

# Mobile Web Development Guide

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3/15/2011

## Why Do Clients Need A Mobile Version Of Their Website?

Every day, more and more people are connecting to the web through mobile devices, so having a mobile version of your website is imperative.

A mobile optimized website is needed because of the usability issues normal websites run into on smaller mobile devices. Drop down menus, excess of content and large images may all add up to a bad user experience, and sometimes unusable website. This document will give an overview of three options that can be used to create mobile websites.

## What is a Mobile Browser?

A mobile browser is designed for use on a mobile device. Mobile browsers are optimized so as to display web content most effectively for small screens on portable devices. Mobile browser software must be small and efficient to accommodate the low memory capacity and low-bandwidth of wireless handheld devices. Typically they were stripped-down web browsers, but as of 2006 most mobile browsers can handle more recent technologies like CSS 2.1, JavaScript and Ajax.

A listing of the most commonly used mobile browsers can be found at StatCounter :

<http://gs.statcounter.com/>

Here are the most current browsers in use as of March 2011:

[http://gs.statcounter.com/#mobile\\_browser-ww-monthly-201002-201102](http://gs.statcounter.com/#mobile_browser-ww-monthly-201002-201102)

## Project and Product Objectives

As in traditional web design, content on the mobile web *must* be user-focused. Presenting content with the greatest consideration and forethought is all the more critical to the mobile web experience due to smaller screens and internet connectivity concerns that are not usually issues in the traditional desktop web-browsing environment.

If you're working on an existing site's mobile web interface, only the essential elements should be brought over to the mobile web. Mobile users don't want to have to look for information or scroll through multiple pages to find what they are looking for; they want their needs to be met quickly. In

comparison, the same thought process put into the development of many popular applications for the iPhone could also be applied to mobile web development.

Getting into your users' heads and determining what they'd be most interested in is of the utmost importance on the mobile landscape.

## The ABC's of Mobile Web Development

TMP Worldwide currently has three development options to choose from when the time comes to create a mobile website. These three approaches will be referred to herein as Mobile A, Mobile B, and Mobile C.

### *Mobile A: Netbiscuits*

TMP Worldwide currently utilizes the services of Netbiscuits, a company that specializes in the delivery of content on the mobile web by means of a technique known as *adaptation*. Content adaptation is the action of *transforming* content to adapt to different mobile devices or browser types. This is typically achieved with server side detection scripts like WURFL (<http://wurfl.sourceforge.net/>). We leverage Netbiscuits for most of our mobile development needs, so they should be your first stop when a client requires a mobile presence.

Currently, content adaptation is considered the **best** approach to serving out high quality mobile websites.

If you have any further question regarding Netbiscuits, please contact Nathan Zamecnik ([nathan.zamecnik@tmp.com](mailto:nathan.zamecnik@tmp.com)) or Russell Miyaki ([russell.miyaki@tmp.com](mailto:russell.miyaki@tmp.com))

### *Mobile B: The "LCD" Approach*

Clients who are not able to harness the power of Netbiscuits can still have a mobile presence by requesting that TMP build a custom mobile site. A baseline approach will be taken in development in an attempt to target as many mobile browsers as possible *without* server side technologies to do the sniffing for us. This is typically called the "Lowest Common Denominator" approach.

This technique applies to mobile sites that cannot or have no need to serve pages to specific mobile browsers, but instead fulfill all minimum requirements to function, and render reasonably well on most mobile browsers in the market.

### Minimum Technical Requirements & Tips:

- **Screen Width** – Creative should be designing towards a minimum width of **120** pixels.
- **Colors** – 256 Colors, minimum.
- **Style Sheet Support** – CSS (Cascading Style Sheets) Level 1

- **Script** – You may use JavaScript, but do not rely on it to work 100% of the time. Unobtrusive scripting techniques should always be used in the event this happens.
- **Images** – Most devices should support the GIF and JPG formats. However, great care should be taken to optimize all imagery no matter which format is used.
- **Page Weight** – Be mindful of page weight and make sure device can easily manage at least **10Kb** of combined mark-up, graphics and CSS.
- **Minimal Bandwidth** – Device and network support at least 9.6 Kbps bandwidth.
- **Markup Language** – XHTML MP 1.0 (extensible Hypertext Markup Language - Mobile Profile)
- **Tables** – Basic tables can be used for tabular data but may cause display issues and should not be fully relied upon.
- **Shortcuts** – Use the “accesskey” attribute to implement keyboard accelerators on menus.
- **Links** - Link color may not be changeable on certain devices.
- **Background Images** - Avoid dependency of background images as they may not render on all devices.

