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OMTP

BROWSER

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CONTENTS

1 INTRODUCTION

1.1 DOCUMENT PURPOSE

This document defines the minimum recommendations for the browser functionality on Terminals and defines how the browser shall integrate with other applications in the Terminal to ensure a good user experience when browsing operator portals and Mobile Enabled Web Sites.

This document contains:

- Use cases and functional requirements to ensure a consistent browsing experience on Terminals.
- Use cases and functional requirements to ensure seamless integration of the browser with other applications in the Terminal.
- Requirements related to browser performance and support for W3C style guides.

The document defines two classes of browser – Class A, which relates to a basic mobile browser, and Class B, which relates to an advanced mobile browser.

It is also intended that this document includes support for the style guides to be produced by the GSMA mTLD initiative and W3C Mobile Web Initiative.

1.2 BUSINESS RATIONALE

This document is expected to result in the following improvements:

- Enhanced interoperability between mobile Terminals and operator service delivery platforms.
- Improved consistency of browser functionality and behaviour.
- Improved integration between applications.
- Improved interaction and aligned behaviour between the browser and other applications residing on the Terminal.

If achieved these enhancements will deliver the following business benefits:

- Prevents interruption in users' workflow and thus improves quality of the user experience.
- Encourages users to intersperse browsing with revenue-generating actions (calling, messages) or other activities and vice versa.
- Simplify browser based service creation and verification by network operators and other 3rd party service providers.

- Foster increased user confidence resulting in better service utilisation.

1.3 INTENDED AUDIENCE

There are two main audiences for this document:

- Other projects inside OMTP that will take these requirements as input.
- OMTP Terminal implementers, i.e. the equipment and technology vendors that will be asked to create implementations of the OMTP platform.

1.4 CONVENTIONS

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

- MUST: This word, or the terms “REQUIRED” or “SHALL”, mean that the definition is an absolute requirement of the specification.
- MUST NOT: This phrase, or the phrase “SHALL NOT”, mean that the definition is an absolute prohibition of the specification.
- SHOULD: This word, or the adjective “RECOMMENDED”, mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
- SHOULD NOT: This phrase, or the phrase “NOT RECOMMENDED” mean that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behaviour described with this label.
- MAY: This word, or the adjective “OPTIONAL”, mean that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which

does not include the option (except, of course, for the feature the option provides.)

The requirements within this document are uniquely identified using the following format:

BR-####, where:

- BR is a 2 letter acronym identifying the subject of this document
- #### is a 4-digit number that identifies the requirement (e.g. 0020) and is unique within this document.

2 USE CASES

2.1 KEY OPERATOR USE CASES

The key operator use cases are listed below.

2.1.1 APPLICATION INTERACTIONS

Many operators require the browser to interact and exchange information with other applications on the Terminal to enable the user to complete a task or transaction.

Typical interactions include:

- Opening a web page from a Java application.
- Opening a web page from the Messaging application.
- Navigating from the browser to a Java application and back.
- Navigating from the browser to the Terminal's native UI and back.
- The ability to copy contact information from web pages for use in the Phonebook.
- The ability to dial or send an SMS to a number in a web page.
- The ability to copy and paste information from web pages into other applications.
- The ability to listen to music whilst browsing.

2.1.2 RETAILING

Many operators sell ringtones, games, videos, music, wallpapers, maps, etc. through their web portals. Typical service delivery and integration problems include:

- Inconsistency of look between the web-based content on different Terminals (Colour scheme / font / spacing / graphics etc.).
- Users being unsure where purchased content they have downloaded is stored on the Terminal.
- Different branding between the browser user interface and actual web page.
- Inconsistent or poor UI or both when switching between media players and browser.
- Inconsistent or poor UI or both when switching between other applications on the Terminal and the browser.
- Inconsistent or poor UI or both during the actual download.

- Loss of context during the purchasing process.
- Speed of purchase and navigation around web pages.
- Inconsistency of UI associated with security.
- Inconsistency of UI associated with online vs. offline content.
- Handling of MIME types that the Terminal does not support.
- Difficulties when entering user information such as an address or bank details.

2.1.3 *Download and Installation of Applications*

Many operators use the browser as a mechanism to allow users to install applications.

Typical service delivery and integration problems include:

- Not being able to run the application after the download.
- Inconsistent or poor UI during the actual download.
- Poor access to information during and after download, especially where downloads take place in the background.
- Users being unsure how and where the new application can be accessed on the Terminal.
- Problems when ‘over-writing’ old versions of application.
- Inconsistency of UI associated with security.
- Inconsistent handling of failed downloads.

