

Data Mining Mobile Devices

Jesus Mena



CRC Press

Taylor & Francis Group

AN AUERBACH BOOK

Data Mining Mobile Devices

OTHER TITLES FROM AUERBACH PUBLICATIONS AND CRC PRESS

Ad Hoc Mobile Wireless Networks: Principles, Protocols, and Applications, Second Edition

Subir Kumar Sarkar, T.G. Basavaraju,
and C. Puttamadappa
ISBN 978-1-4665-1446-1

Android Security: Attacks and Defenses

Anmol Misra and Abhishek Dubey
ISBN 978-1-4398-9646-4

Applying Guiding Principles of Effective Program Delivery

Kerry R. Wills
ISBN 978-1-4665-8789-2

Automatic Defense Against Zero-day Polymorphic Worms in Communication Networks

Mohssen Mohammed and Al-Sakib Khan Pathan
ISBN 978-1-4665-5727-7

Big Data and Business Analytics

Jay Liebowitz (Editor)
ISBN 978-1-4665-6578-4

Bring Your Own Devices (BYOD) Survival Guide

Jessica Keyes
ISBN 978-1-4665-6503-6

The Complete Book of Data Anonymization: From Planning to Implementation

Balaji Raghunathan
ISBN 978-1-4398-7730-2

Data Governance: Creating Value from Information Assets

Neera Bhansali (Editor)
ISBN 978-1-4398-7913-9

Data Mining Mobile Devices

Jesus Mena
ISBN 978-1-4665-5595-2

Driving Business Value with Technology and Big Data

Benjamin Woo
ISBN 978-1-4665-8054-1

Effective Surveillance for Homeland Security: Balancing Technology and Social Issues

Francesco Flammini, Roberto Setola, and
Giorgio Franceschetti (Editors)
ISBN 978-1-4398-8324-2

Enterprise Dynamics Sourcebook

Kenneth C. Hoffman, Christopher G. Glazner,
William J. Bunting, Leonard A. Wojcik,
and Anne Cady
ISBN 978-1-4200-8256-2

Guide to the De-Identification of Personal Health Information

Khaled El Emam
ISBN 978-1-4665-7906-4

Identification and Management of Distributed Data: NGN, Content-Centric Networks and the Web

Giovanni Bartolomeo and Tatiana Kovacikova
ISBN 978-1-4398-7907-8

Information Security Policy Development for Compliance: ISO/IEC 27001, NIST SP 800-53, HIPAA Standard, PCI DSS V2.0, and AUP V5.0

Barry L. Williams
ISBN 978-1-4665-8058-9

Iris Biometric Model for Secured Network Access

Franjeh El Khoury
ISBN 978-1-4665-0213-0

Next Generation Mobile Broadcasting

David Gómez-Barquero
ISBN 978-1-4398-9866-6

Optimal Resource Allocation for Distributed Video and Multimedia Communications

Yifeng He, Ling Guan, and Wenwu Zhu
ISBN 978-1-4398-7514-8

PRAGMATIC Security Metrics: Applying Metametrics to Information Security

W. Krag Brotby and Gary Hinson
ISBN 978-1-4398-8152-1

Return On Process (ROP): Getting Real Performance Results from Process Improvement

Michael West
ISBN 978-1-4398-8639-7

Securing Cloud and Mobility: A Practitioner's Guide

Ian Lim, E. Coleen Coolidge, and Paul Hourani
ISBN 978-1-4398-5055-8

Security and Privacy in Smart Grids

Yang Xiao (Editor)
ISBN 978-1-4398-7783-8

Unit and Ubiquitous Internet of Things

Huansheng Ning
ISBN 978-1-4665-6166-3

Data Mining Mobile Devices

Jesus Mena



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

AN AUERBACH BOOK

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

© 2013 by Taylor & Francis Group, LLC
CRC Press is an imprint of Taylor & Francis Group, an Informa business

No claim to original U.S. Government works
Version Date: 20130220

International Standard Book Number-13: 978-1-4665-5596-9 (eBook - PDF)

This book contains information obtained from authentic and highly regarded sources. Reasonable efforts have been made to publish reliable data and information, but the author and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The authors and publishers have attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, please access www.copyright.com (<http://www.copyright.com/>) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. CCC is a not-for-profit organization that provides licenses and registration for a variety of users. For organizations that have been granted a photocopy license by the CCC, a separate system of payment has been arranged.

Trademark Notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Visit the Taylor & Francis Web site at
<http://www.taylorandfrancis.com>

and the CRC Press Web site at
<http://www.crcpress.com>

To

Sergio “El Juez” Armijo, Jorge “El Mustachon” Bustamante,
Antonio “El Ochotres” Diaz, Eusebio “El Marcos” Gutierrez,
and Victor “El Romano” Munoz

Contents

Preface.....xi

1 Mobile Sites 1

1.1 Why Mobile Sites?1

1.2 Developing a Mobile Site.....2

1.3 Mobile Biz5

1.4 Put Your Brand in Their Pocket.....7

1.5 Mobile Search Engine Optimization (SEO)9

1.6 Mobile Site Requirements.....10

1.7 A Mobile Site Checklist15

1.8 Constructing a Mobile Site.....18

1.9 When to Build a Mobile Site25

1.10 The Mobile Site Experience27

1.11 Getting Mobile Googled29

1.12 Mobile Is about Now!.....31

1.13 Mobile Payments32

1.14 Adobe Shadow™ Mobile Site Tester33

1.15 Mobile Cookies34

1.16 The ConnectMe QR™ Network.....36

1.17 Mobile Ad Networks38

1.18 Mobile Site Developers40

1.19 Mobile Site Development Case Studies.....44

1.19.1 OneIMS44

1.19.2 YoMobi.....44

1.19.3 MobiTily.com.....45

1.20 Tracking via Unique Device ID.....45

1.21 Mobile Site versus Apps47

1.22 Social Mobile Site49

1.23 Web and Wireless Sites50

1.24 Building a Mobile Site with HTML554

1.25 The Importance of Mobile Site Speed56

1.26	Mobile Site Marketing Challenges.....	57
1.27	Construction of Mobile Sites Are a Top Priority.....	57
1.28	Mobile Site Metrics	58
2	Mobile Apps	61
2.1	Why Apps?	61
2.2	Google Mobile AdWords App	62
2.3	HTML5	64
2.4	In Your Face	67
2.5	Brand Apps.....	68
2.6	Apps Metrics and Trends.....	69
2.7	App Exchanges	70
2.8	App Developer Alliance.....	71
2.9	Entertainment Apps	72
2.10	News Apps	73
2.11	An App To-Do List	76
2.12	“Picture-This” Apps	78
2.13	Gov Apps.....	82
2.14	A Stealth App	82
2.15	Apps Overtake PCs	83
2.16	Health Apps	84
2.17	Building a Popular App	85
2.18	An App Ad Reporter.....	87
2.19	Biz Apps	88
2.20	A Video App.....	91
2.21	The Twitter Apps	92
2.22	App Usage Patterns.....	93
2.23	The Whispering Apps.....	94
2.24	Hyper Targeting Apps	96
2.25	Crashing Apps.....	97
2.26	Mapping Apps.....	98
2.27	The American App Economy.....	99
2.28	Googling Apps	101
2.29	Apps Options	102
2.30	App Security.....	104
2.31	Local Company Apps	107
2.32	The \$ Apps	110
2.33	Ambient Social Network Apps	112
2.33	App Developers	114
2.34	App Demographics.....	115
2.35	App Triangulating Services.....	116
2.36	App Ad Agencies	117
2.37	App Analytics.....	118

