“Very good and clearly written. Certainly another great reference to help people find their way in the world of the Mobile Web.”

~JO RABIN, DOTMOBI DIRECTOR & W3C CO-CHAIR
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INTRODUCTION

This is a book about delivering web content to mobile devices. Much has been written about mobile devices. Plenty has been written about developing websites for the so-called "standards era" of the web. However, little has been written about the two colliding. This resource aims to fill that void.

The premise of this book is threefold: Analyze current and future technologies relevant to mobile web content, confront the limitations of existing mobile devices, and discover methods for exploiting the unique opportunities afforded by mobility and its devices, both current and future.

I’m a firm believer that the “mobile web”—a phrase used throughout this book to loosely represent “accessing web content on a mobile device”—is the biggest thing since sliced images. More people worldwide have access to a mobile phone than a PC, and that means only one thing: More people to access, manipulate, use, and expend the web content you’ve worked so hard to create. This was one of the driving forces behind the writing of this book.

IS THIS BOOK FOR YOU?

If you’re in a position to develop for, manage, or give advice regarding your organization’s foray into—or extended development of—a web strategy for mobile devices, then this book is for you.

This book makes a few key assumptions:

• You have at least a basic understanding of XHTML and CSS
• You know little or nothing about formatting web content for mobile devices
• You or your organization is unsure about, interested in, or possibly affected by the future of this “mobile web thing”

**Let’s also set some expectations:** This is not a highly technical book offering extensive tutorials for creating mobilized websites. Instead, it covers the fundamentals of design and development for mobile devices, the methodology behind developing content for those devices, and offers some tips to get things rolling.

At the end of the day, there are simply too many topics to be afforded by just one book, and therefore I’ve written *Mobile Web Design* as a starting point for those who qualify themselves according to the three assumptions just mentioned. Supplementary resources may include the following, most of which are available at quality bookstores:

• *Designing the Mobile User Experience* by Barbara Ballard
• *dotMobi Mobile Web Developer’s Guide* (available at [http://dev.mobi/](http://dev.mobi/))
• *Constant Touch: A Global History of the Mobile Phone* by Jon Agar
• *Personal, Portable, Pedestrian: Mobile Phones in Japanese Life* by Mizuko Ito, Daisuke Okabe, and Misa Matsuda
• *Mobile Interaction Design* by Matt Jones and Gary Marsden

While accessing the web on a mobile device is nothing new, a renewed interest in developing mobile web content has been ignited by notable efforts from groups such as W3C’s Mobile Web Initiative and dotMobi (among many others), an abundance of skilled XHTML/CSS developers, and the increased availability of more capable devices such as iPhone (Figure 1-1).
I CAN READ MINDS

I’ll let you in on a little secret: I can read minds. I know what you’re thinking: “Why should I care about mobile? After all, the mobile web experience isn’t nearly as good as the desktop web experience.”

You’re not alone. That’s a mistake many of us traditional “desktop” web developers, managers, and producers make when assessing the mobile web experience. We long for it to be the same as the desktop experience.

The truth of the matter is web content on mobile devices can be every bit as good of an experience, but in its own right. If we treat the mobile web as its own environment rich with possibilities, rather than a crippled extension of the desktop experience with restrictive limitations, we begin to understand how to embrace and even exploit those possibilities.
2.7 BILLION MOBILE USERS IN CONTEXT

Every so often a web article comes along worthy of a good sit-down read, a print and staple, or a browser bookmark entry. Tomi Ahonen's Putting 2.7 Billion in Context: Mobile Phone Users (http://communities-dominate.blogs.com/brands/2007/01/putting_27_bill.html) is not only all of the above, but I’d consider it required reading for anyone considering a foray into mobile content, especially fence-sitters unsure about making the leap. Ahonen’s lengthy but discerning article compares mobile phone penetration to that of the car, the telephone, the TV, and other forms of ubiquitous technology.

The thrust of Ahonen’s article is comparing common technologies used in everyday life in many parts of the world, the number of years available to consumers, and worldwide usage (Figure 2-1).