2.1.4 *Information Services*

Many operators provide information services, such as news, weather and sports results through their web portals. Typical service delivery and integration problems include:

- Managing bookmarks
- Inconsistency of look between the browsers on different Terminals (colour scheme / font / spacing / graphics / etc.).
- Inconsistency of operation between the browsers on different Terminals (i.e. differences in how pages are navigated).
- Speed of use / rendering.
- Speed of page navigation.
- Difficulties using ‘history’ functions.
- Inconsistency of UI associated with online vs. offline content.
- Difficulties saving the information for later use.

- Inconsistent or poor UI or both when switching from streamed media to and from the browser.

2.1.5 BROWSING MOBILE 'ENABLED' WEB SITES

Operators require Terminals that allow their customers to browse web sites, which conform to the style guides produced by the GSMA mTLD initiative and W3C Mobile Web Initiative.

Typical service delivery and integration problems include:

- Difficulties when entering URIs and IRI's.
- The display of large web pages on small screens typically requires extra navigation options and rendering techniques.
- Difficulties when filling forms.

2.2 POSSIBLE FUTURE OPERATOR USE CASES

The following use cases are out of the scope of this document.

They may however be addressed in a future release of this document.

2.2.1 INTEROPERABILITY

Many operators require the browser to interact and exchange information with other Terminals.

This includes information exchange:

- Over wide areas, via technologies such as SMS or PS data.
- Locally, via technologies such Bluetooth.

2.2.2 BROWSING OTHER WEB SITES

Operators may require Terminals that allow their customers to browse 'regular' non-mobile optimised web sites.

Typical service delivery and integration problems include:

- URI entry.
- Page scaling.
- Content adaptation.

3 FUNCTIONAL REQUIREMENTS RELATING TO BROWSER BEHAVIOUR

In the columns defining the browser classes a '×' indicates that the requirement does not apply to this class of browser. A '✓' indicates that the requirement does apply to this class of browser.

3.1 GENERAL REQUIREMENTS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0010	The user MUST be able to browse *Offline Web Content* stored within the Terminal without connecting to the network.	✓	✓
BR-0020	The operator MUST be able to define whether or not the Terminal asks the user for confirmation to proceed whenever the browser requests a network connection. (Note: This requirement is for billing purposes by certain operators. This requirement does not contradict OMTP application security requirements).	✓	✓
BR-0030	The browser View Context MUST be recoverable after interaction with another Terminal application (e.g. if the user transitions from the browser to the media player and back to the browser, the browser MUST display the same page that it did before the user switched to the media player).	✓	✓
BR-0040	An application's View Context MUST be recoverable after interaction with the browser (e.g. if the user transitions from their diary to the browser and back to the diary, the diary application MUST still be displaying the same date that it did before the user switched to the browser).	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0050	The browser MUST display error messages as an explicit indication when something has gone wrong. The error message MUST be clear, non-technical and indicate if the error is caused by e.g. the network, an application or something else (e.g. address could not be found). The error text SHALL suggest how to recover from an error.	✓	✓

3.2 PAGE RENDERING AND UI

Please note that a summary of the mark-up protocols, style sheets and scripting capabilities required is provided in Annex C.

For some of these protocols, more information about the minimum level of support required is included in annexes A and B.

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0060	The browser MUST support the rendering of Mobile Enabled Web Sites	✓	✓
BR-0070	The browser MUST support the rendering of plain text WML content according to the WAP Forum / [OMA] standard. Version and functionality required are described in requirement **BR-2810**.	✓	✓
BR-0080	The browser SHOULD support the rendering of encoded WML content according to the WAP Forum / [OMA] standard.	✓	✓
BR-0090	The browser SHOULD support the rendering of HTML content according to the [W3C] recommendations with a minimum level of support as outlined in annex A. Version and functionality required are described in requirement **BR-2880**	✓	✗