2.38	Ads as Apps	120
2.39	The Future of Apps.....	120
3	Mobile Data.....	123
3.1	How It Works.....	123
3.2	Machine-to-Machine (M2M) Telemetry	128
3.3	Mobile Data Metrics	131
3.4	Mixing Personal and Business Mobile Data.....	134
3.5	GPS and Wi-Fi Triangulation	136
3.6	Backing Up Mobile Data.....	141
3.7	Real-Time Demographics	142
3.8	Hyperbolic Positioning.....	143
3.9	Privacy Concern of Mobile Data	145
3.10	Deep Packet Inspection (DPI)	147
3.11	Mobile Marketing Data.....	148
3.12	Mobile Data Aggregation Networks	149
3.13	Mobile Video Data	151
3.14	iPhone and Android ID Numbers	152
3.15	Blocking Browsers	155
3.16	Mobile Voice Recognition Data.....	156
3.17	Mobile Data Assurance Service	160
3.18	Mobile Facial Recognition.....	160
3.19	Mobile Wallet Data	162
3.20	Mobile Digital Fingerprinting Data.....	163
3.21	Capturing Mobile Data	167
3.22	Mobile Haptics Data	168
3.23	Mobile Mad Men	170
3.24	Mobile Data Privacy Policies	172
3.25	Mobile Big Data	174
3.26	Mobile Data Triangulation Techniques.....	175
3.27	Mobile Data over Mobile Revenue	177
3.28	Triangulation Targeting via Mobile Data	178
3.29	The Mobile Data Challenge.....	179
3.30	Triangulating Exchanges of Mobile Data	180
3.31	The Future of Mobile Data.....	183
4	Mobile Mobs.....	185
4.1	The Mobs	185
4.2	Deal Mobs.....	186
4.3	Mobile Analytics: What, Where, How, and Why.....	192
4.4	The Social Mobile Mobs.....	197
4.5	The Apple Mobile Mob.....	200
4.6	The Facebook Mobile Mob.....	209

- 4.7 The Google Mobile Mob 216
- 4.8 The Twitter Mobile Mob 224
- 4.9 The Amazon Mobile Mob 230
- 4.10 The Mobile Fab Four 235
- 5 Mobile Analytics 241**
 - 5.1 Mining Mobiles..... 241
 - 5.2 Mining Mobile Sites..... 243
 - 5.3 The Metrics of Mobile Analytics..... 245
 - 5.4 Google Mobile Analytics 246
 - 5.5 An Artificial Intelligence (AI) App 248
 - 5.6 Clustering Mobiles 249
 - 5.7 Mining Mobile Mail..... 252
 - 5.8 Text Mining Mobiles..... 252
 - 5.9 Classifying Mobiles 256
 - 5.10 Streaming Analytics 262
 - 5.11 Mining Mobile Mobs 263
 - 5.12 Mining Social Mobiles 265
 - 5.13 An Artificial Intelligence (AI) Mobile..... 267
 - 5.14 Business-to-Business (B2B) Marketing Analytics..... 268
 - 5.15 Mapping Mobiles 269
 - 5.16 Text Analytics 279
 - 5.17 Behavioral Analytics..... 283
 - 5.18 Streaming Analytics 286
 - 5.19 Mobile Site Analytics..... 293
 - 5.20 Social Mobile Consultancies..... 295
 - 5.21 Mobile Analytics 297

Preface

This is a book about data mining mobiles in millions of peoples' pockets or purses — which represent incredibly powerful diaries of their life — *continuously* and *intimately* broadcasting where, how, when, and what products, content, games, news, movies, relationships, books, searches, services, interests, places, entertainment, etc., they want.

The structure of the book begins with the construction and leveraging of mobile sites, in Chapter 1, followed by the strategic use of mobile apps in Chapter 2. Both of these are important because they generate vital mobile data, which is the subject of Chapter 3.

Chapter 4 discusses mobile mobs, which can be differentiated as distinct marketplaces, that include Apple, Google, Facebook, Amazon, and Twitter. Finally, Chapter 5 discusses mobile analytics in detail via clustering, text, and classification AI (artificial intelligence) software and techniques.

Data mining, behavioral targeting, big data, business intelligence, Web analytics, and, most importantly, AI have been confined to stationary devices by enterprises, brands, and marketers. However, given the recent trends, this will soon change; the world is going mobile — and this is why this book was written. Here are a few numbers to consider:

- “Mobile marketing revenues will grow to \$58 billion by 2014,” Gartner <<http://www.gartner.com/technology/home.jsp>>
- “There will likely be more mobile Internet users in 2015 than PC users,” IDC <<http://idc.com/>>
- “Global mobile marketing will grow by 30 percent to \$1,047 billion in 2016,” Ovum <<http://ovum.com/section/home/>>

Chapter 1

Mobile Sites

1.1 Why Mobile Sites?

Just as companies did, marketers and brands quickly realized a decade ago that they needed to create a website in order to have a presence and be relevant to consumers. History is repeating itself with the current mobile explosion; by 2013, more people will be using their mobiles than PCs (personal computers) to browse the Internet. The tipping point came in 2011; in that year, consumers spent more time on their mobiles than on their desktops or laptops—during that holiday season they searched, shopped and did price comparisons—via the devices they carried with them in stores and malls.

One critical feature about mobile sites is that they can generate a wealth of information for data mining mobile devices, such as the segmentation of different models and operating systems, or by their physical locations or interests. It is in this context that the importance of constructing and supporting a mobile site becomes paramount—as they generate important mobile data for modeling and predicting consumer behaviors and preferences. The mobile device *is* the consumer, and mobile sites are the means by which to use cookies and other mechanisms to track and segment their owners' behaviors.

