



HTML 4.0 Guidelines for Mobile Access

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This document has been produced as part of the W3C Mobile Access Activity. Please send comments about this document to the public mailing list www-mobile@w3.org (archive).

Abstract

This document describes guidelines for content authors how to create HTML 4.0 contents to be acceptable to mobile devices as much as possible.

Available Formats

This document is available in the following formats:

HTML:

<<http://www.w3.org/TR/1999/NOTE-html40-mobile-19990315/NOTE-html40-mobile.html>>

A plain text file:

<<http://www.w3.org/TR/1999/NOTE-html40-mobile-19990315/NOTE-html40-mobile.txt>>

HTML as a gzip'ed tar file, including accompanying resources:

<<http://www.w3.org/TR/1999/NOTE-html40-mobile-19990315/NOTE-html40-mobile.tgz>>

HTML as a zip file, including accompanying resources:

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In case of a discrepancy between the various formats of the document, <<http://www.w3.org/TR/1999/NOTE-html40-mobile-19990315>> is considered the definitive version.

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Document Type Definition

1. Introduction

Ever since the Internet industry exploded a few years ago, numerous related industries have spawned and flourished from the standard WWW (World Wide Web) infrastructure. This growth is most attributable to the exponential growth of Internet users all over the world. Today, Internet access is no longer limited to personal computers and powerful workstations in your office, but is reaching into the your home, as well as on the road.

A new class of electronics devices with Internet access capability called "Information Appliances" was recently born. This Internet access capability is embedded in devices such as televisions, set top boxes, home game machines, telephone-based terminals, PDAs, car navigation systems and cellular phones. These Internet appliances will drive the merger of wireless and wired Internet world that will eventually create a much larger industry than today's predominantly wired Internet industry.

The need to support this new class of information appliances while still meeting the W3C standards and the rigid design requirements are the challenges this evolving industry faces today.

This document describes guidelines for content authors how to use HTML 4.0 Specification [HTML40] effectively for "Mobile Access", and some design notes for user agent manufacturers.

2. Requirements from Mobile Access

There are a wide range of mobile devices in the market. The typical product examples are as follows:

PDA

- pager
- embedded system
- automobile information appliance (car navigation system)
- mobile game machine
- digital book reader
- smart watch

This section summarizes the requirements from "Mobile Access".

2.1. Hardware Restrictions

As described in [CompactHTML], there are several hardware restrictions in mobile devices. The major characteristics are as follows:

- small memory capacity
- small display space
- less powerful CPU
- limited input method
- no or small data storage
- limited power consumption

These characteristics have to be taken into account in designing the user agent functionality for mobile devices, as well as creating mobile-friendly contents.

2.2. Narrow Bandwidth Networking

The size of contents should be small in the case of narrow bandwidth and low speed wireless networking. The major characteristics of today's wireless connection are as follows:

- slow speed
- unstable
- expensive
- non-IP connection

These restrictions depend on underlying communication bearers. The infrastructure will be improved in the third generation wireless phone networking.

2.3. Accessibility Requirements

Simple and easy operations of information appliances are very important. Unlike PC user interface, keyboard and mouse are not suitable for mobile devices. Rather, intuitive operation like a four-button interface (cursor forward, cursor back, select, and back buttons) is required. In this sense, some kind of accessibility considerations, as described in WAI Accessibility Guidelines, should be taken into account. In general, WAI Accessibility Guidelines are also useful for mobile access.

For example, the "accesskey" attribute of HTML 4.0 can be used to assign buttons to links or form selections. Also, alternative text for images should be provided via "alt" attribute so that mobile devices can make use of text descriptions instead of large images. For more information, see section 3.8 and 3.7 respectively.

3. Guidelines for Mobile Access

In order to meet the requirements as described in section 2, we use `HTML 4.0 Strict`, which excludes the presentation attributes and elements, as a suitable baseline for mobile access. Thus, the following guidelines assume to use `HTML 4.0 Strict`.

