# Wireless CSS Specification Requirements Requirements

Approved Version 1.1 – 20 Oct 2006

**Open Mobile Alliance**

OMA-RD-CSS-V1_1-20061020-A

# Contents

# 1. Scope (Informative)

This document defines the requirements for a new conformance baseline of the Wireless CSS Specification [WCSS]. It creates a specific minimum client profile aimed at the mobile device market, and is specifically targeted at assuring a consistent level of support for presentational control in the mobile phone browser marketplace.

All the conformance baseline requirements defined herein profile the work completed by WAPForum and W3C, and contained in the WAPForum WCSS [WCSS] specification, contained in WAP 2.0 release and Browsing V2.1 [Browsing21], and W3C CSS2 [CSS2] and CSS Mobile Profile [CSSMP] specifications.

This profile is meant to be an update of WCSS specification. It defines a new conformance profile of that specification in cases where today:

- All property choices specified by the WCSS specification are optional.
- There are multiple compliant alternatives possible for implementation of a feature or function.

# 2. References

## 2.1 Normative References


**[CSS2]** "Cascading Style Sheets, level 2", CSS2 Specification, W3C Recommendation.
URL: http://www.w3.org/TR/1998/REC-CSS2-19980512

**[CSSMP]** "CSS Mobile Profile 1.0", W3C Candidate Recommendation,25-July-2002
URL: http://www.w3.org/TR/2002/CR-css-mobile-20020725

**[RFC2119]** "Key words for use in RFCs to Indicate Requirement Levels". S. Bradner. March 1997.
URL:http://www.ietf.org/rfc/rfc2119.txt

**[RFC2234]** "Augmented BNF for Syntax Specifications: ABNF". D. Crocker, Ed., P. Overell.
November 1997. URL:http://www.ietf.org/rfc/rfc2234.txt

**[WCSS]** "WAP CSS Specification", WAP Forum™, WAP-239-WCSS.
URL:http//www.wapforum.org/


## 2.2 Informative References


**[Browsing21]** OMA-ERELD-Browsing-V2_1-20031101-C, Open Mobile Alliance, URL:
http://www.openmobilealliance.org

**[PICT]** "WAP Pictogram Specification", WAP Forum™, WAP-213-InterPic

URL: http://www.wapforum.org

**[XHTML-MP]** "XHTML Mobile Profile 1.1", Open Mobile Alliance, OMA-WAP-XHTMLMP-V1_1-20020904-C. URL: http://www.openmobilealliance.org

# 3. Terminology and Conventions

## 3.1 Conventions

This is generally an informative document, which is not intended to provide testable requirements to implementations.

Requirements are noted as either high-level requirements or as detailed requirements, which are expansions of one or more high level requirements,

| | |
|---|---|
| HL-REQ-XX | This is a high level requirement. |

or as detailed requirements which are expansions of one or more high level requirements.

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|---|---|
| DL-REQ-XX | This is a detailed requirement. |

Note that in section 6, which is specified as normative, only the requirements (identified as above) should be considered normative text. All prose is informative and descriptive of the requirements.

## 3.2 Definitions

| | |
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| **B&W** | Devices that support 1 bit of colour depth. Normally this bit is interpreted as Black and White for its two states though in some circumstances this can be mapped to other choices using palettes etc. |
| **Colour** | Devices that support more then 1 bit of colour depth. |
| **CJK** | A collective term for Chinese, Japanese, and Korean defined in Unicode. |
| **Locale** | A geopolitical place or area, especially in the context of configuring an operating system or application program with its character sets, date and time formats, currency formats etc. |

## 3.3 Abbreviations

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|---|---|
| **B&W** | Black and White, or alternatively monochrome |