In such an evolving environment, a traditional website designed to be viewed on a large stationary device comes across as woefully lacking on a tiny mobile device where a person may be walking down a street, maneuvering through a mall, or entering a store. New website designs are required when creating a mobile site—as those visitors are using small moving devices and new factors must be considered—such as *location*- and *interest*-based parameters. The features to include at mobile sites will differ among retailers, enterprises, and brands as consumers are no longer

browsing with their mouse and keyboard but are instead swiping with their thumbs and tipping with their fingers.

One common dilemma when browsing via a mobile device is that traditionally designed websites take a relatively long time to load. The second common problem is that the print type on the pages is dismally small, requiring a lot of zooming to navigate the site. Additionally, certain style sheets and mechanisms from traditional websites such as Adobe® Flash** are not supported by certain mobiles; this is definitely the case with all Apple®† devices. Mobile devices will overtake desktop use in less than two years, if not sooner; the number-one way people access local information on Google® or Facebook® is via mobile devices, with over 20 million users per month visiting just these two sites.

According to KISSmetrics (<<http://www.kissmetrics.com>>), 88 percent of all mobile users are more likely to buy from an auto dealer with a mobile site, 65 percent for auto parts stores, 62 percent for furniture, 61 percent for florists, and so on—the race is on. According to eMarketer (<<http://emarketer.com>>), almost 60 percent of all business-to-business (B2B) decision makers in the United States are on their mobile devices every day for email and Web research. They use mobile websites to make informed decisions—half of them are participating in social media, especially in industry forums in places like LinkedIn® or Twitter® on their mobiles—and another third are reading blog posts and listening to podcasts for information to support their everyday decision making.

Any enterprise or brand that does not have a mobile site is missing the attention of critical decision makers. Failure to construct one will result in the following: visitors will have to zoom in to read anything, probably multiple times, most likely there is too much text that no one will bother to read. Eye-catching calls-to-action will not be seen; the landing page forms will be too small to fill out on the mobile device; and finally, no one will take the time to browse a traditional website and navigate through layers of content. Mobile sites have to shout out, quickly and precisely; they need to get to the point instantly before the mobile browsers wander off to competitors.

1.2 Developing a Mobile Site

According to a recent survey from Compuware (<<http://www.compuware.com>>), 40 percent of mobile device users have turned to a competitor's site after a bad mobile experience. Yet currently, most companies and brands have not optimized

* “Adobe” and “the Adobe logo,” if used, followed by other Adobe marks used in alphabetical order are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

† Apple is a trademark of Apple Inc., registered in the United States and other countries.

their websites for mobile. A recent survey by Google Mobile Ads™ * of marketers and enterprises in 2011 found that only 21 percent have launched a mobile website. Google is eager to expand its online advertising empire further into the mobile ecosystem and has launched GoMo® † (<<http://www.howtogomo.com/en/d/>>), an initiative that aims to help businesses, marketers, and brands go mobile.

Google [howtogomo.com](http://www.howtogomo.com) (<<http://www.howtogomo.com/en/d/#homepage>>) is a clearinghouse of information on the topic of building a mobile site and includes features that allow marketers, brands, and enterprises to see how their site looks on mobile devices. For those looking for a quick fix, Google provides a list of companies that specialize in constructing mobile sites—visitors can specify what they want to spend, and some can get a site up and running for as little as \$100 a year.

Mobile devices introduce a new layer of complexity that can be difficult for traditional websites to accommodate because they require *cross-platform* functionality and diminutive displays; at a minimum, the mobile sites should support the native Android™‡ and Apple browsers. Mobile-optimized sites need to simplify content and make it highly readable. They also can take advantage of audio-video content instead of long pages of text—which for mobile devices is like viewing a TV ad—as opposed to browsing a static website. Mobile sites need to draw in consumers in a fun and intuitive way, keeping in mind that they are also a new ad channel for delivering very important lead generation content to millions of consumers.

Marketers, enterprises, and brands need to consider how the mobile site structure will be organized and indexed on the Internet. There are three basic domains options for a mobile site: the first is constructing an independent site just for mobiles, while the second option is creating a subdomain or subdirectory for the mobile site, and finally creating a hybrid of both the traditional and mobile sites.

A separated mobile site is hosted on a different domain than the main website and works in a completely separate way from the traditional main website. This option increases the cost of creating, maintaining, and updating a separate mobile site, which tends to be higher than the other structure options. In addition, the separate new mobile site will not benefit from the traffic, links, or rankings of a traditional website. The new, separate mobile site must be positioned by the mobile search engines and must compete with other mobile sites that are already well positioned in these engines.

The second option of creating a subdomain or a subsection for a mobile website represented in the main URL (universal resource locator) may be done in the following way: *name-subdominio.dominio.com*. Subdirectories are sometimes called folders or subfolders and are represented differently in the URL. One of the biggest advantages of this option is the ability to customize the content of a main website

* Google Mobile Ads is a trademark of Google Inc., registered in the United States and other countries.

† GoMo is a trademark of Google Inc., registered in the United States and other countries.

‡ Android is a trademark of Google Inc., registered in the United States and other countries.

to the needs and requirements of the mobile Web. This usually means eliminating unnecessary components and controls, and most importantly the elimination of multimedia content that slows down the loading time for mobiles. Another option is the simplification of the mobile site design into a single column with different headers correctly labeled.

The hybrid option is based on the use of multiple cascading style sheets (CSSs) to adapt the presentation and the contents of the traditional website to mobile devices. The CSSs allow the developer of the site to determine how the content of a webpage is displayed on a mobile device. The site developer will need to insert a link to the mobile CSS for each page after the link to the traditional style sheet in order for the mobile browsers to automatically detect if there is a style sheet adapted for mobile devices.

Today, most of the modern mobile devices support Wi-Fi Protected Access II (WPA2), which is a security protocol and security certification program developed by the Wi-Fi Alliance (<<http://wi-fi.org/>>). WAP2 technology also allows the viewing of images, XHTML, and CSSs; in addition, WAP2 offers monochrome or high-resolution displays supporting CSS and Java™*. The use of this technique is very simple, especially if the code for the host that controls the styles is in a separate file server. This design allows for site updates to be done automatically and quickly. These updates will be taken by the mobile browser to display the page in an optimal way. This minimizes the load time of the mobile site because it is only necessary to load the style when the developer accesses the site but is not required for subsequent accesses to other pages.

Keynote Systems (<<http://keynote.com>>) released some mobile site performance metrics that indicate important industry best practices. The mobile metric company said the top mobile site performers stood by a couple of key mantras in managing and developing their presences. The first and most important best practice is that *less is more*. It is as simple as this: the fewer number of objects on a mobile home page, the less time it takes to load. On a small mobile screen, the user experience is about *clarity*, *usability*, and *speed*. Images and objects look great on a desktop, but on a mobile they just take a long time to load. The best practice for mobile sites is to cut down their loads by reducing the number of heavy images and using clear, directive text for their mobile homepages.