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0100	The browser MUST support the rendering of HTML content according to the [W3C] recommendations with a minimum level of support as outlined in annex A. Version and functionality required are described in requirement **BR-2880**.	×	✓
BR-0110	The browser SHOULD support the rendering of XHTML content according to the [W3C] recommendations with a minimum level of support as outlined in annex A. Version and functionality required are described in requirement **BR-2870**.	✓	×
BR-0120	The browser MUST support the rendering of XHTML content according to the [W3C] recommendations with a minimum level of support as outlined in annex A. Version and functionality required are described in requirement **BR-2870**.	×	✓
BR-0130	The browser MUST support the rendering of XHTML Mobile Profile content according to the [OMA] specifications with a minimum level of support as outlined in annex A. Version and functionality required are described in requirement **BR-2850**.	✓	✓
BR-0140	The browser SHOULD support the rendering of CSS content according to the [W3C] recommendations with a minimum level of support as outlined in annex B. Version and functionality required are described in requirement **BR-2890**.	✓	×
BR-0150	The browser MUST support the rendering of CSS content according to the [W3C] recommendations with a minimum level of support as outlined in annex B. Version and functionality required are described in requirement **BR-2890**.	×	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0160	The browser MUST support the rendering of Wireless Profile CSS and CSS-Mobile Profile content according to the [OMA] specifications with a minimum level of support as outlined in annex B. Version and functionality required are described in requirement **BR-2840**.	✓	✓
BR-0170	The browser MUST support 'pixel perfect' CSS positioning of elements (i.e. the browser MUST not add any additional spacing into the CSS).	✓	✓
BR-0180	The browser MUST support the following character sets: • UTF-8 • Latin-1 ISO-8859-1 • US ASCII	✓	✓
BR-0190	The operator MUST be able to select the default character set used by the browser out of the character sets supported.	✓	✓
BR-0200	The browser MUST render the graphical file formats defined by [OMTP CODECS] CDI0 and CDV1 profiles.	✓	✓
BR-0210	The browser SHOULD support Macromedia Flash Lite.	×	✓
BR-0220	The browser MUST support the use of external CSS files referenced in the mark-up.	✓	✓
BR-0230	The browser SHOULD support the rendering of WICD content according to [W3C] recommendations with a minimum level of support as outlined in requirement **BR-2910**.	✓	×

