flash Lite 3.0	73
Exploring Flash Lite 3.1	74
Exploring Adobe Mobile Client	75
Exploring ActionScript	76
Using ActionScript 1.0	76
Using ActionScript 2.0	76
Choosing an ActionScript 2.0 editor	77
Developing via the timeline vs. classes	79
Working with the timeline	79
Using functions and procedural code	80
Developing classes	81
Exploring the Flash Lite CDKs	82
Introducing the Flash Lite CDKs	82
Introducing the Device Central CS4 SDK	82
Introducing Flash Lite visual component sets	83
Packaging Flash Lite content	84
Understanding Flash Lite packaging formats for SWFs	84
Packaging file formats and methods for Flash Lite content	86
Custom SIS	86
Custom NFL	86
SWF2SIS	86
SWF2Go Professional	87
SWF2JAR	87
Jarpa	88

SWFPack.com	88
Forum Nokia Flash (and Flash Lite) packager	89
SWF2NFL	89
Adobe Mobile Packager	89
W'd-get-it	91
Distributing and monetizing Flash Lite content	92
Introducing Flash Lite content aggregators and providers	93
Zed	93
ThumbPlay	93
GetJar	93
Nokia MOSH	94
Nokia Software Market and Nokia Download!	94
Verizon Wireless Get It Now	95
Smashing content	95
Shockwave Games (Atom Entertainment)	95
Moket Content Network	95
Handango	95
Voeveo	96
Mobibase	96
ClickGamer	96
FunMobility	96
Chumby Network portal	96
Iguana Mobile	97
Aggregating content for Flash 10 and AIR applications	97
Distributing via direct-to-customer and consultation models	97
Introducing the Open Screen Project Fund	97
Joining Flash mobile and device development communities	98
Summary	99

Chapter 3 **Flash Lite 3** **101**

Getting to know Flash Lite 3.0	102
Improving performance	102
Enhancing video capabilities	103
Browsing web content	103
Local file security	105
Managing content	106
Getting to know Flash Lite 3.1	110
Enhancing mobile and device web browsing	110
Supporting Flash 9 (ActionScript 2 only)	110
Using the LocalConnection class	111
Enhancing HTML browser support	115
Using the new HTML capabilities	117
Video enhancements	121
MP3 streaming support	122
Graphic API additions	122
ActionScript enhancements	123
Working with Flash Lite 3.x	124
Explaining mash-ups	125
Creating our Flash Lite 3 video application	125

Exploring the Adobe Distributable Player Solution	139
Downloading the Flash Lite 3.1 Distributable Player	140
Using Adobe Mobile Packager	140
Downloading Adobe Mobile Packager	141
Accessing Adobe Mobile Packager documentation	142
Accessing the Flash Lite Distributable Player tutorials	142
Introducing the Adobe Device Central CS4 SDK	143
Downloading the Adobe Device Central SDK	144
Exploring the Adobe Device Central SDK	144
Installing sample plug-ins	145
Leveraging Adobe Device Central CS4 plug-ins	145
Summary	146
Chapter 4 Tips and Tricks for Developing Flash Mobile Applications	149
Optimizing your mobile user interface	149
Keeping it simple	150
Visualizing interaction	150
Using soft key labels	151
Using arrow visualization	151
Highlighting items	151
Minimizing interaction possibilities	151
Providing extra explanation	152
Minimizing text	152
Considering usability: four reasons user context is important	152
Light	152
Time	153
Application awareness	153
Movement	153
Optimizing for mobile devices	154
Managing memory	154
Understanding the static and dynamic memory heaps	154
Understanding the garbage collector	154
Optimizing for efficient memory use	156
Improving CPU performance	157
Rendering bitmap artwork	158
Loading XML data	158
Using gotoAndPlay()	158
Tweening objects	158
Registering variables and defining functions	158
Looping iterations	159
Using events	159
Optimizing calculations	159
Optimizing a project before publishing it	159
Using Oxygen, the Flash Lite Developers Kit	160
Testing using mobile emulators	160
Adobe Device Central	160
Using device profiles	161
Previewing application appearance and performance	161

DeviceAnywhere	162
Emulating all major worldwide carriers and their networks	162
Previewing application appearance	162
Working through best practices tutorials	162
Using persistent data	162
Configuring the application	162
Checking existing data	163
Loading interactive SWF files	164
Using local and external SWF files	164
Loading external files to stream video in Flash Lite 3	168
Summary	170