# 4. Introduction (Informative)

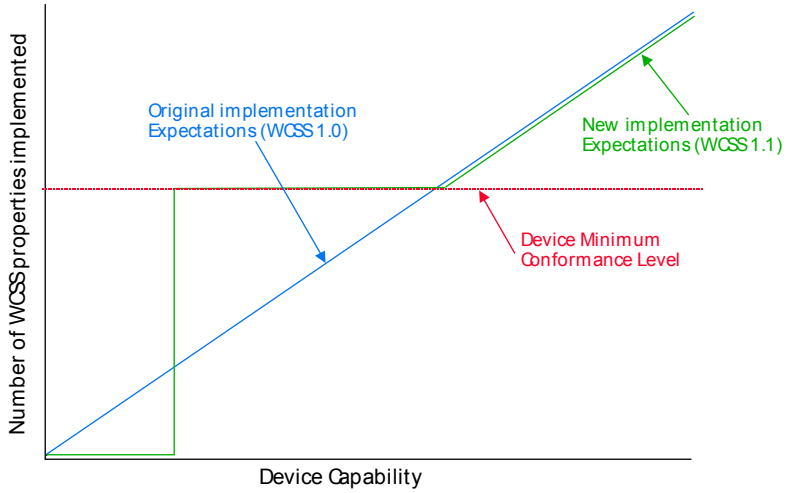
Advances in device technology are allowing a much richer browsing experience than the market place had been used to with WAP 1.x devices. Devices are now available that feature larger colour displays, stronger rendering capabilities and the expectation is that this trend will continue to yield more and more capable terminal devices.

By design, the XHTML Mobile Profile [XHTML-MP] language does not provide the means for content providers to fully utilize the capabilities of a device, such as colour, placement of objects and other fancy rendering features. The Wireless CS S [WCSS] specification provides the way for content authors to control these features and is well aligned with the Internet trend of separating content from style.

In order to make content applicable to a wide range of devices, it is desirable that content authors be able to rely on a minimum set of properties supported by all devices advertising support of WCSS. A mandatory minimum conformance profile would greatly simplify the task of content authors trying to create consistent content across multiple devices.

The current WCSS "mandatory" conformance criteria only mandate the machinery and none of the visually interesting functionality. All visual elements are “optional”. The risk of such a specification is that implementations of WAP 2.0 compliant devices will show a large variation in their support of WCSS, with some devices supporting a rich set of properties, while others only very basic WCSS functionality or none at all.

There are now significant numbers of WCSS implementations completed and implementers have a better understanding of the costs of a WCSS implementation. As such browser implementers are now willing to create conformance criteria with mandatory visual elements on small devices. The intervening time has allowed a better understanding of both the relative importance of specific WCSS capabilities for mobile applications, and the costs associated with implementing these features, thereby allowing an appropriate profile to be produced to meet the market needs.




The original market model for CSS functionality was based upon the notion of a “smooth” curve of functionality defining the terminal devices being brought to market. In reality the device market has shown us that there is a threshold below which devices will not (cannot) implement any WCSS functionality. Above that threshold the implementation cost of WCSS functionality is such that a significant part of the total WCSS profile can be implemented on any device capable of supporting visual styling properties.

# 5. Description (Informative)

The goal of creating a new version of the Wireless CSS Profile [WCSS] is to create an agreed set of features for the [WCSS] that may be relied upon by the content developer community and by the IT community to be present and to work in an interoperable manner across multiple vendors, devices and in multiple markets. This, in turn, will promote the development of more sophisticated services, by

- Lowering the software cost of multiple client maintenance.
- Guaranteeing richer presentation of client to users.
- Providing a more consistent presentation to end-users.
- Allowing content providers to base branding and related content customisations on client WCSS functionality.

It is anticipated the resulting WCSS conformance profile will yield the following levels of support for WCSS:

- None, i.e. there is no support for WCSS. This preserves the minimum conformance in Browsing 2.1 today.
- The new WCSS Version 1.1 profile: providing a known base of WCSS support where styling of content is supported, which is an improvement for service providers and users over Browsing 2.1 today.
- Beyond WCSS Version 1.1 profile: where vendors' device capabilities permit a richer styling capability. Note: MAG is already working on a means to advertise to application servers the supported styling capabilities so that optimal use may be made of them by applications.

## 5.1 Wireless Cascading Stylesheets profiling

In determining which WCSS properties are mandated or left optional in the WCSS Version 1.1 the following rationale shall be applied.

### 5.1.1 Inclusion rationale

The rules used for the inclusion of WCSS properties in the profile are:

- Demonstrated value to the market.
- Selectors and properties are already included in WCSS 1.0.
- Include shorthand property only when multiple properties can be written.
- Ease of implementation – when it is agreed that a property is "easy" to implement.
- When properties are included as mandatory, there is a commitment, within reason, as defined by the CSS2 specification, to implement properties that will show visual effects upon the presentation.