Here are a few things that developers, companies, marketers, and brands should not include in their mobile sites:

1. Avoid multiple forms; keeping forms to one page allows mobile visitors to see exactly where they are in the process of filling out the form.
2. Avoid irrelevant functions; instead, concentrate on quick functionality, such as click-to-call or click-to-text.

* Java is a trademark of Sun Microsystems, Inc.

3. Avoid all pop-up ads; this predicament can be caused when a company chooses to sync its traditional website to its mobile site.

It is important that all of these mobile-specific options be simple and efficient.

As companies, brands, and marketers extend their businesses through mobile websites and apps, they should be careful to use mobile-specific strategies that put the end-user experience first. All obstacles should be removed in order to allow end users to easily engage with a company's mobile site and apps. Allowing visitors to engage with key business processes at mobile sites can add significant business value to brands, enterprises, and marketers. Traditionally, this high level of mobile engagement has required the creation of native mobile apps, a time-consuming and costly building process that results in siloed data and inflexibility.

However, firms such as UR Mobile (<<http://urmobile.com/>>) are offering an attractive alternative to native business apps, and that is mobile site apps. Through its Accelerate™ Platform, UR Mobile allows companies to quickly integrate a mobile Web app that can be embedded in their mobile site. With mobile Web apps, there is nothing for mobile end users to download or manage, and the Web app solutions can be easily and efficiently updated and edited at any time by the company, brand, or marketer without having to go through a re-release or app store approval process. This option allows for two data aggregators to be created and evolve—the mobile site and the mobile app—both with one strategic stroke.

1.3 Mobile Biz

The number of mobiles is rapidly advancing; in 2011 alone, the tablet market experienced explosive growth, thanks to the Apple iPad® and Kindle Fire™*. The acceleration of these mobiles will significantly increase many aspects of business, including content consumption, customer touch points, and mobile commerce. Today, millions of apps, publications, sites, social networks, and other digital media content are readily available with the swipe or a tap of a finger. The question for the marketer, developer, and brand is: How will they leverage these mobile opportunities to foster more productive relationships with customers and prospects?

While mobiles support an “always on, always connected” way of life, they help people navigate the day in ways they never could have imagined. Beyond mobile sites and apps, consumers are now searching the Internet—Google sees 4 billion local searches for products and services each month with 61 percent of those resulting in an actual purchase. This is important for small retailers because 55 percent of consumers report using their mobiles to buy a local service or product.

* Amazon, Kindle, Kindle Fire, the Amazon Kindle logo, and the Kindle Fire logo are trademarks of Amazon.com, Inc. or its affiliates.

Every business is a little different, but this much is becoming clear: at some point in that sales cycle, people are turning to the Internet for more information. So it is mission critical for a marketer, company, or brand to understand the basics of local mobile search optimization and put these skills to work. This starts with optimizing their mobile site at all search engines, with ample maps, directions, discounts, and calls to contact touch points with one-click functionality.

Enterprises, retailers, developers, and brands also need to start considering the acceptance of mobile payments and this should be planned as an option and development for the mobile site. Expect mobile payments to increase and for mobile site visitors to begin asking for that mobile option—thanks in part to continued pressure from major players like Amex^{™*}, PayPal^{™†}, VISA^{®‡}, Intuit[®], and Google—plus, start-ups like Square^{®§} and Dwolla^{®¶}, which are accelerating this payment option.

People like to watch video—in fact, YouTube^{™**} is the second-largest search engine, behind only the behemoth, Google. People do not mind watching video ads on their mobiles; as Hulu^{™††}, Netflix^{™‡‡}, and YouTube apps continue to provide quality mobile content at a very low cost, consumers will become even more used to watching video on-the-go. There is an entire sector of the population that turns to YouTube to search and be entertained. Marketers, brands, and developers need to begin to develop a content strategy for social sites such as Facebook and Twitter and search sites such as Google and Bing[®] with equal attention to YouTube, which is ideal for advertising to mobiles on-the-move.

Here are some other issues to keep in mind when building a mobile site for getting down to business. Do not just scale down a traditional website and try to squeeze as much content into the little screen; instead, use the mobile development process to prune original offerings down to the most essential for mobiles. Put content over navigation; nobody cares about an enterprise's organization chart; instead, use screen real estate to display actual content, not just hierarchies of links. Consider what your visitors want first and then make sure you can deliver it: don't start from what you have; start from what they need.

Design the site to make the mobile experience fast; people use mobiles in between other tasks and nobody wants to wait while they are waiting. Check what visitors regularly do while at the mobile site, especially when changes are made. Do not assume to know how visitors will use the mobile site; rather, rely on mobile site analytics to measure what visitors do. The mobile landscape is constantly evolving

* Amex is a registered trademark of the American Express Company.

† PayPal is a registered trademark of PayPal, Inc.

‡ VISA is a registered trademark of Visa Inc. in the United States and other countries.

§ Square is a registered trademark of Square Inc.

¶ Dwolla is a registered trademark of Dwolla Corporation.

** YouTube is a registered trademark of Google Inc.

†† Hulu is a registered trademark of Hulu, LLC.

‡‡ Netflix is a registered trademark of Netflix, Inc. (<http://www.netflix.com>).

in terms of devices and even operating systems, so use HTML5 and other Web standards to future-proof the site development.

Mobile devices are becoming more capable of rendering pages on the front end, so use this ability to limit server calls and provide for each device's unique implementations. Finally, to make more screen area available for content is to tuck navigational options behind clearly labeled buttons that allow users to explore options and dive deeper. The developer can make navigation disappear altogether by setting up preferences for mobile alerts; visitors will get the content faster and the developer will learn about what they want.

1.4 Put Your Brand in Their Pocket

As more consumers engage through mobile devices, marketers are looking for ways to communicate with them—whether through apps or mobile sites where visitors are looking for content and information. For example, AvatarLabs (<<http://www.avatarlabs.com>>) recently created a series of mobile sites to help train retail sales associates at Best Buy® and AT&T™ so they could help consumers in their stores. Through the sites, employees accessed real-time information about products and resources to help clients on the sales floor.

Meanwhile, a new release from iBuildApp (<<http://www.ibuildapp.com>>) could help build buzz about a brand's mobile offering. Their new widget previews a brand's app on a mobile site, so potential users can “see” how the app will look and the types of information offered. This could help their decision making in downloading the app—more informed decisions mean a higher likelihood that those apps will be used rather than downloaded and deleted or ignored—it is a great way to reach customers and visitors, and get a brand in their pocket.