Chapter 5 Mobile and Device Widget Platforms with Flash 173

Understanding widgets	174
Running widgets on the desktop	174
Running widgets on mobile and devices	174
Developing widgets with Nokia Web Runtime	175
Learning the basics of WRT	176
Preparing to develop a widget for an S60 device	177
Exploring the widget files	178
Exploring the info.plist configuration file	181
Building a Flash Lite–based WRT widget using Aptana Studio	182
Downloading, installing, and configuring Aptana Studio	184
Downloading and installing the Nokia WRT plug-in	185
Developing a Nokia WRT widget	187
Designing the Nokia WRT widget’s Flash Lite content	191
Adding the Flash Lite content to a Nokia WRT widget framework	194
Packaging a Nokia WRT widget	195
Packaging Flash Lite content in a widget	196
Testing a WRT widget	197
Testing with the Nokia S60 platform SDK emulator	197
Testing with Nokia S60 handsets	198
Testing with Aptana	199
Testing with RDA	200
Testing with Adobe Device Central	201
Deploying and distributing WRT widgets	201
MOSH	201
The OVI Store	202
Nokia Download!	202
Other distribution methods	202
Installing a widget onto a supported S60 device	202
Developing Chumby widgets	203
Introducing the Chumby	204
Understanding glanceable technology	204
Comparing Chumby and Nokia WRT widgets	204
Hacking the Chumby	206
Accessing online community support resources	207
Getting hold of a Chumby	207
Exploring the Chumby	208

Getting ready for Chumby widget development	209
Flash widgets on the Chumby	209
Delivering content via channels	209
Understanding Chumby input methods and sensor APIs	210
Touch screen	211
Accelerometer	211
Bend switch	212
Microphone	212
Display	212
Using Chumby variables	212
Widget parameters	213
Widget configuration variables	213
Using the Chumby fscommand2 API	213
Dealing with Flash security on the Chumby	215
Working with audio	216
Working with video	216
Loading and saving data	217
Remote data	217
Persistent data	217
Working with widget configurators	217
Publishing Chumby SWFs	218
Finding tips, tricks, and further resources for Chumby widgets	219
Using best practices for Chumby widget development	219
Building a Flash Lite widget for the Chumby	219
Downloading and installing SWFMill	220
Downloading and installing FlashDevelop	221
Creating the Asset SWF	223
Developing the Flash Lite Chumby widget	224
Testing Chumby widgets	230
Testing without the Chumby device	230
Testing on the Chumby device	232
Deploying a widget on the Chumby Network	234
Monetizing Chumby platform development	238
Summary	239

Chapter 6 **Flash Lite User Interface Components and Frameworks** **241**

Flash Lite user interfaces	242
Benefits of Flash Lite with user interfaces	242
Leveraging Flash Lite user interfaces	243
On-device user interfaces	243
User interfaces in Flash Lite applications	244
Creating Flash Lite user interfaces with components and frameworks	244
Flash Lite Feather Framework	245
Downloading and exploring the Feather Framework	245
Examining the Litedays demo application	246
Downloading and exploring Feather user interface components	260
Flash Lite BracketPC LayoutManager	261
Features of the LayoutManager	262

Exploring the LayoutManager demos	262
Exploring the LayoutManager demo01.rar example	263
Shuriken Flash Lite 2.x component framework	264
Downloading and installing Shuriken	265
Exploring the Shuriken components	266
Oxygen Toolkit (for Nokia devices)	268
Exploring the Oxygen components	268
Downloading and installing the Oxygen Toolkit	269
Using the Oxygen components	270
Nokia Flash Lite Indicator and List components	271
Exploring the Nokia Flash Lite 2.x components	271
Downloading and installing the Nokia Flash Lite 2.x components	272
Using the Nokia components	273
Forum Nokia Flash Lite component set	274
Exploring the Nokia Flash Lite component set	274
Downloading and installing the Nokia Flash Lite component set	274
Using the Nokia Flash Lite component set	275
Adobe XD Flash Lite user interface component examples	275
Exploring the Adobe XD Flash Lite user interface components	275
Downloading the Flash Lite user interface components	277
Using the Flash Lite user interface components	277
Summary	277
Chapter 7 Extending Flash on Mobile and Devices	279
Using OEM-Based Solutions	
Working with next-generation mobile and device APIs	280
Extending Flash Lite with device APIs	280
Powering Flash with Nokia S60 Platform Services	281
Introducing S60 Platform Services	281
Getting to know the S60 Platform Services methods	282
Leveraging S60 Platform Services	284
Installing the Nokia S60 Platform Service APIs	284
Targeting S60 Platform Services–supported devices	285
Writing an inline SMS application	286
Getting more information on S60 Platform Services	289
Extending Flash on Sony Ericsson devices	290
Getting started with Flash on Sony Ericsson devices	290
Working with accelerometers on Sony Ericsson devices	291
Detecting devices	291
Accessing the accelerometer	292
Introducing Project Capuchin	294
Looking at high-level Project Capuchin architecture	296
Exploring the use cases for Project Capuchin	297
Passing data between Java and Flash Lite	297
Using DataRequest	298
Using ExtendedEvents	299