## The Pros and Cons of the “LCD” approach:

### Pros

Simple to build, cost-effective and will still reach a very wide audience. About 90% of users should be able to use a site that is built using LCD.

### Cons

The other 10%. Older or outdated devices with browser capabilities may fail to load or render the site properly.

## *Mobile C: CSS @media Queries*

As support for web standards continue to grow on the mobile front, so will support for CSS @media queries. Media queries are a very powerful way to enhance an existing website by allowing developers to easily transform desktop published pages into mobile ones by targeting a browsers *capabilities* rather than the browser itself as is traditionally done with content adaptation (See Mobile A: Netbiscuits). Targeting different devices in this manner is also known as “Responsive Web Design”.

Let’s take a look at a quick example. In your style sheet, all that would be needed to target a specific screen size is a simple rule like this:

*@media screen and (max-width: 480px) {*

```
body {  
  
background: red;  
  
color: white;  
  
}  
  
}
```

What this means is that if the device has a screen with a *maximum width* of 480 pixels then change the background color of the document to red and the text to white. The possibilities of what can be done here are *endless*. Entire layouts can now be altered on the fly, to suit mobile devices, with just a few simple CSS rules!

## When to use media queries

Media queries are **not the answer** to all mobile web development needs. Context plays an important role here. For example, a full blown media or functional heavy career web site would probably not benefit from CSS @media queries. Two important reasons include:

1. **Context** – the user experience may have to be tailored quite differently on the mobile version of the site to accommodate a mobile users needs.
2. **Page Weight** – Applying media queries will not actually remove all of the assets that load on the desktop version of the site. Therefore, low-bandwidth issues could may occur.

At the moment, media queries may be a viable alternative for smaller, less media driven sites, but the possibilities they introduce to the mobile world are truly exciting.

## Best Practice for the Mobile Web

Regardless of which method is being used to deliver a mobile site, some basic rules should be followed during the development of our client's mobile home. Generally speaking, these rules could, at times, also be applied to sites on the web today whether they are mobile or not:

### *Use Rich Media Effectively*

Keeping rich multimedia to the barest minimum or providing alternatives to users that can't access multimedia content is essential because of internet connectivity and technology limitations that our mobile web infrastructures are still working on to improve.

Viewing hefty rich media assets can be very costly to those mobile web users who use metered mobile internet connections. Not everyone owns an iPhone.

## *Simplify User Interaction*

Accessing information on a mobile device is quite a different user experience, so shortcuts to common and repetitive tasks are necessary. The main reason behind this is efficiency, since the mobile device display and keypad are small. The use of shortcuts simplifies the user experience. Once again, the popularity of mobile apps on various multiple devices demonstrates this point excellently.

## *Good Usability & Coding Techniques*

- Do not rely on embedded objects or scripts. Unobtrusive techniques must be used to allow a page to degrade gracefully in the event Flash or JavaScript are unavailable.
- Label all form controls appropriately and explicitly associate labels with form controls.
- Ensure that information conveyed with color is also available without color.
- Do not cause pop-ups or other windows to appear and do not change the current window without informing the user.
- Provide a text equivalent for every non-text element. **Example:** **
- Limit scrolling to one direction, unless secondary scrolling cannot be avoided.
- Clearly identify the target of each link.
- Do not use tables for layout.
- Do not use frames.
- Create documents that validate to published formal grammars.

## **Backend Involvement**

Upon completion of a mobile site, a backend developer will need to be brought in to redirect the desktop version of the website to the mobile one. This is usually achieved with *Dot Net's App Browser* configuration. If you have any further questions regarding backend development, please contact Larry Viezel ([larry.viezel@tmp.com](mailto:larry.viezel@tmp.com)) or Bobby KC ([bobby.kc@tmp.com](mailto:bobby.kc@tmp.com)) for more details.

## **SEO Considerations**

The main concern for mobile SEO standards is submission of a sitemap:

<http://www.google.com/support/webmasters/bin/answer.py?hl=en&answer=34648>.

Mobile sitemaps need to be submitted to the search engines through their consoles. The sitemap should include pages that are mobile only and pages that function for both types of browsers. The main issue with the mobile sitemap is that it should help get the pages indexed in the mobile search engines. You

will need an additional sitemap since it's submitted to a different engine. When you add the sitemap in the consoles you select the type of sitemap web, news, mobile...