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0240	The browser MUST support the rendering of WICD content according to [W3C] recommendations with a minimum level of support as outlined in requirement **BR-2910**.	×	✓
BR-0250	The browser MUST support ECMA Script content according to the OMA [ECMA Mobile Profile] specifications. The browser MUST support all mandatory parts of the specifications and SHOULD support all optional parts of the specifications.	×	✓
BR-0260	The browser MUST support the automatic filling of form elements with text from previously entered form elements, which had the same ID as the current form element.	✓	✓
BR-0270	Automatic form filling MUST be user configurable for general form elements (not including password elements, i.e. the user shall have the choice to switch this feature ON or OFF, independently to password form elements as defined in **BR-0280**).	✓	✓
BR-0280	Automatic form filling MUST be user configurable for password form elements (i.e. the user shall have the choice to switch this feature ON or OFF for password form elements independently to general form elements as defined in **BR-0270**).	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0290	The browser SHOULD support Hints in the attributes of form elements indicating the type of content for the different fields. If this feature is implemented, at least the following Hints SHOULD be supported: • Phone numbers • Email addresses • Image name • Video name Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓
BR-0300	When entering a field marked with a Hint the browser SHOULD provide a feature to retrieve the content of the field from the appropriate content storage (e.g. if a field is hinted to be a Phone Number the browser will provide an option to look up the phone number in the phonebook) Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓
BR-0310	The browser MUST support the automatic login and authentication to operator services using end-user identities stored in the Terminal or Smart Card. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0320	The browser's text entry mechanism SHOULD not obscure the context of the form element in which the text is being entered (e.g., the browser SHOULD not take the user to a different screen to enter text into a form element such as a text field).	✓	✓
BR-0330	The text entry mechanisms for the native UI of the Terminal and for the browser UI MUST be the same.	✓	✓
BR-0340	The browser SHALL support right/left navigation while editing texts in Input controls.	✓	✓
BR-0350	The browser text entry fields MUST support all of the text input mechanisms that are available on the Terminal.	✓	✓
BR-0360	The browser MUST allow predictive text entry to be used for input of text into web pages.	✓	✓
BR-0370	If the page mark up contains embedded Hints on the use of predictive text entry for a particular text entry field then the Terminal SHOULD use these Hints to switch predictive text entry on or off as indicated. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓
BR-0380	The user MUST be able to switch the use of predictive text entry within the browser ON or OFF.	✓	✓
BR-0390	The browser MUST show the user the relative position of the content they are viewing within the whole browser page (for example by using a scroll bar.)	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0400	The browser MUST support the maintenance of the View Context of a page containing a hyperlink, such that if the user selects the hyperlink to a new page and then selects the browser back function the View Context of the page is the same as before they followed the hyperlink (e.g. by not resetting the page View Context to the top of the page).	✓	✓
BR-0410	The browser MUST support at least one proportional font.	✓	✓
BR-0420	The browser SHOULD support at least one monospaced font.	✓	×
BR-0430	The browser MUST support at least one monospaced font.	×	✓
BR-0440	The browser SHOULD support both portrait and landscape screen orientations.	×	✓
BR-0450	If the browser supports both landscape and portrait modes then the Terminal SHOULD use a Hint in the page's mark up as a trigger to inform the user when they are using the non-optimal screen orientation for that particular page. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	×	✓
BR-0460	The browser MUST be able to be used in a Full Screen Mode (see definition of terms).	×	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0470	If the Terminal supports Full Screen Mode then the Terminal SHOULD use a Hint in the page's mark up as a trigger to inform the user that the page would render better in Full Screen Mode. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	×	✓
BR-0480	The user MUST be able to select and execute a function that reloads a web page.	✓	✓
BR-0490	The user MUST be able to select and execute a function that stops the browser downloading a page or a file transfer.	✓	✓
BR-0500	The browser MUST provide a history function.	✓	✓
BR-0510	The user MUST be able to select and execute a function to move backwards through the browser history.	✓	✓
BR-0520	The user SHOULD be able to select and execute a function to move forwards through the browser history.	✓	✓
BR-0530	The Terminal SHOULD provide a mechanism for viewing and selecting browser history entries.	✓	×
BR-0540	The Terminal MUST provide a mechanism for viewing and selecting browser history entries.	×	✓
BR-0550	The user MUST be able to select and execute a function to erase the browser history.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0560	For any web page the browser MUST ensure that the page title is visible 'on screen' at all times when the browser is used in Normal Display Mode.	✓	✓
BR-0570	For any web page the browser MUST provide access (e.g. via a menu) to the following page details after the page has downloaded: • Current downloaded page size in KB. • The URI of the page currently being displayed.	✓	✓
BR-0580	The browser MUST provide 'zoom in' and 'zoom out' functionality that applies to the text within the browser window.	✓	×
BR-0590	The browser MUST provide 'zoom in' and 'zoom out' functionality. This function MUST apply to all scaleable objects within the browser window.	×	✓
BR-0600	It MUST be possible for the user to control the display of fully downloaded embedded content displayed within a web page (e.g. replay an animation, sound, video, etc.) without reloading the page.	✓	✓
BR-0610	The browser SHOULD be able to render content to fit into the browser display area width to avoid horizontal scrolling.	✓	×
BR-0620	The browser MUST be able to render content to fit into the browser display area width to avoid horizontal scrolling.	×	✓
BR-0630	The browser SHALL provide the ability of enabling/disabling the Fit-to-screen functionality.	×	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0640	When the text displayed on an option of a select tag (WML or XHTML) is longer than the x size of the screen the browser SHALL not truncate the text. Instead the Browser SHALL split the text on more lines or performs an automatic scroll.	✓	✓
BR-0650	The user SHOULD be able to scroll up and down pages at different speeds (i.e. the user shall be able to control the scroll speed whilst scrolling through a page).	✓	✗
BR-0660	The user MUST be able to scroll up and down pages at different speeds (i.e. the user shall be able to control the scroll speed whilst scrolling through a page).	✗	✓
BR-0670	The user MUST be able to select and execute a function to quickly navigate back to the top of the page.	✓	✓
BR-0680	The browser MUST support page anchors.	✓	✓
BR-0690	The browser MUST support a 'find' capability to allow the user to find a particular text string in a web page.	✓	✓
BR-0700	The browser MUST start to render the page as soon as possible during the page download, without waiting until the full page has been downloaded.	✓	✓
BR-0710	The browser MUST allow the user to click on hyperlinks before the full page has downloaded.	✓	✓
BR-0720	The browser MUST allow the user to click on hyperlinks before the page has been fully rendered.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0730	The browser SHALL be usable while loading documents. The user SHALL be able to scroll, move focus and select links before a complete document (including embedded content) has been loaded.	✓	✓
BR-0740	If the browser is capable of supporting multiple pages using 'page tabs' (or a similar UI mechanism) the browser MUST be able to download these pages simultaneously.	×	✓
BR-0750	By default each soft key SHOULD have a coherent meaning and use. Back or erase functions SHOULD always be supported by the same soft key, and OK/select/accept or follow link functions SHOULD always be supported by a different soft key from the soft key that supports the back or erase functions.	✓	✓
BR-0760	The user SHALL be able to stop the page loading in progress by pressing a hardware or software key.	✓	✓
BR-0770	The browser SHALL support images having a width up to at least the width of the browsing window.	✓	✓
BR-0780	The browser MUST support images having a height up to at least the height of the browsing window.	✓	✓
BR-0790	The browser SHALL support at least 20 images per page.	✓	✓
BR-0800	The browser SHOULD support Multiple Windows	✓	✓
BR-0810	The browser SHOULD support Multiple tabs	✓	✓
BR-0820	The browser SHALL support displaying images in tables.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0830	The browser SHALL highlight clickable images.	✓	✓
BR-0840	The number of pixels between images by default SHALL be 0 pixel vertically and 0 pixel horizontally.	✓	✓