Setting up the development environment for Project Capuchin	300
Creating your first Project Capuchin application	301
Downloading, extracting, and installing the Project Capuchin example	301
Walking through the Java MIDlet	303
Walking through the Flash Lite user interface	306
Packaging Flash Lite content with SWF2JAR	307
Getting more information about Project Capuchin	311
Extending ActionScript in Flash Lite 3.1	311
Looking forward to Flash 10 and Device APIs	311
Summary	312

Chapter 8 Porting Flash Lite Applications to the iPhone..... 315

Using Third-Party Tools

Porting Flash applications to the iPhone using b.Tween	316
Introducing eyeGT	316
Understanding the inner workings of eyeGT	317
Converting Flash applications into native iPhone applications	319
Getting to know the Monster Match game	319
Changing the interface	319
Using the reAnimator tool	320
Porting to the iPhone	322
Emulating the root object	322
Getting ready to deploy	323
Flash on touch-screen devices	323
Touching things	323
Designing a touch-based UI	324
Summary	324

PART THREE AIR APPLICATIONS FOR MULTIPLE SCREENS AND MOBILE INTERNET DEVICES

Chapter 9 Adobe Integrated Runtime on Mobile Devices 329

Taking a high-level view of the AIR 1.5 platform	330
Using tips and tricks for Flash Player 10 on mobile devices	333
Moving objects in 3-D space	334
Using Pixel Bender for graphics and calculations	337
Creating custom filters with Pixel Bender	337
Using Pixel Bender to calculate information	340
Utilizing the Text Layout Framework	348
Using the Spark TextArea	352
Creating sound dynamically	357
Improving visual performance	359
Using the enhanced Drawing API	362
Reading and writing local files	363

Taking a high-level view of AIR 1.5 capabilities	368
Loading HTML and JavaScript to a container	368
Accessing the local file system	370
Encrypting SQLite data	372
Updating applications and using the notification API	375
Listening to network changes	375
Changing native windowing and chrome control	377
Signing your AIR application	379
Choosing your digital signing method	379
Signing your application with Flex Builder	380
Summary	382
Chapter 10 Adopting AIR for Mobile Devices	385
Implementing platform and context awareness	386
Detecting system capabilities	387
Detecting system support	389
Detecting user presence	391
Detecting network connectivity changes	392
Detecting HTTP connectivity	392
Detecting socket connectivity	393
Detecting local drives	393
Detecting application window movement	394
Getting the AIR runtime version and patch level	394
Adapting configuration and behavior	398
Downloading files from a server	399
Implementing HTTP connectivity awareness	401
Using a database to store information	401
Creating a SQLite manager	402
Mobile touch and multitouch screen applications	413
Understanding the touch screen	413
Creating a UMPC touch screen application	415
Creating a seamless installation experience	421
Enabling browser invocation	423
Creating a custom badge installer	424
Installing the Browser API	426
Summary	429
Chapter 11 Developing Cross-Platform Air Applications	431
Introducing the basics of dynamic GUIs	432
Understanding the Passive Multi-view design pattern	433
Understanding the Passive View design pattern	435
Understanding the Factory design pattern	436
Putting the patterns together	436
Implementing the Passive Multi-view design pattern	437
Creating the abstract passive main view class	438
Creating the passive main view class	438
Creating the abstract passive subview	439
Creating the passive subview	439

Creating the factory class	440
Creating the presenter class	441
Creating the creator class	442
Developing the music player application	444
Building the music player API	444
Creating the IPlayer interface	444
Creating the AbstractPlayer class	445
Creating the Player subclass	449
Creating the music player GUI	455
Creating GenericMusicPlayer.mxml	455
Creating a GUI for a music player application	459
Creating the login form	459
Creating the GUI	462
Creating the creator class	464
Creating the skin components	466
Implementing the AbstractMusicPlayerMain class	472
Implementing the AbstractMusicPlayer class	473
Making the application context aware and adaptable	476
Utilizing context awareness for multiple views	476
Adapting the application	477
Summary	478