### 5.1.2 Exclusion rationale

Basic ordered rules for the exclusion of WCSS properties in the profile are:

- Exclude certain properties from a CJK profile for Locale Base reasons.
- Exclude the values where use of memory is unclear or unbounded. (visibility).
- Exclude certain properties or selectors if there are acknowledged difficulties of implementation in a small device.
- Exclude certain properties or selectors if they require excessive computation resources to implement.
- Exclude properties that create interoperability issues between devices and implementations.

In those cases where there is a perceived or potential interoperability issue that has been identified, a property may be either included in the mandatory profile with further clarification of behaviour, or excluded from the mandatory profile on the basis of the interoperability issues.

# 6. Requirements (Normative)

## 6.1 High level requirements

The use case(s) for the WCSS version 1.1 is (are) straightforward. It is recognised that the market needs to provide a known level of styling support that content authors can rely on when devices claim support for WCSS styling capabilities. In so doing the content author can provide content able to best take advantage of device capabilities without having to re-write the content to match the individual devices' capabilities. The accruing benefits are evident.

The rationale for modifying and further defining the existing Wireless CSS Profile [WCSS] is summed up in the following 4 high level requirements. These are further broken down into detailed requirements dealing with specific properties, features, or conformance criteria of WCSS.

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| HL-REQ-01. A WCSS conformance profile SHOULD reflect market needs and realities of the devices that will support it. |

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| HL-REQ-02. A WCSS conformance profile SHOULD enhance compatible presentation of markup across devices. |

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| HL-REQ-03. A WCSS conformance profile SHOULD address recognised interoperability issues and promote the creation of testable assertions to help drive the development of interoperable implementations of WCSS. |

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| HL-REQ-04. A WCSS conformance profile MUST support internationalisation and localization requirements. |

## 6.2 Security

No requirements identified.

## 6.3 Charging

No requirements identified.

## 6.4 Administration and configuration

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| DR-REQ-01. For all devices supporting WCSS visual styling, a consistent base level of conformance MUST be specified. |

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| DR-REQ-02. The conformance specification MUST allow for devices that do not support any WCSS visual styling while still mandating the handling of WCSS syntax. |

# 6.5 Terminal devices and smartcards

## 6.5.1 Terminal devices

### 6.5.1.1 Colour vs. B&W Devices

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| DR-REQ-03. | Colour handling must be specified in an interoperable manner across terminal devices. |

Devices may be characterised as having 1 or more bits of colour depth. Those devices that have only 1 bit of character depth should treat all colour requests, other then white as black.

## 6.5.2 Smartcards

No requirements identified.

# 6.6 Platforms

No requirements identified.

# 6.7 Network interfaces

No requirements identified.

# 6.8 Usability

No specific requirements identified though the requirements for supporting WCSS are at their heart addressing a more consistent usability of content over a range of devices.

# 6.9 Interoperability

Interoperability is normally considered to be defined as the end-to-end compatibility of service elements in a system deployment. However, in the case of WCSS, it is the implied contract between the content providing element and content rendering element in a deployment that defines interoperability. This contract is defined as following the prescribed rendering algorithms defined in [CSS]. The testing of interoperability is thus defined as the ability of a rendering device to correctly style and render content measured against a reference rendering or against other devices.

To ensure interoperability between different device implementations of WCSS Version 1.1 and content not written specifically for a particular embodiment of WCSS Version 1.1, particular attention shall be taken to the selection of properties mandated, and any associated values that may be mandated, to ensure its appropriateness for a wide range of devices that fall into the mobile phone device segment including allowance for the anticipated increases in man machine interfaces for the anticipated life of WCSS Version 1.1.

A number of CSS properties are under-specified with regards to the WCSS profile. In the case where under-specification may lead to interoperability issues, these behaviours should be included as part of the definition of the profile.

## 6.9.1 List-style-image Height

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| DR-REQ-04. | List-style-image MUST be specified in an interoperable manner. |

Because very large “list-style” images (which are normally used as list bullets) may cause strange behaviour, a constraint should be applied to List-style-images. They will be specified to be of a height less then or equal to the font box height in the line in which the list-style-image is used. This is to eliminate an overflow condition, which is not specified.

### 6.9.2 Height and Width Overflow

| DR-REQ-05. | Error conditions and edge case failure modes of box model overflows MUST be specified in an interoperable manner. |
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Attempts to display content that cannot fit into allocated space may cause a range of problems including inaccessible content, garbled display and rendering errors. This problem is especially acute with devices typical of the mobile space. Tables are a well-known case where content may be extremely sensitive to device display width.