Finally, in an effort to help all those users with fitness resolutions, a new augmented reality program from Hipcricket®* (<<http://www.hipcricket.com>>) offers athletes training tips, sports, and information. Through a mobile ad campaign, consumers use their mobiles to access an interactive training card. That card “comes to life,” offering the user training tips and athlete and sports information—the mobile ad campaign incorporated a number of channels to provide readers with a truly interactive and engaging experience. This is another example of how to make the mobile experience truly engaging for and rewarding to visitors and customers.

mytaGGle (<<http://www.mytaggle.com>>) offers a completely free Web application for creating a mobile site and apps for marketers and developers. The company provides businesses and individuals with the opportunity to swiftly create a professional app and site optimally suited for visitors using mobiles. Already half of all Internet users use mobiles—and this percentage will only rise further; at the same time, it seems that only a small fraction of all traditional websites can be

* Hipcricket is a wholly owned subsidiary of Augme Technologies, Inc.

viewed properly using mobile devices. When using the mytaGgle Web app, it soon becomes apparent how complete the package actually is.

Apart from the wide choice of templates and icons currently available, it offers to developers the option to design their own icons and to define the mobile site layout. Developers and marketers can easily and neatly position photographs and YouTube films on their mobile sites with links to social media, a Really Simple Syndication (RSS) page, which is a family of Web feed formats, or a Google page. They have even developed a unique link with Facebook that enables the developers or marketers to integrate their entire app site into their brand's Facebook profile. mytaGgle is a completely free service, and it only takes developers a few minutes to create an attractive app site for mobile devices.

Another firm, myhosting.com®, has launched its Mobile Website Builder platform, goMobi, enabling developers to build a professional mobile site both quickly and easily. The goMobi Mobile Website Builder platform includes a number of features through a WYSIWYG (What You See Is What You Get) interface that allows customers to easily create a mobile version of their traditional website by adding options like Products, Contact Forms, Find Us, Reviews, Image Gallery, and many more features. The goMobi Setup assistant can also automatically generate a mobile site based on an existing traditional website, to help visitors and developers get started quickly.

With mobile Web browsing becoming a more common way for users to access the Internet, the time to create a mobile-specific site has never been better. The goMobi Mobile Website Builder and Setup Assistant allow developers to create a site for smaller screens, enabling marketers to more easily engage mobile website visitors with a customized browsing experience. With search engines such as Google indicating that mobile is an upcoming trend that webmasters should be aware of, the time to jump on the bandwagon is now. Mobile users interact with search results and sites differently than desktop users.

Another mobile marketing company, ConnectMe QR (<<http://www.connectmeqr.com>>), offers its mobile website and QR Code package subscription service. This service also makes it possible for individuals and small businesses to have a mobile marketing site that they manage themselves, giving them the opportunity to compete in the mobile marketing arena often dominated by big business. The ConnectMe QR mCard™ comes with a unique Quick Response (QR) Code and URL, allowing developers and marketers the flexibility of attracting both mobile and online visitors.

Each ConnectMeQR user receives an mCard mobile site that is hosted by ConnectMe QR and has the ability to customize and control content by adding banner images and editing icons and text. Also included are nine different links developers can tailor for their site, such as phone, site, email, map, and social media. A unique ConnectMeQR Code can be printed on business cards and marketing materials, including access to their mCard mobile site 24/7 with edits and pricing, contact information, and marketing campaign changes taking effect immediately.

Here are some tips for getting your brand in their pocket or purse. Plan your mobile marketing strategy based on how people use their mobile devices. Do some market research, or perform a survey of your visitors' mobile habits: what are they searching for, or what are their desires, interests, and locations. The developer should evaluate how to target market using mobile technology and how mobile marketing will uniquely allow marketers to reach their goals. For example, a very common use is to locate a restaurant or other business that is close to where the mobile is located at the time, utilizing the GPS (Global Positioning System) or Wi-Fi triangulation functionality of the device.

1.5 Mobile Search Engine Optimization (SEO)

If you want them to choose your location, make sure that your online directory listings are up-to-date, accurate, and are search engine optimized (SEO). If you do not have online directory listings, get them. For example, if you own a restaurant, you will want to be on online directories such as Yelp™ (<<http://www.yelp.com>>), Google Places™ (<<http://google.com/places>>), Zagat.com (<<http://www.zagat.com>>), Citysearch.com, Opentable.com, or Insiderpages.com. Once you establish whether or not mobile marketing is appropriate for your marketing campaign, you should integrate your mobile marketing with your mass media and outdoor marketing by placing banners and ads that reference your mobile-friendly site in places where people might have idle time with their mobile device, such as at bus stops, in subway stations, cafes, or on billboards.

One of the easiest ways to begin mobile marketing is to ensure that your mobile site is locatable via mobile search engines and usable on mobiles. First, you need a site that is optimized for mobile devices. The elements of a dynamic traditional website are different from those of a mobile site. The trick is to make it attractive and functional to both kinds of visitors, but keep in mind that increasingly these will be mobiles. Be sure to test it on all the major platforms to ensure that it works as intended; this includes the two dominant devices: Android and Apple. Micro-formats are a newer class of open-data formats that can be used to adapt existing data so that it is more flexible for use across multiple platforms.

With mobiles becoming increasingly popular, it is becoming more important to take into account mobile-specific SEO when it comes to designing a mobile site. It is wrong to assume that mobile SEO is the same as SEO used in stationary computers; this is definitely not the case. To begin with, the content and method of presentation differ greatly between traditional websites designed for stationary devices and those designed for mobiles. The main difference is in the screen size, but the environments between these stationary and mobile devices are also different—mobile Web browsing takes place in one of two situations: “on the move” or “sitting down.”

The search engines that have been built specifically for use on mobile devices have also been built differently than those created for use on stationary devices. The

user's location, types of mobile device being used, and the content format are more critical to SEO than keywords in mobile search engines. This, however, is not to say that traditional SEO techniques should not be applied to mobile websites. Include keywords in title tags, headings, and content, as well as the SEO principles used in traditional websites.

There are some areas where mobile website SEO differs from that of traditional websites, and those areas include that the most important content needs to be placed in the top part of the webpage to ensure search engine spiders, and users, can find it easily. The CSS must be used for the layout in mobile websites, as tables will not render well at all, valid XHTML (eXtensible HyperText Markup Language) coding must be used, even though WML is the mobile-specific language; XHTML is more readable. Finally, it is recommended that the maximum size of any given webpage for a mobile device not exceed 20 kilobytes.