3.3 CACHE FUNCTIONALITY

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0850	The browser MUST support a caching mechanism.	✓	✓
BR-0860	The user MUST be able to modify the browser cache size within the limits defined by the operator and that of Terminal memory size.	×	✓
BR-0870	The Terminal MUST NOT require the user to clear the cache manually.	✓	✓
BR-0880	The operator MUST be able to configure the default minimum browser cache size.	✓	✓
BR-0890	The cache MUST have no limit on the number of objects it may contain up to its size limit.	✓	✓
BR-0900	Objects stored in the cache MUST be stored in their original format (such as in GIF or JPEG format).	✓	✓
BR-0910	If the user requests the Terminal to load a web page containing a cached asset the browser MUST NOT issue a request to the network for the cached asset if the cached asset has not expired, except where the user has specifically requested a page reload.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-0920	The user MUST NOT be able to override the caching mechanism (e.g. always force the browser to refresh non-expired cached content) except by the page reload command.	✓	✓
BR-0930	If the user requests a page reload the browser MUST categorically verify that all cached objects have not been modified with respect to the source server. (Note: this does not apply to any pre-cached content on the Terminal).	✓	✓
BR-0940	If the user requests a page reload, the browser MUST NOT use any expired cached asset contained in that page.	✓	✓
BR-0950	The user MUST be able to browse cached content after browser termination or Terminal power cycle.	✓	✓
BR-0960	The user SHOULD NOT perceive any delay due to the loading of cached data when re-booting the Terminal or re-starting the browser application.	✓	×
BR-0970	The user MUST NOT perceive any delay due to the loading of cached data when re-booting the Terminal or re-starting the browser application.	×	✓
BR-0980	The user MUST be able to view browser data stored in the cache when the Terminal is out of network coverage.	✓	✓
BR-0990	The user MUST be able to view browser data stored in the cache without the Terminal establishing a network connection.	✓	✓
BR-1000	The browser cache MUST support an Operator Persistent Cache (e.g. for caching the homepage of the operators portal).	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1010	The Operator Persistent Cache MUST only be able to be used by one or more operator domains; these domains MUST be able to be provisioned as a factory setting and over the air.	✓	✓
BR-1020	The user MUST be able to manually clear the cache.	✓	✓
BR-1030	If a page contains the same element (image, etc.) several times, this element SHALL be downloaded only once.	✓	✓
BR-1040	The Terminal must memorize the screen position, focus position and text input (excluding password) saved in cache of the page when the user goes back to a previous page. This function is effective only when the browser is activated.	✓	✓

3.4 BOOKMARK FUNCTIONALITY

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1050	The browser MUST allow the user to save bookmarks in both the Terminal memory and Smart Card.	✓	✓
BR-1060	The browser MUST allow the user to manage (i.e. add, list, go to, edit, rename, delete, move, copy and organise) bookmarks stored in both the Terminal memory and Smart Card.	✓	✓
BR-1070	The browser MUST allow the user to send bookmarks via local connectivity applications (such as IRDA, Bluetooth, etc., if supported by the Terminal).	✓	✓
BR-1080	Bookmark URI's MUST support URI's containing query ? and parameter parts.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1090	Focusing and activating a bookmark SHALL cause the browser to load the bookmarked page Seamlessly.	✓	✓
BR-1100	The user MUST be able to save the current URI and IRI to bookmarks.	✓	✓
BR-1110	The user MUST be able to save a target URI and IRI to bookmarks without needing to load the page.	✓	✓
BR-1120	When saving bookmarks, the user MUST be able to change its predefined title. In the case that a predefined title is not defined the user SHALL be prompted to enter a title.	✓	✓
BR-1130	The browser MUST allow bookmarks to be shared with other applications on the Terminal (e.g. to allow another application to provide the user with quick access to bookmarks outside of the browser application).	✓	✓

3.5 FOCUS FRAME FUNCTIONALITY

OMTP require the ability for operators to be able to control, within operator web content, the appearance of Focusable Elements in operator web pages and the appearance of the Focus Frame itself.