<table>
<thead>
<tr>
<th>TYPE</th>
<th>YEARS</th>
<th>WORLD USAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile</td>
<td>100</td>
<td>800 million</td>
</tr>
<tr>
<td>PC</td>
<td>30</td>
<td>850 million</td>
</tr>
<tr>
<td>Landline Phone</td>
<td>110</td>
<td>1.3 billion</td>
</tr>
<tr>
<td>Credit Card</td>
<td>40</td>
<td>1.4 billion</td>
</tr>
<tr>
<td>TV</td>
<td>60</td>
<td>1.5 billion</td>
</tr>
<tr>
<td><strong>Mobile Phone</strong></td>
<td><strong>35</strong></td>
<td><strong>2.7 billion</strong></td>
</tr>
</tbody>
</table>

Figure 2-1. Common technologies used in everyday life. (Rough estimates are provided only for the sake of comparison.)
Consider the implications: In just 35 years—roughly the same amount of time as the PC and nearly one-fourth that of the landline phone—mobile phone penetration has surpassed the PC and landline phone combined, reaching 2.7 billion mobile subscriptions in 2006.¹ In fact, in some of the more developed areas of the world, penetration is at 100% or better.² In 2006, Western Europe crossed the 100% wireless subscriber penetration mark with some nations such as Italy reporting up to 140% subscriber penetration. Astoundingly, this literally means there are more mobiles than humans in these countries. Comparatively, the U.S. achieved 75% penetration in 2006. (Statistics for nearly every country in the world can be found at http://mobileactive.org/countries.)

Tomi Ahonen further illustrates the importance of mobile penetration by explaining that regions such as Africa are:

... in a hurry to increase phone penetration after the OECD study found that increasing mobile phone penetration results in the greatest benefit to the GDP of an emerging country. Better benefit than providing computers, electricity, roads etc. You don't need a literate population to have benefits from phones, but you do need literacy for personal computers.

It’s difficult to overstate the worldwide ubiquity of the mobile phenomenon, if merely for the fact that subscription growth is rampant in what seems to be the most unexpected places. Consider India, which has surpassed China to become the fastest-growing cellular market in the world, adding more than 5 million subscribers monthly towards the latter part of 2006.³ China, however, seems to be


² Penetration is usually measured using mobile subscriber data for age 15 and older, and the final count may include subscribers with multiple SIM cards.

in a league of its own, recently adding its 301-millioneth subscriber, a number which exceeds the entire U.S. population. Granted, ubiquity in behemoth China might not be unexpected, but how about Kenya, where the number of mobiles has grown from one million to 6.5 million in the last five years, while the number of landlines remains at about 300,000.4

Given this is a book about the mobile web, the question then becomes how many of these worldwide subscribers are accessing the web from their mobile devices? According to a study conducted in January 2007 by Telephia and comScore, two leading research firms for mobile media and internet metrics respectively, 5.7 million people in the U.K. used a mobile device to access the web compared to 30 million who accessed the web from a PC. In the U.S., 30 million of the 176 million web users accessed the mobile web. The most popular sites in the U.K. included BBC, MSN-Windows Live, Yahoo!, Google, and SKY, whereas in the U.S. the most popular sites were Yahoo!, MSN-Windows Live, Google, The Weather Channel, and AOL.5

Do the math on these numbers and mobile web usage in the U.S. and U.K. is between 17 and 19 percent of PC web usage. In other words, the mobile web audience is already one-fifth the size of the PC web audience in some areas of the world. So, is there traction behind this mobile web thing? I’d say the numbers speak for themselves.

COMMUNICATING WITHIN AN ENVIRONMENT OF MOBILITY

Lest we get carried away with stats and tables, let’s step back for a minute and look at the underlying concepts of the phrase “mobile design.”

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The first element of this two-part phrase is mobile. I adore Barbara Ballard’s definition, included in her latest book, *Designing the Mobile User Experience*:

*Fundamentally, ‘mobile’ refers to the user, and not the device or the application.*

Mobile, the user; not mobile, the device. Mobile is more than just being wireless. Mobility transcends freedom from wires; it suggests an entirely different user experience. For example, a wireless router enables me to roam from room to room within my house or to connect to the web at a local Starbucks. I’m using the same laptop in each case. What’s more, I’m probably accessing data in much the same format I do from my desktop computer.

In contrast, a mobile device, say my Nokia 6680 phone, requires an entirely different user experience. The device is smaller. The screen is miniscule in comparison to most modern desktop displays. Input methods are often much different than that of a QWERTY keyboard. Further, I might be accessing that data while holding a bottle of water or while gripping a handle on the subway. I might be seeking only contextual data such as directions or a contact’s number, rather than the plethora of data at my disposal via a desktop PC. And in many cases, I want to do things with my mobile that I just can’t do with my PC.

In short, comprehending the experience of consuming, manipulating, and reporting data, and the context in which that experience occurs, is imperative to the creator of the data.

The second element is design, a medium through which a message is conveyed and response is sought. Design is certainly first and foremost communication, yet what separates design from other forms of communication, such as speech and the written word, is that it cannot exist without a medium—print, multimedia, signage, canvas, and so on. Further, what separates design from art is that design “is meant
Whether you agree or disagree with the advice offered by the Best Practices Working Group and Luca Passani, both parties offer recommendations worth considering.