It is also important to ensure that a mobile site focuses on *localized* SEO strategies. This is for a number of reasons: location is highly important in the ranking of sites in a mobile search. Location-based SEO on a mobile site will ensure better results—mobiles are most often used by people on-the-move who want to find something locally in a hurry. Localized SEO will ensure that potential visitors find the site based on location, the type of mobile being used to browse, and the format of the content. Mobile SEO expands the attributes from mere keyword tags to include the mobile's (1) location, (2) type, and (3) content.

1.6 Mobile Site Requirements

Developers and marketers need to remember that mobile visitors and all major search engines are using the Internet in different ways and for different purposes—mobiles are not PCs. Mobile users are accessing the Web using a small keypad, predominantly with one hand—and perhaps with a pointing device, such as a finger or a stylus—and oftentimes while balancing on one leg at the back of an overcrowded transit vehicle during rush hour. This tends to make a difference in their patience thresholds, and also makes SEO, usability, and search critical to a mobile site's marketing effort.

The objective of a mobile site design is to make it a simple and elegant user experience!

Keep in mind that mobile visitors may be viewing the mobile site through a different screen via a different browser on their mobiles. This may be a fully featured combination such as that found on Apple devices, or it may be a stripped affair of cheaper mobiles. This makes a critical difference in how much content mobile visitors are able to consume in one go and how much of it can be rendered by the developer. This means that mobile Web production efforts are more complex as debugging and testing user experience become much more than a quick sanity

check in Microsoft® Internet Explorer® (IE), Google Chrome™, Apple Safari®, and Mozilla Firefox®.

As previously mentioned, mobile sites are accessed by users on the move; being on the move means users who are likely to be performing several tasks, such as searching for a particular restaurant or a particular piece of information (e.g., a flight departure time). Mobile site visitors may also be stationary, where they are likely to be engaged in a more private, immersive browsing experience, such as watching a movie, socializing with friends, or catching up on the news headlines. Just as mobile Web users are different, most mobile-specific search engines, such as Google Mobile™ (<<http://www.google.com/mobile>>), Jumptap (<<http://www.jumptap.com>>), Medio™ (<<http://www.mediosystems.com>>), and Taptu® (<<http://www.taptu.com>>), are also built in different ways.

Mobile SEO exists on a different plane: keywords are still critical, as search engines will always operate on that basis, but newer dimensions such as location, device types, and content formats are more critical to and indicative of the mobile Web experience. Table 1.1 illustrates some of these differences.

Table 1.1 Mobile versus Desktop Differences

<i>Search Dimension</i>	<i>Mobile</i>	<i>Stationary</i>	<i>Mobile SEO Challenges</i>
Keywords	Limited	Many	Ensure relevant content is based on sketchy user input
Locations and Interests	Critical	Not Critical	Simplified presentation of results content in relation to a mobile's immediate location and needs
Browsers	Varied	Standardized	The challenge is the presentation of content in an accessible way and assurance of a good user experience, regardless of multiple mobile devices and browsers
Content	Poor	Good	Delivering a high quality mobile experience from poorly formatted raw mobile site source material
Content Formats	Specific	Generic	Using device information to help improve results by serving relevant content formats

With the above in mind, here is how search engines are beginning to adapt to mobile searches with limited and fewer keywords. According to Google research, the average query search on Google Mobile is fifteen characters long—and this takes roughly thirty key presses and approximately forty seconds to enter; this means that search engines do not have a lot to work with when tasked with providing the user with an experience that equates to the quality of a desktop search. However, search engines are adapting to mobiles because that is where the traffic is heading.

One way in which Google and others are compensating for this lack of keyword action is by providing what is known as “predictive search,” or predictive phrase query suggestions based on text mining and clustering technology. This helps users complete their queries more easily and also helps them deliver more relevant mobile search results. For example, a search for “pizza restaurant, San Francisco” on a mobile can result in triggering a variety of predictive suggestions that attempt to complete the search query with a variety of options such as: “pizza restaurant,” “pizza north beach,” “pizza take out,” and so on.

This text mining application is a way that search engines assist mobile users in conducting a faster search and guaranteeing the results of relevant content based on location and interests. For the mobile site developer and marketer, this new functionality presents a new SEO opportunity, because by properly designing their site with the right metatags and the set of keywords in critical categories in the most common “predictive search phrases” that are specifically related to their business, brand, company, or location.

Because a large majority of mobile searches are locations, interests, and task specific, search engines are beginning to present their content in new ways to make results more accessible to mobiles. Using Google Mobile as the example—the results page is normally restricted to a list of five sites—their research has shown that mobile users do not tend to browse deeper than two pages. So, much like the new predictive search functionality previously mentioned, what today’s search engines are doing is making some educated guesses on the user’s behalf to try and get them to the results that Google thinks they want and as quickly as possible—remember that these searchers could be walking down the street!

In terms of the presentation of search results, Google—using GPS and Wi-Fi triangulation—recognizes that when a mobile is searching for a pizza restaurant in the Bay Area, it gives a heavier bias to those mobile sites that it thinks satisfy these location- and interest-based parameters. It gives them “featured presentation” treatment to these top-ranking sites, as they are the most relevant to the mobile user and their Google clients. Additionally, in order to compensate for small screen sizes, search engines are dividing the presentation of their results content into new location- and interest-based design layouts.

Additionally, from the search engine’s point of view, this makes the mobile environment a challenge, particularly if, like Google, they are trying to recreate the slickness of their desktop experience on the mobile platform. To compensate for this

relative anarchy, these engines are using a couple of techniques to make the problems disappear: site transcoding and user agent detection. Google Mobile, AOL®, Windows Live™, and others use transcoding software in order to give their users a more uniform user experience. In practice, this means that they have decided to impose mobile website presentation standards of their own; and if your site does not conform to them, then they will take your content and repurpose it to the design, layout, and format that they feel is best suited to the user's mobile. A transcoded version of a mobile site means that webpages are hosted temporarily on the search engine's servers and domain, rather than on the developer's site, with the URLs and links also transcoded.

User agent detection is another form of transcoding; it takes a mobile site's content and, if necessary, re-purposes it in the name of providing a more uniform browsing experience for various mobiles. The implication of all this transcoding work is that those mobile sites that avoid it by conforming to a more standardized means of mobile presentation will probably fare better when it comes to search engine and ranking.

Mobile users conduct their searches using a disproportionately high volume of brand names and, more obviously, location- and interest-based phrase categories. As already mentioned, the mobile Web is a different beast, used for different purposes, where people are searching for different sorts of things using a different sort of language and techniques. For the mobile site developer and marketer, this has a couple of very important ramifications: new search relevance is now determined by more *immediate* dimensions, such as location or vertical products, services, or brand suitability. For this reason, it is important for mobile site developers to understand the mobile-specific search phrases and interests that mobile users are using in order to optimize their content around those key terms.