PART FOUR FLEX APPLICATION RUNNING FLASH 10 ON MOBILE DEVICES

Chapter 12 **Mobile Applications and Development Strategies** **483** **with Flex 4 and Flash Catalyst**

Getting to know Flash Catalyst	483
Exploring the benefits of Catalyst	484
Getting the tool	484
Separating presentation from logic with Flash Catalyst	484
Exploring Flash's new development cycle	485
Getting started with Flash Catalyst	486
Creating a new Catalyst project	487
Creating your first full Catalyst application	489
Creating graphics	489
Converting graphics to components	491
Choreographing the application	492
Adding actions to the buttons we created	493
Switching to code mode	493
Creating an application with Flash Catalyst and Flex Builder	496
Refactoring the code	497
Adding the user authentication service	497
Adding incorrect credential and logged in states	500
Creating a mobile application with Catalyst and AIR	501
Creating the Flash Catalyst project	502
Converting graphics to components	504

Adding FXG graphic elements	505
Adding button state interactivity	506
Creating the detail state	507
Adding interactivity between states	508
Importing the FXP project into Flex Builder 4	509
Converting the project to an Adobe AIR project	511
Getting the list of YouTube videos	512
Getting YouTube feeds with our utility class	512
Extracting the FLV from the YouTube utility class	514
Adding logic to the Flash Catalyst application	516
Signing your AIR application	519
Signing your application with Flex Builder	520
Deploying your AIR application on a UMPC	522
Summary	523
Chapter 13 Adopting Flex for Multiple Devices	525
Creating a Flex GUI for the Nokia N810 browser	526
Creating dynamic GUIs using Flash Catalyst	527
Creating a GUI for a 320X480-pixel screen with Catalyst	528
Importing the Illustrator file into Catalyst	528
Importing artwork into Flash Catalyst	529
Converting graphic components to Flex components	530
Converting the slider graphic into MXML components	532
Creating a GUI for a 530X520-pixel screen with Catalyst	533
Converting graphic components to Flex components	534
Converting sliders graphics into MXML components	535
Importing Flash Catalyst GUIs into Flex 4 SDK	536
Importing the FXP project	537
Implementing the Passive Multiview design pattern	537
Creating logic for Flash Catalyst applications	541
Creating the main view, MusicPlayerMain.mxml	542
Creating the subviews for MusicPlayer.mxml	544
Skinning the Flex components	552
Summary	559
Chapter 14 Building Mobile Applications Using Test-Driven Development	561
Understanding TDD basics	562
Creating unit tests using FlexUnit	563
Creating your first test suite and test case	564
Creating the TestSuite class	564
Creating the TestCase class	564
Create the TestRunner component	565
Writing a failed unit test	566
Writing code to pass the test	567

Passing the test	568
Refactoring the test's code	568
Repeating this process	569
Using assertion methods	570
FlexUnit in Flex 4	571
Creating a test suite and test case in Flex 4	572
Creating a test suite class	572
Adding a test case class	573
Writing a failed unit test	575
Writing code	578
Passing the unit test assertion	579
Refactoring our code	579
Creating a second unit test	579
Writing asynchronous tests	581
Testing visual components with FlexUnit	586
TDD with MVC frameworks	590
Using TDD with Cairngorm	591
Creating the use case	591
Creating the application model	592
Creating the Main.mxml class	595
Creating initialization events	598
Creating the Adobe feeds container	599
Adding the service call	602
Responding to user selections of a feed	604
Creating the application test suite and test cases	605
Using TDD with PureMVC	609
Creating the mediator class	610
Creating the proxy class	612
Creating the test suite and test case to test PureMVC	614
Summary	616
Chapter 15 Creating a Cross-Platform Video Player and Optimizing Content	619
Initial strategy choices: reusing or creating video content	621
Tips for making great mobile device video content	622
Video Codec 411	625
Playback using device and Flash video	626
FLV, the most popular supported video format	628
F4V format	628
H.264 format	628
3GP format	628
Dynamically discovering a device's available codecs	629
Detecting device capabilities in Flash Lite	629
Encoding video for Flash applications	631
Compressing video files using the Adobe Media Encoder	631
Understanding the difference between streaming and progressive download	637
Tips for selecting servers for your videos	638