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1140	The browser MUST allow the Focus Frame appearance to be set by the operator based on page contents. The implementation MUST override any user preferences for the Focus Frame if they are provided to the user.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1150	At a minimum, the operator MUST be able to control all of the following properties of the Focus Frame, using operator page content, when they are on hypertext elements and form controls: • Border • Outline • Background colour • Colour • Focus (Note: Outline is a CSS 2.1 item and is recommended for use even with Class A browsers).	✓	✓
BR-1160	When the Focus Frame is on an image within a web page its border MUST not encroach on the image pixels.	✓	✓
BR-1170	When the Focus Frame is on an image within a web page its outline MUST not encroach on the image pixels.	✓	✓
BR-1180	As a minimum, the operator MUST be able to control all of the following properties of the Focus Frame, using operator page content, when they are on Focusable Elements: • Background colour • Colour	✓	✓
BR-1190	The operator MUST be able to set the initial focus on a page.	✓	✓
BR-1200	The browser MUST be able to set the initial focus on a page using named anchors.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1210	The browser MUST support 4 way navigation (i.e. the browser MUST not support just 2 way navigation only). The proposed behaviour of the 4 way navigation in the browser MUST be consistent with the navigation on the rest of the Terminal interface (e.g. Main Menu), thus increasing the overall usability of the Terminal.	✓	✓

3.6 CUT AND PASTE FUNCTIONALITY

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1220	The user SHOULD be able to 'select and copy' text from a web page.	✓	×
BR-1230	The user MUST be able to 'select and copy' text, pictures or other items from the page content.	×	✓
BR-1240	The clipboard that stores copied items SHOULD be globally shared between all applications in the Terminal.	✓	✓
BR-1250	The user SHOULD be able to 'paste' text copied from other applications in the Terminal into a web page for the purpose of form filling.	✓	×
BR-1260	The user MUST be able to 'paste' text copied from other applications in the Terminal into a web page for the purpose of form filling.	×	✓

3.7 SAVE PAGE / OBJECT FUNCTIONALITY

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1270	The user MUST be able to save the text content of a web page in the Terminal memory, Smart Card or in *Removable Media* (if *Removable Media* is supported).	✓	×
BR-1280	The user SHOULD be able to save complete web pages in the Terminal memory, Smart Card or in *Removable Media* (if *Removable Media* is supported).	✓	×
BR-1290	The user MUST be able to save complete web pages in the Terminal memory, Smart Card or in *Removable Media* (if *Removable Media* is supported).	×	✓
BR-1300	The user MUST be able to save individual objects (such as images) from a web page to the Terminal memory, Smart Card or *Removable Media* (if *Removable Media* is supported).	✓	✓
BR-1310	When the user wishes to save an object the browser MUST suggest to the user a default place for the object to be saved based upon the type of object being saved and the organisation of that type of object within the Terminal (i.e. to help the user logically organise their ringtones, music, pictures, etc. within the Terminal).	✓	✓
BR-1320	When saving a page or an object the browser MUST allow the user to manage where the object is being saved.	✓	✓
BR-1330	The browser MUST allow the user to send saved objects (such as images) via the messaging applications available in the Terminal (i.e. via SMS, MMS, IM, email if supported)	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1340	The browser MUST support the following save page functions: • Save page • List saved pages • Go to saved page • Delete saved page • Rename saved page (default name MUST be <title>)	✓	✓
BR-1350	Pages saved by the browser MUST include all embedded content including images, CSS etc.	✓	✓
BR-1360	All individually saved objects from a web page (such as an image) MUST be accessible to other applications on the Terminal.	✓	✓
BR-1370	The save image function, if supported by the Terminal, MUST respect DRM.	✓	✓
BR-1380	The browser MUST support the unwrapping and rendering in-line of DRM 'forward-lock' protected objects.	✓	✓
BR-1390	When saving an object, the default name MUST be the ALT description value if this attribute is present. If an ALT description is not present, the user shall be prompted to use the object file name as the default filename.	✓	✓
BR-1400	If an object cannot be saved because the Terminal memory is full, it MUST be possible for the user to instruct the Terminal to delete existing data at their discretion.	✓	✓