### 6.9.3 Font Weight Mapping

| DR-REQ-06. | Font weight mapping must be specified in an interoperable manner. |
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It is reasonable to assume that many mobile devices will not support more than the two font-weights "normal" and "bold". Those two are defined in CSS2 to map to the numerical font weight values of 400 for "normal" and 700 for "bold". It is also defined that a lower numerical font-weight must be lighter or equal to a higher numerical font-weight. The first assumption, in conjunction with the two definitions, yields the following numerical font-weight mappings:

- 100-400 maps to keyword "normal"
- 500-900 maps to keyword "bold"

Also note that with two font weights the relative value "bolder" always equals "bold" and "lighter" always equals "normal".

Note: As specified in CSS2, only the strings 100,200,300,400,500,600,700,800,900 are legal as font weights. These weights are strings, not values.

Actual mappings are under-specified in [CSS2].

### 6.9.4 White Space Management

| DR-REQ-07. | White space management MUST be specified in an interoperable and more completely specified manner. |
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This property declares how whitespace inside the element is handled. The current [CSS] specification is under-specified regarding white space management. Two new values have been added to the newer W3C CSS2.1 draft, which are suitable for mobile devices and therefore are added to WCSS Version 1.1.

Note that these new values are only in a W3C draft state.

**pre-wrap**

This value prevents user agents from collapsing sequences of whitespace. Lines are broken at newlines in the source, at occurrences of "\A" in generated content, and as necessary to fill line boxes.

**pre-line**

This value collapses whitespace as for “normal”, except occurrences of newlines in the source or "\A" in generated content do cause line breaks.

### 6.9.5 Inheritance

| DR-REQ-08. | Support for the inheritance property MUST be specified such that the conformance criteria are consistent across implementations. |
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In CSS2 the feature of property inheritance is defined in two, somewhat confusing ways, either through an explicit property modifier (“inherit”), with no default action specified, or via a default (implied) action specification, which may or may not have an explicit property modifier available. In order to eliminate confusion and enhance interoperability, the feature of

property inheritance MUST be supported in all cases where CSS2 defines the default inheritance feature to be enabled. Furthermore, the explicit value for overriding the inheritance feature also MUST be supported for those same properties. Support of the inheritance value for other properties, with no defined default, is optional for this profile.

Shorthand properties will follow the same rules. Any shorthand property for which all included properties have an inherit default defined, MUST support the inheritance feature and value. All other shorthand properties may optionally support inheritance properties as defined in the CSS2 specification.

Note: Due to this confusion in the [CSS2] specification, it appears that WCSS 1.0 mandates full implementation of inheritance across all properties. This conformance criterion is an unreasonable requirement and does not represent market reality.

The following is the list of properties in CSS2 for which inheritance is defaulted (implied):

```
'color'
'font' (shorthand)
'font-family'
'font-size'
'font-style'
'font-variant'
'font-weight'
'list-style' (shorthand)
'list-style-image'
'list-style-position'
'list-style-type'
'text-align'
'text-indent'
'text-transform'
'white-space'
```

All properties on this list MUST support inheritance behaviour.

Some of the properties on the above list are themselves optional. Implementations choosing to implement any of the optional properties on this list MUST support inheritance behaviour if they choose to implement the optional property.

### 6.9.6 Float and Clear

| DR-REQ-09. | Support for the Float and Clear properties MUST be specified such that the conformance criteria are consistent across implementations. |
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Because complete implementation of float and clear is prohibitive for some implementations, and because support for these properties has been deemed important, a well-defined subset must be defined.

When CSS is applied to an XHTML Mobile Profile document, the user agent MUST support the “float” property applied to the **<img>** element. A user agent MAY support applying “float” to other elements, according to [CSS2].

## 6.10 Internationalisation

| DR-REQ-10. | A WCSS conformance profile MUST take into account internationalisation issues. |
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A number of the stylesheet properties are only relevant to presentations of Latin character sets. The conformance criteria of these properties are dependent upon character set rendered.

# Appendix A. Change History (Informative)

## A.1 Approved Version History

| Reference | Date | Description |
|---|---|---|
| OMA-RD-CSS-V1_1 | 20 Oct 2006 | Approved by TP<br>OMA Ref# OMA-TP-2006-0370R01-INP_Browsing_V2_2_for_Final_Approval.doc |