- Building a progressive download video player for mobile devices 639
 - Creating video playback components in Flash Professional 639
 - Creating a video player in Flash Lite 642
 - Creating a video player for Flash 10 646
 - VideoDisplay for Flash 10 652
 - Detecting connection status 656
- A streaming and optimizing technique for mobile devices 658
 - FMS architecture overview 658
 - Installing FMS 3.5 on Windows 659
 - Streaming video to a mobile device using FMS 3.5 662
 - Setting a smart buffer policy 665
 - Bandwidth Detection 666
 - Dynamically switching between different video profiles 676
 - FMS 3.5 DVR using Flash Media Live Encoder 3.0 677
- Embedding video techniques 677
 - Embedding a video file in a Flash Lite application 677
 - Embedding a video file in Flash 10 679
- Adobe Strobe and Open Video Player (OVP) initiatives 680
 - Dynamic switching of video profiles 680
- Enhancing progressive download seeking 688
 - Adobe Strobe framework 688
- Summary 697

Index 699

FOREWORD

The technology landscape has never been more exciting, and it has also never been more confusing. Everywhere you look, you see a number of ways to connect to your friends and consume digital content. Mobile devices, your living room consumer electronic devices, PCs, laptops, and netbooks are all increasingly connected and capable of providing a full web experience. All of this is very good news for Flash developers. Flash continues to let developers and designers create rich Internet applications across multiple screens. At Adobe, we have been working very hard on the next generation of the Flash Player for mobile devices as well as for cutting-edge areas, like the digital living room.

One of the core promises of the Flash Player has always been to provide a consistent experience for the user regardless of the operating system or the browser. In a world where not only the operating systems but the hardware and screen sizes are all different, that promise is even more important. You have to be able to reach your customers on whatever device they're using, while still providing the rich user experience that users now expect. There is no better or more efficient platform for creating rich content that will run everywhere than Flash.

Up until now, there hasn't been a book that covers the wide range of the Flash platform, so this book is sorely needed. The breadth of the platform means that Flash developers are under more and more pressure to deliver across all multiple environments. The fact that Flash accounts for over 85 percent of video streamed on the Web means that the traditional Flash world is colliding with other media, and the skill demands on a Flash developer have never been more diverse. Part designer, part developer, and part rich-media guru, the Flash developer needs to have many tools available. This book does a great job of covering the budding mobile space, the browser space, and the desktop space all the while providing tips and tricks to use the tools and technologies of the Flash platform.

This book couldn't have a stronger set of authors. Elad Elrom is a rising star of the Flash development world. He brings a fresh perspective, a strong background, and an inherent knack for the more subtle aspects of the Flash platform. He's been involved very early in a number of Adobe products, providing feedback and ideas to ensure that the platform remains cutting edge. Scott Janousek needs no introduction in most Flash circles. He came early to the world of Flash mobile and has watched it go through many, many iterations. He has built some of the most compelling Flash Lite demonstrations out there and has been a constant resource for the community when it comes to Flash on mobile devices. Having him author a book like this, at a time when Flash on mobile devices has never been more exciting, is a resounding endorsement of both what's inside and what's coming for Flash developers.

The multiscreen experience brings many challenges and many opportunities. As a Flash developer, you've got a leg up on the rest of your competition. The combination of great tools, great services, and a formidable rich media infrastructure means you can target these devices with next-generation user interfaces and media. This book will be a great resource as you navigate the waters of multiscreen and mobile development with the Flash platform.

Ryan Stewart

ABOUT THE AUTHORS

Elad Elrom is a technical writer, technical lead, and senior Flash engineer. As a technical writer, Elad wrote books covering Flash technologies. He maintains an active blog (<http://www.elromdesign.com/blog>) and has spoken at several conferences regarding the Flash platform. He has helped companies follow the XP and Scrum methodologies to implement popular frameworks, optimize and automate built processors and code review, and follow best practices. Elad has consulted for a variety of clients in different fields and sizes, from large corporations such as Viacom, NBC Universal, and Weight Watchers to startups such as MotionBox.com and KickApps.com.