3.8 SETTINGS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1410	The browser MUST allow the user to: • Clear the browser cache. • Clear the cookie cache.	✓	✓
BR-1420	The browser SHOULD allow the user to configure the following browser settings: • Viewing certificates. • Scrolling speed (from slow to fast). • Cookie acceptance – “always accept”, “ask” and “always reject”.	✓	×
BR-1430	The browser MUST allow the user to configure the following browser settings: • Viewing certificates. • Scrolling speed (from slow to fast). • Cookie acceptance – “always accept”, “ask” and “always reject”.	×	✓
BR-1440	The operator MUST be able to define the default setting in the Terminal for Cookie acceptance (i.e. be able to set this to ”always accept”, “ask” or ”always reject”).	✓	✓
BR-1450	It MUST be possible for the user to access all browser communications settings (APN, proxy, etc.) via the ‘general’ settings menu on the Terminal (i.e. these setting MUST not just be accessible via a specific browser settings menu).	✓	✓
BR-1460	It MUST be possible for the user to configure several proxy servers and APNs.	✓	✓
BR-1470	The operator MUST be able to indicate which connection settings are to be used for every operator defined bookmark and link stored within the Terminal.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1480	When a user selects an operator defined bookmark or link and no connection is currently set up, the Terminal MUST connect to the network using the connection settings indicated by the operator.	✓	✓
BR-1490	If a user selects an operator defined bookmark or link and the operator indicated connection setting for that bookmark or link is different to the network connection that is already set up, then the Terminal MUST tear down the current connection and establish a new connection using the correct connection settings.	✓	✓
BR-1500	The browser MUST remember the network connection settings used when the user saves a new bookmark from web page. That connection MUST be used when starting the browser from that bookmark.	✓	✓
BR-1510	The user MUST be able to modify the network connection used for each of their bookmarks.	✓	✓
BR-1520	The Terminal SHALL support at least 5 APN configurations.	✓	✓
BR-1530	Each profile SHALL support at least 5 proxy configurations.	✓	✓
BR-1540	The user SHALL be able to turn image rendering on or off. If image rendering is off the browser SHALL not make a request for them.	✓	✓
BR-1550	The device SHALL support menu item “Delete private data” in order to erase all cached data. This includes cookies, history, logfiles and saved passwords	✓	✓
BR-1560	The browser SHALL provide user function to switch On/Off sound playing	✓	✓

3.9 INDICATORS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1570	The Terminal MUST be able to display all of the following indicators when the browser application is open in Normal Display Mode (i.e. excluding Full Screen Mode): • Page loading indicator. • Data connection indicator. • Data volume indicator. • Security indicator. • Signal strength indicator. • Download progress indicator (see download section). • Unread message indicator.	✓	✓
BR-1580	The Terminal SHOULD display the following indicators when the browser application is open in Normal Display Mode (i.e. excluding Full Screen Mode): • Battery indicator. • Local content indicator.	✓	✓
BR-1590	The 'page loading indicator' MUST: • Be displayed on screen whenever a page is loading. • Provide an indication that page data is actively being downloaded from the network. • Provide indication that the page has finished loading and is fully rendered.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1600	The 'data connection indicator' MUST: • Always be displayed on screen whenever the browser is open. • Indicate the current status of the PDP data connection (i.e. Disconnected, Connected, Active).	✓	✓
BR-1610	The 'data volume indicator' MUST: • Provide an indication of the amount of data the user has downloaded from the network using the browser application. • Be easily accessible from the browser via a menu.	✓	✓
BR-1620	The 'security indicator' MUST: • Always be displayed on screen whenever the browser is open. • Indicate if the browser is using a secure or insecure connection to the web server.	✓	✓
BR-1630	The 'local content indicator' SHOULD be displayed: • When browsing content stored in the Terminal's internal memory (with the exception of the cache). • When browsing content stored in Removable Media (if supported by the Terminal). • When browsing content stored in the Smart Card.	✓	✓