This is important because consumers more often turn to a company or brand mobile site than to an app for shopping, according to a report conducted by Nielsen that tracked the shopping habits of thousands of iOS® and Android™ mobiles. Nielsen.com found that retail mobile websites are more popular than retail apps, and Amazon's is the most popular retail mobile website of all. Behavior split slightly along gender lines; the survey found that of those who did try a retailer's app, men were more likely than women to do so.

Target® and Walmart® skew female when it comes to their mobile websites, while Best Buy skews male, and Amazon® and eBay® appeal to both genders—retailers need to think that their businesses can potentially include mobile, online, and bricks-and-mortar stores. Winning with shoppers requires a consistent experience across mobile sites that reinforces the values of a retail brand, whether it be price, service, reviews, selection, style, or other key attributes.

At the same time, much like the early Internet desktop users, consumers are happy to take some guidance in overcoming their navigational challenges—lack of time, small form factors, and screen size restraints. We have already looked at “predictive search queries,” but in terms of navigational aids, it is worth noting that

search is definitely not the only component. Search may not even be the number-one activity on the list when a user is trying to locate stuff on the mobile Web; their primary interface is likely to be their operators' portal or a bunch of prepackaged vertical directories. To this end, this type of Web browsing service is currently at least as important as Google, if not more.

Ensure that the mobile site can be crawled at the code level—use the correct headers, do not block Internet Protocol (IP) ranges unnecessarily, use the correct robots.text file instructions—and ensure that all of the pages to be indexed are situated in the public domain. Submit the mobile sitemap to Google, Bing, and Yahoo!® in order to help them discover it and give them a head start when it comes to crawling and indexing. The developer should ensure that the navigation scheme is easy to crawl by coding it cleanly and ensuring that all the key content sits somewhere within easy reach of the top-level pages. Ensure that the content contains a sensible level of outbound links that lead to other complementary and preferably related mobile site pages.

This is a basic approach to traditional search engine optimization (SEO) that appears to be overlooked when it comes to the mobile sites. It is easily explained by the relative value of on-screen real estate—the desktop Web affords more screen space in which to present outbound links, whereas the mobile experience puts screen space at a far higher premium. Submit the mobile site to DMOZ (<<http://www.dmoz.org>>), the Open Directory Project that is maintained on an open-source basis by human editors and used as a seeding index for many mainstream search engines; if the submission is accepted, it will improve the chances of mobile search engines picking up the domain and starting to crawl the site. Encourage other, related mobile sites to link to the site—using markup that is helpful to the overall keyword marketing strategy. The theory of page rank will continue to flourish on the mobile sites as far as search engines are concerned—as illustrated via the proprietary Google PageRank™ algorithm (<<http://www.google.com/technology/>>).

Ensure that the content layout is suitably simple for a mobile audience. Do not use Flash, Ajax, or other presentation methods that may make sense on a desktop, because they render the mobile experience cumbersome and should be avoided. Mobile crawlers will largely follow the browsing patterns and experiences of humans—burying key content in inaccessible layers of mobile pages can create a struggle for search engine crawlers. Do not make anything or anyone work too hard to access the mobile site content; different mobiles and different browsers will splice the mobile content in different ways.

Some search engines will decide to transcode it; the best way to make the content accessible is to keep it simple—make page titles, subheaders, content extracts, images, and body copy suitably concise, pithy, and readable to mobile crawlers. Conform to the new W3C mobileOK (<<http://validator.w3.org/mobile>>); these guidelines provide all the code-level instructions needed to make a content mobile site ready. They cover everything from the creation of mobile-friendly style sheets (CSSs) to the correct rendering of tricky content elements such as tables and image maps.

For further information, see <<http://www.w3.org/TR/mobileOK-basic10-tests/>>. While these guidelines were created to help mobile webmasters ensure that their sites would be accessible to mobile devices, they are also a critical part of an SEO strategy because they represent the standards around which most major search engines build their indexing algorithms. A mobile site is more likely to be recognized, indexed, and rated as a mobile site if the code is mobileOK compliant.

Use compliant markup language to ensure that the widest range of mobiles can access, read, and render the site content. This means WML (Website Meta Language; <<http://the.wml.org/>>), WAP 1.0 (Wireless Application Protocol; <<http://www.wapguru.in/wap-technologies.php>>), xHTML “Mobile Profile” (<<http://www.w3.org/TR/SVGMobile>>) or WAP 2.0 (<http://www.wapforum.org/what/WAPWhite/_Paper1.pdf>), and/or cHTML (<<http://www.w3.org/TR/1998/NOTE-compactHTML-19980209>>); good use of standards-compliant code will again ensure that search crawlers can easily find and index the mobile site and thus make a better candidate for inclusion in search results. Create the site content targeting mobiles with moving audiences in mind. This means paying more attention to shorter form factors for key important SEO content fragments such as URLs, page titles, and metadata—all of which will be re-used in search results pages and thus need to be suitably keyword-relevant to the search query in question—but also concise enough to be rendered and read on a mobile screen.

Many mobile search engines will help to achieve this presentation by removing standard elements in URL strings such as the “http://” to maximize the use of mobile-targeted page content. All major mobile search engines are now beginning to build in new mobile dimensions to their indexing methods and the presentation of their results, such as location indicators, content formats such as ringtones, and anything else that identifies the site as mobile-relevant or mobile friendly. One key way in which the developer can identify their site content is to use new “micro format” and “semantic” markup standards such as “hCards” (see <<http://microformats.org/wiki/hcard>>) that enable a mobile webpage content to be picked out—for example, the information within a “Call Us Now” button on the mobile site—as an hCard; this makes it possible for the mobile browser to re-purpose the source data for dialing up a phone number; for further information, see <<http://microformats.org>>.

1.7 A Mobile Site Checklist

- Use 100 percent valid XHTML 1.0 code. Many optimizers on the traditional WWW (WorldWide Web) do not consider using valid code as a best practice. Mobile search engines, however, may have more trouble digesting invalid code, so validate that the mobile search engines will not have any trouble with the site.
- Follow accessibility best practices. These will ensure that the content is accessible to anyone, regardless of their platform; this includes mobile users’

browsers and *mobile search engines*. The W3C Web Accessibility Initiative (<<http://www.w3.org/WAI>>) is a good place to turn to for the latest information on accessibility, and Dive Into Accessibility (<<http://diveintoaccessibility.org>>) is also a useful tutorial.