Scott Janousek is a technical writer, software developer, training instructor, community evangelist, worldwide speaker, and CEO. He is also the owner of Hooken Mobile, a mobile design and development company based in the United States, in the suburbs of Boston, Massachusetts. Scott is an Adobe Certified Flash Designer and Developer as well as a recognized Flash mobile expert. In addition to working with Flash Mobile, he is also currently creating native applications for the iPhone, webOS, and Android platforms. As an active and contributing member of the Adobe Flash Mobile User Group, Boston Flash Platform User Group, Mass Mobile, and Mobile Monday Boston (momoBoston), Scott is passionate about mobile and devices and works with the Flash platform across all sorts of devices and gadgets. For more information about Scott and his latest mobile and device endeavors, check out his personal blog at <http://www.scottjanousek.com/blog/>.

Thomas Joos is a mobile consultant who graduated with a degree in multimedia and communication technology from the Technical University West-Flanders. As a result of his passion for mobile, Thomas specialized in Flash Lite development and mobile concepts and design. In December 2008, he won an Adobe Max Award for Rock Werchter Mobile, the only mobile entry that made it into the European finals. Thomas is always on the lookout for any mobile opportunities that could add value to a client's online campaign, experience, or communication platform. Fueled by his interest in mobile design and concepts, combined with a strong technical knowledge in Flash Lite, Thomas offers a wide variety of mobile consultation, from technical training sessions and workshops to brainstorming meetings, and he's constantly looking for mobile platform opportunities for clients and their online strategies. For more information about Thomas, you can check his personal blog at <http://www.thomasjoos.be>.

ABOUT THE TECHNICAL REVIEWER

Nancy Nicolaisen is an author, a researcher, and a former computer science professor, specializing in the design and development of small and embedded mobile-device-based solutions. Her three programming books have been printed in five languages. She writes feature and analysis content for Internet-based publishers including Jupitermedia, CodeGuru, and Faulkner Information Services and has published hundreds of feature articles, columns, and analyses in internationally circulated publications including *BYTE*, *PC Magazine*, *Windows Sources*, *Computer Shopper*, *Dr. Dobb's Journal of Software Engineering*, *Microsoft Systems Journal*, *DataBased Advisor*, and *Telecom Advisor*, and for McGraw-Hill/DATAPRO Research Corporation.

Look for her first consumer-oriented book, *Getting Started with Netbooks*, which will be published by friends of ED in 2009. *Getting Started with Netbooks* is a plain-language guide to shopping for best fit and value in your new ultra-mobile computer and learning how to get the most out of the connected mobile lifestyle using cloud computing services and innovative accessories.

ABOUT THE COVER IMAGE DESIGNER

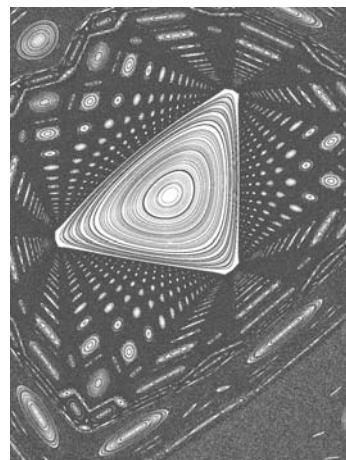
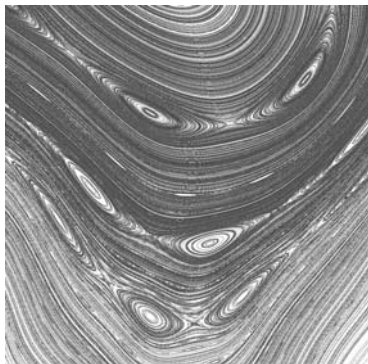
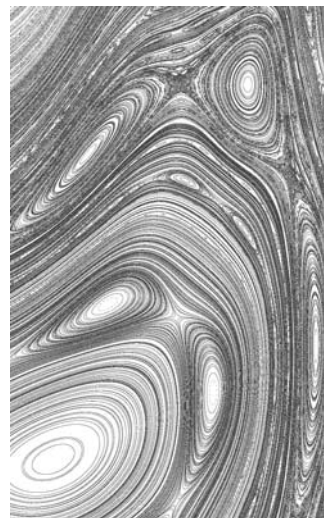
Bruce Tang is a freelance web designer, visual programmer, and author from Hong Kong. His main creative interest is generating stunning visual effects using Flash or Processing.

Bruce has been an avid Flash user since Flash 4, when he began using Flash to create games, web sites, and other multimedia content. After several years of ActionScripting, he found himself increasingly drawn toward visual programming and computational art. He likes to integrate math and physics into his work, simulating 3D and other real-life experiences onscreen. His first Flash book was published in October 2005. Bruce's folio, featuring Flash and Processing pieces, can be found at www.betaruce.com and his blog at www.betaruce.com/blog.