3.1. Styles

Usual mobile devices have small size of screens, and limited display capabilities, thus in many cases style sheets are not supported, or its support is limited.

When style sheets are used, external style sheets are recommended from the viewpoint of content size and separation of structure and style. In this way, user agents which don't support style sheets don't have to load unnecessary style sheets.

The "media" attribute can be used so that user agents can select appropriate style sheets. See section 14.2.4 of [HTML40] for more detail.

The `STYLE` element can be also used, but inline style sheets via "style" attribute is not preferred, because it's not flexible and almost like the presentation attributes which are deprecated and excluded from the `HTML 4.0 Strict`.

Contents should be readable without style sheets so that devices which don't support style sheets can still render contents reasonably.

See also section 2.10 of Techniques for [WAI-WEBCONTENT].

Note for User Agents:

It is desirable that even if user agents don't support style sheets, it should parse `STYLE` elements not to show styles nor to cause any other side-effects.

3.2. Scripts, Event Handlers

Usual mobile devices have limitation of memory storage, CPU power and so on, thus in many cases scripting are not supported. It should not be assumed that scripts will always be executed. Contents should be readable even if scripts are not executed.

See also section 2.13 of Techniques for [WAI-WEBCONTENT].

Note for User Agents:

It is desirable that even if user agents don't support scripts, it should parse `SCRIPT` elements not to show scripts nor to cause any other side-effects.

3.3. Forms

Usual mobile devices support basic forms, but they don't have keyboards like desktop PCs. Content authors should keep in mind that it will be hard for users of mobile devices to input many characters.

Since sometimes mobile devices don't have local file systems, some features, which depend on local file system, such as file upload, should not be used.

Many mobile devices do not support images, thus value "image" for "type" attribute of `INPUT` element should not be used.

See also section 2.12 of Techniques for [WAI-WEBCONTENT].

3.4. Frames

Usual mobile devices have small size of screens, and some of them support only textual information. Frames strongly depend on screen interface, and are not part of the HTML 4.0 Strict. Therefore, frames should not be used.

If there is compelling reason to use frames, make sure that those contents have the descriptions below:

- Provide a fallback content for contents that contain frames using `NOFRAMES` at the end of each `FRAMESET`.
- Name each frame via the "title" attribute on `FRAME` elements so that users can keep track of frames by name.

See also section 2.11 of Techniques for [WAI-WEBCONTENT].

Note for User Agents:

If user agents don't support frames, it should render contents of the `NOFRAMES` element. Also, even if user agents can't render frames, it is desirable to provide links to each frame, so that users can access to contents of each frame.

3.5. Image Maps

On mobile devices, it cannot be generally assumed that images are always rendered, nor can be pointed by pointing devices like mouse. Therefore, server-side image maps should not be used.

On the other hand, client-side image maps can be used even if images are not rendered nor can be pointed, so authors may include client-side image maps into their contents. But this is acceptable only when alternative descriptions are provided via "alt" attribute of `AREA` element, which is a required attribute in HTML 4.0, as in many cases images are not rendered on mobile devices, or pointing on images is impossible even if images can be rendered, as described above.

See also section 2.7 of Techniques for [WAI-WEBCONTENT].

Note for User Agents:

It will be desirable that user agents render images and provide selections with pointing (using area information) if possible. Even if rendering images or selection with pointing are impossible, they should provide access to linked resource of each area via "alt" attribute of `AREA` element.

3.6. Tables

Many mobile devices have small size of screens. If contents have table descriptions, it will be very difficult to browse them in mobile devices. In addition, though it would be possible to restructure tables in accessible way by following guidelines as described in Guideline 7 of [WAI-WEBCONTENT], it will be difficult for mobile devices to process complex tables due to the hardware restrictions as described in 2.1. It would be, therefore, safe to avoid using tables whenever possible. Consider alternative structures, e.g. lists, whenever appropriate. Content authors should not expect tables will always be processed in mobile devices.

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