- Follow traditional on-site search engine optimization (SEO) best practices, with major keywords in the title tag, H1's and body text, keyword-rich anchor text for internal links, etc.
- Get spidered and indexed by mobile search engines; submit the mobile site to all the major mobile search engines for quick mapping: Google Sitemaps™ (BETA) and Yahoo! Submit Your Mobile Site. It is also a good idea to ensure that each of the mobile webpages has at least one incoming link.
- If you are using a content management system such as WordPress® (<<http://wordpress.org>>) building a mobile version of a site can be as easy as installing a plugin; simply search for “mobile” and pick a plug-in that best suits your needs.
- There are numerous services available to create an app for mobiles or to make a mobile site; depending on your budget, these apps could be extremely intricate or as simple as a landing page with basic information.
- If you are not using a content management system, you will need to enter some code onto your existing website that tells it to behave differently if it is accessed by mobiles.
- Be sure to check for compatibility—at the very least, across Apple and Android devices—because there are many more mobiles on the market.
- Consider using goMobi™ (<<http://gomobi/>>), a service designed for small and medium businesses to easily create a user-friendly mobile site that works on all major mobiles.
- Studies have found that apps are mainly used for navigation and information gathering by the user, while mobile sites are preferred for entertainment and search queries; depending on the content and industry, this should be part of a brand, retailer, and enterprise strategy decision.
- A report from Jumptap Jumptap (<<http://www.emarketer.com/Article.aspx?cR=1008825>>) found that businesses looking to boost their SEO should focus on their mobile sites; the study found that users conducting searches would rather access a mobile site than download an app.
- Consideration should be given to formulating a mobile matrix strategy (Figure 1.1).
- Plan your mobile marketing strategy based on how people use their mobiles; do some market research or perform a survey of clients' mobile habits: for example, a very common use is to locate a business that is local to where the person is located at the time, utilizing the GPS functionality of the mobile.
- Strategy, interface design, and visual mobile site should allow for the discoverability and share-ability of the Web, while still allowing for the connected platform nature of an app.

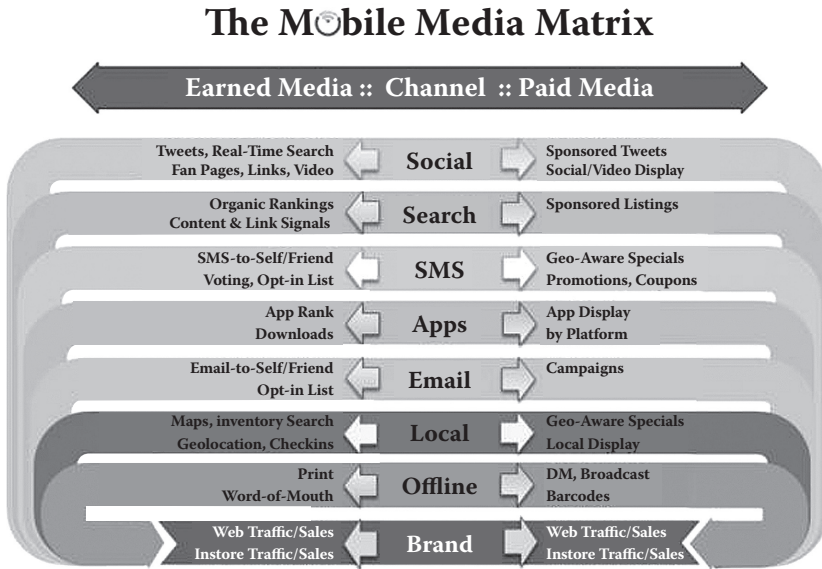


Figure 1.1 Mobile channels leading to a brand.

- Consumers are getting into the habit of hunting down businesses on the move, looking for contacts, directions, product comparisons, price checks, and full-on purchases. So keep it simple. Put the most important information front and center, and make sure that everything on a mobile site absolutely needs to be there.
- Mobile site developers are using JavaScript® -based tools such as jQuery (<<http://jquery.com>>) to mimic the same-page interactivity that Adobe Flash made popular on desktop sites; it can help bring a mobile application to life without sacrificing simplicity.
- Reducing the number of form fields is a good idea on any website, but in a mobile site, it is absolutely critical, and be careful with the credit card form: see Stripe & Square (<<https://squareup.com>>).
- Finally, ask this important question—not so much technical as practical: Can the mobile site provide a benefit from having information at the moment of a purchase decision? Location, price, time of offer, etc.

* JavaScript if a registered trademark of Oracle Corporation.

1.8 Constructing a Mobile Site

The simplest way to construct a mobile site is to add JavaScript to an existing website that detects the kind of mobile device visitors are using and redirects them to the mobile site, on a sub-domain or separate mobile domain. The advantage here is that the enterprise or brand can have completely separate content, layout, and design to make it easy for visitors to navigate and consume the mobile-relevant content. The strategy is to rethink the site to appeal to mobile visitors and convert them to sales leads; it is critical to have contact information such as a phone number, a call to action, navigation directions, and maps for guiding mobiles toward the retailer, restaurant, brand, store, or company.

Although desktop and mobile sites use the same Internet, there are some basic differences in technology, aesthetics, and purpose that make them each quite different in terms of design and functionality. The mobiles allow users to do different things as they move, search, and share. A traditional website might include multiple videos, large images, and Flash animation, but that will not work with mobiles, due to their bandwidth and browser limitations—Apple does not support Flash at all. However, mobiles have their own unique functionalities; they can pinpoint a store's location within a few feet, and the user can tap on a phone number and be instantly connected.

Because traditional sites have been around for so long, a standard in design and layout has developed over time. Most people browsing such sites are already familiar with it—the eye naturally looks for navigation options at the top of the page, expecting the perimeter of the sites to be occupied by ads. However, mobile is a whole new frontier, so it is important to guide the user's eye naturally through designs and layouts more specific to mobiles. For example, having a full menu at the top of the page would not work for mobile sites, simply because of space. Mobile sites also cannot handle an overload of text like traditional websites can. Having less text that is larger lets users read comfortably and makes it much more likely that they will read it at all.

Due to increasingly larger monitors and faster bandwidth, traditional websites have grown to include dozens of sections with a lot of content. Mobile devices, however, have a limited viewing area, which means that it is important for each mobile page to have a single focus. Mobile sites should be linear and simple. Users want to interact with the page and be guided one step at a time. For example, if a retailer sells huaraches, their mobile site might have a list of the different types of sandals; once a user taps on a style, he or she can then narrow it down further by shoe size, brand, color, etc. Giving visitors a single task to complete on each page makes it easy for mobiles to navigate and a mobile site to succeed.

An analysis of mobile Web metrics can pinpoint where users are dropping off. With the right use of technology, design, and layout, a business will be able to draw in consumers to a mobile site that lets them tap and swipe through a user-friendly and interactive experience. The critical design feature is to *keep mobile users in mind*