The cover image uses a high-resolution Henon phase diagram generated by Bruce with Processing, which he feels is an ideal tool for such experiments. Henon is a strange attractor created by iterating through some equations to calculate the coordinates of millions of points. The points are then plotted with an assigned color.

$$x_{n+1} = x_n \cos(a) - (y_n - x_n^p) \sin(a)$$

$$y_{n+1} = x_n \sin(a) + (y_n - x_n^p) \cos(a)$$



ACKNOWLEDGMENTS

This book, as you can imagine, is the collective effort of a whole team over at friends of ED, and I would like to thank each and every one of you for the superb team effort in getting this book out in a relatively short amount of time. Specifically, I would like to thank Clay Andres for helping make an idea into this book. Without Clay sharing my enthusiasm, this book wouldn't have been possible.

I would also like to thank Tom Welsh, who made sure to speak what's on his mind about keeping readers' interest and ensuring the high quality of this book. Also, thanks to Nancy Nicolaisen for an excellent technical review and the contribution of the first few pages in Chapter 15, as well as many ideas in this book's chapters. Also, thanks to Sofia Marchant for ensuring that this book stayed on track and for overcoming obstacles.

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Special thanks go to the Adobe Strobe Team, and in particular to Christine Yarrow and Sumner Paine, who were kind enough to allow us publishing and never-before-seen information about the framework.

I would like to thank my coauthors Scott Janousek and Thomas Joos, who worked day and night to make deadlines while juggling busy schedules and personal lives.

Finally, I would like to thank the mobile and Flash communities for being active and helping inspire much of this book's material, as well as for keeping up with the fragmented mobile ecosystem.

Elad Elrom

Many thanks to Alessandro Pace, Dale Rankine, Mark Doherty, and many other passionate leaders in the worldwide Adobe community for the hours spent evangelizing Flash on mobile and devices over the years. The Flash mobile (and especially the Flash Lite) community is a tight-knit group of great people who are always willing to share opinions, resources, ideas, and knowledge. It has been really great to be a part of the community over the past few years.

To my coauthors, Elad and Thomas, thanks, guys, for hanging in there as we put in all those long hours to make this beast of a book actually happen (finally).

I also want to give big props to the friends of ED team for managing the whole book's process and getting it out to readers, despite many of the obstacles we've encountered along the way. The publishing team at friends of ED rocks!

Scott Janousek

I would like to thank the entire multimedia and communication technology (MCT) crew at the Technical University of West-Flanders for doing a fantastic job providing high-quality and new-media-related education. Going for MCT was one of the best decisions I made and really helped me find out what I wanted to do. Special thanks go to Koen De Weggheleire, who has always inspired and motivated me to get the most out of my projects and my goals.

Many thanks to my coauthors Elad Elrom and Scott Janousek, who worked so hard to make this book great. Besides that, I would like to thank you both for taking me under your wings. Even though there were lots of late nights and long hours, it was a wonderful experience, and I am very proud of the result.

To the entire friends of ED crew, thanks for managing the whole book's process and doing a great job getting this book out to readers. It was a real pleasure working with all of you.

Thomas Joos

INTRODUCTION

The idea of writing this book emerged from the last book Elad coauthored called *Advanced Flex 3*. In the previous book, Elad wrote an 80-page chapter about mobile devices. Before that book was printed, the team realized that writing a chapter covering Flash Lite may not be suitable for a Flex 3 book, and the chapter was dropped. After a conversation with Clay Andres in Manhattan about trends, technology, Flex, and mobile, Elad and Clay decided that they should do the extraordinary and combine Flash Lite with emerging technologies, taking into account the release of Flash Player 10 on mobile devices; they also decided to include the hard-to-keep-up-with changes to Flash Lite.

Shortly after, Elad was connected with Scott Janousek and Thomas Joos, who shared his vision and helped create this book—it includes theory, relevant real-life examples, as well as never-before-seen tutorials and information on how to develop applications for mobile devices using the Flash platform.

Mobile devices are the most frequently used devices worldwide, and today, the mobile ecosystem is undergoing an exciting revolution. Amid all these changes is the Adobe Open Source Project, which is moving from an idea into a reality with the availability of Flash Player 10 and Adobe Integrated Runtime (AIR) for mobile devices. These exciting changes open up new possibilities for mobile developers and allow you to create cross-platform applications that share code across the devices.