**FUNDAMENTAL MARKUP STRUCTURE**

*Note:* The following recommendations are applicable if you’ve chosen method #4, Mobile-Optimized Content (see previous chapter, *Four Methods, Revisited*). These recommendations assume you’ve chosen XHTML-MP over XHTML Basic, although the markup structure is very similar for both subset languages.

That precious moment has arrived, wherein one’s heart palpitates at the thought of opening one’s favorite text editor and flawlessly composing line upon line of clean, semantic markup. Or wherein one’s palms sweat upon realizing one must churn out line after line of complex elements, attributes, properties, and values.

Either way, it’s time to put some markup beneath your content. Shown here is the recommended basic markup structure for a well-formatted XHTML-MP document, followed by a description of the individual components.

1. ```xml
<?xml version="1.0" encoding="UTF-8" ?>
```
2. ```xml
<!DOCTYPE html PUBLIC "-//WAPFORUM//DTD XHTML Mobile 1.0//EN"
    "http://www.wapforum.org/DTD/xhtml-mobile10.dtd">
```
3. ```html
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>My Site's Title</title>
<link rel="stylesheet" type="text/css" href="mobile.css"/>
<meta http-equiv="Cache-Control" content="max-age=600" />```
4. ```html
</head>
<body>
<h1>My Page Heading</h1>
```
5. ```html
```
6. ```html
```
7. ```html
```
8. ```html
```
9. ```html
```
10. ```html
```
11. ```html
```
12. ```html
```
13. ```html
```
14.  <p>My content goes here.</p>
15.  </body>
16.  </html>

Line 1 is the **character encoding** for the document. The recommendation here is to use UTF-8 encoding for maximum compatibility (see [http://dev.mobi/node/341](http://dev.mobi/node/341)).

Lines 2 and 3 are the **DOCTYPE**, short for “document type declaration,” which tells a validator which version of (X)HTML to use when checking the document’s syntax. Shown here is the recommended DOCTYPE for XHTML-MP.

Line 5 is the recommended XHTML **namespace**.

Line 8 is the directive for linking to your mobile-specific **style sheet**. See section that follows for additional CSS information.

Line 9 is the **cache control header**, which instructs the browser to use a local copy instead of requesting a new copy from the server if the local copy has not expired (see [http://dev.mobi/node/209](http://dev.mobi/node/209)). In this example, the expiry time is 10 minutes (600 seconds), but you should adjust this value according to how often your content is updated. Cache control can be helpful for reducing page refreshing on slower mobile networks.

Once you’ve made it to the **body**, the XHTML-MP markup is not unlike what you’re already used to with XHTML Transitional or Strict. As you begin development, keep a browser tab open with DevelopersHome.com’s **XHTML-MP Tutorial** ([http://www.developershome.com/wap/xhtmlmp](http://www.developershome.com/wap/xhtmlmp)), an impressively replete resource for all things XHTML-MP. And you’ll probably need a complete list of XHTML-MP elements and accompanying attributes whilst furiously coding your critical content, so keep another tab open with the **XHTML-MP Tags List** found at [http://htmllint.itc.keio.ac.jp/htmllint/tagslist.cgi?HTMLVersion=XHTML-MP](http://htmllint.itc.keio.ac.jp/htmllint/tagslist.cgi?HTMLVersion=XHTML-MP).

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5 If this were a page created for desktop browsers, you would not include this XML declaration, as pages that have an XML declaration before the DOCTYPE force IE 6 to use quirks mode.
BEYOND SIMPLE XHTML PAGES

When developing content for mobile devices, it’s important to look beyond simple XHTML/CSS pages and even beyond the browser. The interplay between web content and mobile user can occur in a variety of ways, some of which are often more efficient, affordable, or universal than browser-based interaction—even some of which are not delivered through the web but through other content delivery channels. This chapter exposes a few approaches for developing a well-rounded mobile strategy.

MESSAGING

Mobile messaging, quite simply, is a far more prevalent mobile activity than viewing web content with a browser. To ignore messaging is to ignore the largest slice of the content consumer pie and a potentially profitable opportunity. Messaging comes in a variety of flavors: Short Messaging Service (SMS), which is text-only messaging; Multimedia Messaging Service (MMS) for sending photos, audio, video, and rich text in addition to plain text; Enhanced Messaging Service (EMS), a technology older and less capable than MMS, but marginally more capable than SMS.