1. Add HTML file for sitemap.
2. Add robots.txt (you can add the sitemap to robots.txt by adding this line, sitemap: <http://www.example.com/sitemap.xml>)
3. The SEO team will provide the Meta tags to add for verification. Then, once they're added SEO team will need the location of the sitemap to submit.

## Quality Assurance Considerations

Due to the small footprint in memory and on disk, mobile browsers are not as robust as desktop browsers. It is recommended that the WAP site is tested on a wide enough array of devices, in order to gain confidence about the actual solidity of the mobile UI.

1. **Emulators** – There are plenty of online emulators (<http://mtld.mobi/emulator.php> or <http://ready.mobi>) and offline emulators that allow you to quickly see images in context and the general layout, but they're not real devices, and therefore they have their own quirks and differences. These tools can act as a good first pass to find common issues.
2. **Rent time** – Renting time is another option. There are services that allow you to upload or view the content on multiple phones in real time. You control the different phone's features remotely. This service does cost money, but it's still cheaper than purchasing lots of different phones.
3. **Multiple devices** – Buying a small subset or representative phones is a possibility.  
Recommended devices for testing:
  - a. An HTC Mogul PPS-6800 using Internet Explorer on Windows CE, which gives a representative coverage for all Windows Mobile devices
  - b. Nokia model phone running Symbian Series 6 OS and the built-in Services and optional Opera browser.
  - c. Sony Ericsson phone such as a T630, which covers Sony's Internet Services
  - d. Whatever model is most popular in the target audience

We do not need these exact phones, but these types of devices will allow us to quickly see the minor differences in the phone browsers and cover the majority of potential customers.

## Quality Assurance Deliverables

A TMP Quality Assurance Technician will develop a Front End QA Plan for the site including scope control, quality assurance and testing recommendations. MDA will participate in a testing phase with

TMP during the Implementation phase and guidance will be provided from a TMP Quality Assurance Technician.

## *Testing*

The following types of testing will be conducted:

1. **Document review** – review of the EDD elements and technical specifications, if required, for accuracy and approach.
2. **Code reviews against LCD and TMP standards** – review of the code to ensure adherence to naming conventions, correct logic for the business challenge at hand, and to ensure code is clean and streamlined.
3. **Manual functional testing** – Manually executed testing in the QA environment to verify that the site is functioning as agreed and detailed in the requirements documentation (EDD, tech spec, etc.)
4. **Device testing** – testing the mobi site using the top five mobile devices.
5. **Database testing** – As is the case now, if we have a site that requires a database – to serve content, for registration or upload – this database, the calls, its structure, and whether it conforms to our TMP database standards all needs to be confirmed. This can be done from a back-end perspective.
6. **Micro-browser compatibility testing** – Full test suite execution conducted against the top five micro-browsers to ensure compatibility.
7. **ORM tool/Watchfire testing** – The verification of 508 compliance, page loads, link functionality, and spelling (for US/English) using TMP's ORM software utility, Watchfire WebXM. This testing will take place on the www version of the site.
8. **Regression** – Manual front end and scripted and manual back end re-testing of the site once bug fixes are introduced to ensure site stability and correction of errors.
9. **Base load emulation testing** – Though we don't run load testing on our current www sites, because WAP is so new, we highly recommend emulation of a base amount of 1000 concurrent users at a minimum. This was the first step of load testing in the baby stages of testing years ago when www was where WAP is today.

The client will be expected to conduct their own Acceptance testing, to accept the product and sign off on launch. Once the site is launched the QA team will conduct a full regression sweep that will include manual regression testing against all reported errors as well as expected functionality, device testing, ORM/Watchfire testing, and browser compatibility testing.

## ***Document Deliverables***

**Front End QA Plan** – top view of the overall approach to testing, including test time line, risks, and in scope and out of scope items.

**Back End QA Plan** – top view of the back end approach to testing including, including test types, risks, and list of files that will be tested reviewed.

**Front End Test Plan** – front end manual test plan including each area of the page to be tested with instructions for the tester to follow in order to fully complete each test.

**Backend End Test Plan** – Back end test plan outlining exact test that will be conducted on the code level.

## **Mobile Analytics**

<http://www.mobilytics.net>

## **URL Registration and Hosting**

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## **Appendix**

### ***Other Resources***

7 Steps to better handheld browsing

[http://www.colly.com/index.php?/weblog/comments/7\\_steps\\_to\\_better\\_handheld\\_browsing/](http://www.colly.com/index.php?/weblog/comments/7_steps_to_better_handheld_browsing/)

Mobile Web Best Practices

<http://www.w3.org/TR/mobile-bp/#bpgrouppgeneral>