The book is a good starting point if you're a developer interested in getting involved in mobile development using the Flash platform, and it's an equally a great resource for taking mobile development to the next level and moving to more advanced topics and understanding where mobile development is going. This book is suitable for many individuals, whether you're a current Flash Lite developer who wants to push the limits and better understand the mobile ecosystem or a Flex developer who's been reluctant to develop applications for mobile development because you refused to write your code in ActionScript 2.0. This book is also suitable if you're a developer who has never used the Flash platform to develop a mobile application but wants to be part of the exciting possibilities.

The book offers you unparalleled insight into the mobile development world, which is known for being rewarding, as well as complex, fragmented, and rapidly changing. The chapters in this book will cover different versions of Flash content using Flash Player 1.1, 2.0, 2.1, 3.0, 3.1, 9.0, and 10.0. Topics covered in this book include desktop and mobile development using AIR, as well as differences between desktop and web development—as well as how to take these differences into consideration in mobile development. This book includes information regarding existing platforms, content providers, and aggregators that are part of the worldwide mobile ecosystem. It also talks about the communities and desktop and online tools to make your life easier, and it offers exciting tutorials for concepts such as deploying Flash on the iPhone and developing mobile applications using Flash Catalyst, Flex, and AIR.

We believe that this book is a great resource but also a window into the future of mobile development: it addresses not only challenges that mobile developers face today but the new challenges developers will be facing in developing applications with Flash Player 10 and AIR for mobile devices. Our hope is that this book will inspire you to start developing applications for mobile devices.

Layout conventions

To keep this book as clear and easy to follow as possible, the following text conventions are used throughout.

- Code is presented in fixed-width font.
- New or changed code is normally presented in **bold fixed-width font**.
- Pseudo-code and variable input are written in *italic fixed-width font*.
- Menu commands are written in the form Menu ► Submenu ► Submenu.
- Where we want to draw your attention to something, we've highlighted it like this:

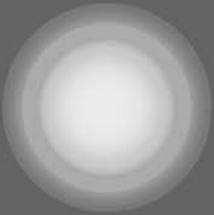
Ahem, don't say we didn't warn you.

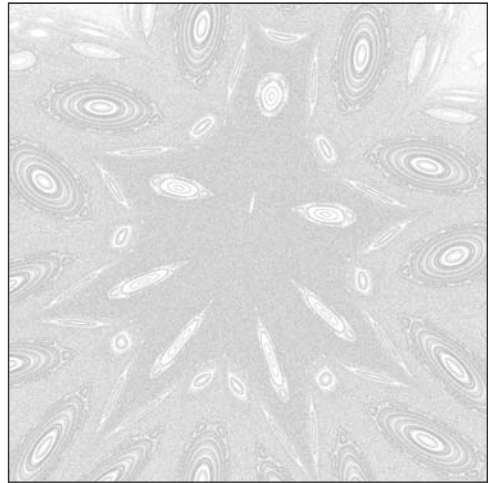
- Sometimes code won't fit on a single line in a book. Where this happens, we use an arrow like this: ➡.

This is a very, very long section of code that should be written all ➡ on the same line without a break.

Part One

MOBILE DEVELOPMENT LANDSCAPE





Chapter 1

THE MOBILE AND DEVICE LANDSCAPE

Mobile devices are undergoing an exciting revolution today due to the rapid increase in network subscribers as well as the increase in experienced designers, which results in better user interface and hardware innovations such as touch screens. According to *Mobile Magazine*, over a billion people will have a mobile device connected to a 3G network with a fast Internet connection by 2010. As the mobile device changes, consumers' expectations of their mobile devices increase as well.

Amid all these changes, the Adobe Open Source Project is moving the Flash Player from a licensed model to an open source model to compete with other mobile technologies. The announcement of the availability of Flash 10 and Adobe Integrated Runtime (AIR) for mobile devices opens new possibilities to mobile developers.

Many different mobile devices are in use today, including the following:

- **Mobile phones** are the most commonly used electronic devices worldwide. The mobile phone started as a mobile device capable of making phone calls, but recent years have seen a real transition from pure voice to data. Today, mobile phones include many more features than just the ability to make calls and have turned into what are called “smart phones,” which include more-capable CPUs and larger memory to support multimedia and other programs that we usually use in our desktops or on the Web. Up until now, mobile phones only supported Flash Lite (FL) and the development was limited to