Of particular interest as it relates to mobile web content is text messaging. More than 10 billion text messages are sent worldwide every month, and estimates for SMS support on handsets in use today range as high as 98%.¹ In the U.K. alone, 41.8 billion text messages were sent in 2006.² Because of its prevalence, person-to-person (one-to-one) text messaging is a familiar activity: A user types a message on her handset, sends it to a personal number, and the intended recipient receives the


message on his handset. However, texting can also be a one-to-many or many-to-one relationship. Content providers big and small have leveraged the power of texting as a means of serving web content to mobile users in this way. For example, mobile users can conduct a web search by texting their search query rather than entering a query in a browser search field.

Google SMS (http://www.google.com/sms) offers SMS search, and the process combines texting and search query (see Figure 6-1). A user types keywords, e.g. “hotels san francisco,” as a text message, sends the message to Google’s SMS number (466453 in the U.S.), and search results are sent back as a text message. Only a few relevant results are sent, often as multiple text messages due to the recommended 160 character limit for SMS messages. Yahoo! oneSearch (http://mobile.yahoo.com/onesearch) and 4INFO (http://4info.net) offer similar services, among others.

Figure 6-1. Using Google SMS Search with a Nokia 6800 in my trusty Jeep Cherokee. (Yes, of course I was parked.)
PayPal (http://www.paypal.com) has also embraced texting as a means for extending its popular web payment service to mobile phones. PayPal's Text To Buy (http://mobilewebbook.com/shorty/98098) allows consumers to send money via phone merely by texting an amount and email address to PayPal's SMS number, which is 729725 in the U.S. (see Figure 6-2). In addition to texting, PayPal Mobile Checkout (https://www.paypal.com/IntegrationCenter/ic_mobile-checkout.html) offers PayPal's traditional payment services via mobile browser.

![Text message](https://source.unsplash.com/random/300x200)

**Figure 6-2. Sending money using PayPal's Text To Buy. (Nokia 6680)**

SMS search and Text To Buy are only the tip of the proverbial texting iceberg. Imagine if the University of Texas directory (see chapter, Mobile Web Fundamentals) were also available by SMS. One could text “amy miller” to a number for the university and receive matching directory results by text message. The options are seemingly endless for employing text messaging to serve web content. Although I personally recommend you seek professional assistance if considering a custom messaging solution, DevelopersHome.com offers a very thorough SMS Tutorial at http://www.developershome.com/sms. A less replete but more digestible overview is How SMS Works by Howstuffworks.com, located at http://communication.howstuffworks.com/sms.htm.

The SMS numbers mentioned thus far—Google (466453), PayPal (729725)—are commonly known as Short Codes. They differ from phone numbers in that they
act as a numeric domain name for text messaging, and they’re often shorter in length than phone numbers, typically 4-6 digits. The numbers often map to letters (e.g. 82267 = “tacos”), much like toll-free advertising phone numbers.

However, while Short Codes function irrespective of carrier or operator, they are not as universal as domain names because they are generally restricted to continents. So while 466453 is the Short Code for Google in the U.S., in the U.K. the Short Code may be an entirely different number. Further, because Short Codes are meant to be short, the quantity of available codes is limited. In North America, for example, Short Codes are five-digit numbers in the range 20000-99999, which results in 79,999 total numbers available.

To register a Short Code, visit one of the following:

• U.S.: http://www.usshortcodes.com
• U.K.: http://www.short-codes.com

Alternatively, if you are an organization based in the U.S., TextMarks (http://www.textmarks.com) offers a generic Short Code (41411) that can be used by any organization to send on-demand, customized messages to users, such as a web address, a marketing promotion, and so on.

JAVA ME

Java Platform Micro Edition (Java ME), formerly termed J2ME but still commonly referred to as such, is perhaps the most common platform for mobile application development today. Though somewhat riddled with marketing speak, the description from Java creator Sun Microsystems’ website describes Java ME as follows (http://java.sun.com/javame):

Java™ Platform, Micro Edition (Java ME) is the most ubiquitous application platform for mobile devices across the globe. It provides a robust, flexible environment for applications running on a broad
ABOUT CAMERON MOLL

Co-author of CSS Mastery (http://cssmastery.com) and author of Mobile Web Design (http://mobilewebbook.com), Cameron Moll creates meaningful web interfaces that harmonize utility and presentation. His work or advice has been featured by Forrester Research, Communication Arts, National Public Radio (NPR), HOW Magazine, .net Magazine, and many others. He speaks on user interface design at conferences nationally and internationally, and amid all this craziness he still finds time to play ball with each of his boys.

He also manages Authentic Jobs (http://authenticjobs.com), a targeted destination for standards-aware designers and developers and the companies seeking to hire them.

Cameron is currently employed as Principal Interaction Designer for the LDS Church (http://lds.org), helping to create and manage the many websites and applications of a organization with more than 12 million members worldwide. Cameron resides in Salt Lake City, Utah with his wife Suzanne and four sons. Find him online at http://cameronmoll.com.