3.10 FILE UPLOAD AND DOWNLOAD

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1640	The user MUST be able to easily find and use (i.e. view or initiate) downloaded content that is stored on the Terminal, Smart Card or Removable Media (if supported by the Terminal).	✓	✓
BR-1650	The user MUST be able to view the date and time that each downloaded file stored on the Terminal was downloaded from the server.	✓	✓
BR-1660	The user MUST be able to view the size (in KB) of each downloaded file stored on the Terminal.	✓	✓
BR-1670	When the user downloads an object, the browser MUST suggest to the user a default place for the object to be saved based upon the characteristics (i.e. type, size, etc.) of the object being downloaded and the organisation of that type of object within the Terminal (i.e. to help the user logically organise their ringtones, music, pictures, etc., within the Terminal).	✓	✓
BR-1680	If the browser keeps a history of downloads that have taken place, the browser MUST allow the user to clear this 'download history'.	✓	✓
BR-1690	The browser MUST support content download over secure and insecure connections.	✓	✓
BR-1700	The browser MUST support the download of large files up to the size of the free memory available in the Terminal, Smart Card or Removable Media.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1710	While the browser is requesting or downloading a file, the user SHOULD be able to continue browsing with minimum impact on their user experience.	✓	×
BR-1720	While the browser is requesting or downloading a file, the user MUST be able to continue browsing with minimum impact on their user experience.	×	✓
BR-1730	The browser MUST indicate to the user that a file transfer is in progress for upload and download.	✓	✓
BR-1740	During a file download the browser MUST provide an indication of the size of the file the user is currently downloading if the file size information is available to the Terminal.	✓	✓
BR-1750	During a download the browser MUST provide the following information to the user: • An indication of the current download state (e.g. download started, download in progress, download finished). • An indication of the download progress (e.g. a percentage of the file size that has been downloaded). • Indication that the download request is executing successfully (e.g. indication that data is coming from the server or that data transfer has stopped). • An indicator showing an estimate of the time remaining for the download.	✓	✓
BR-1760	File uploads MUST be supported over secure and insecure connections.	✓	✓
BR-1770	The browser MUST allow large files (i.e. file sizes up to the size of the Terminals memory) to be uploaded to the network.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1780	The browser MUST be able to resume interrupted downloads if this is supported by the server (i.e. a download that has been interrupted due to a temporary loss of connection or temporary download failure).	✓	✓
BR-1790	Interrupted downloads MUST resume from the point at which they were interrupted (i.e. after the interruption the file download MUST not have to begin from the start).	✓	✓
BR-1800	The browser MUST allow user to append more than one download request on the queue.	✗	✓
BR-1810	The Terminal MUST allow users to manage (i.e. edit, delete, move) downloaded content.	✓	✓
BR-1820	If downloaded content cannot be saved because the Terminal memory is full, it MUST be possible for the user to instruct the Terminal to delete existing data at their discretion.	✓	✓
BR-1830	Just after the downloading and storing process of a multimedia content, the user SHOULD be asked about the playing of the content.	✓	✓

3.11 COOKIES

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1840	The browser SHOULD: • Allow the user to authorise cookies to be set for certain websites. • Allow the user to block cookies from being set for certain website. • Allow the user to manage (i.e. delete and view) cookies stored in the browser.	✓	×
BR-1850	The browser MUST: • Allow the user to authorise cookies to be set for certain specified websites. • Allow the user to block cookies from being set for certain specified websites. • Allow the user to manage (i.e. delete and view) cookies stored in the Terminals memory.	×	✓
BR-1860	The browser MUST support a standard mechanism or mechanisms for cookies. (See section 6.5)	✓	✓
BR-1870	Adequate storage MUST be reserved in the Terminal for cookies.	✓	✓
BR-1880	The operator MUST be able to configure the default minimum cookie storage size.	✓	✓
BR-1890	Cookies MUST persist after browser termination and Terminal power cycle.	✓	✓
BR-1900	The operator MUST be able to pre-provision persistent cookies for operator or related services.	✓	✓

3.12 SECURITY

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1910	The browser MUST have a secure transaction indicator showing entry and exit of secure sites.	✓	✓
BR-1920	The browser MUST support transport layer security mechanisms.	✓	✓
BR-1930	The browser MUST support secure sockets.	✓	✓
BR-1940	The user SHALL be prompted to proceed in an un-trusted manner when accessing a site that requires a certificate but does not process the relevant certificate.	✓	✓

3.13 URI / IRI HANDLING

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-1950	The browser MUST allow the user to send the URI / IRI of the current page or any bookmark via any messaging application or local connectivity applications available in the Terminal.	✓	✓
BR-1960	The user MUST be able to select the message type used to send the URI / IRI.	✓	✓
BR-1970	The operator MUST be able to specify the default message type to be used when sending a URI / IRI.	✓	✓
BR-1980	The user MUST be able to edit a URI / IRI before it is sent via a messaging or local connectivity application in the Terminal.	✓	✓
BR-1990	The browser MUST provide a function to allow the user to enter a specific URI / IRI for a site.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2000	The URI / IRI entry function MUST support the recalling of previously entered URI / IRI's.	✓	✓
BR-2010	The entered URI / IRI MUST be remembered, and when the user uses the function again, the last entered URI / IRI MUST be automatically entered by the Terminal as default value.	✓	✓
BR-2020	The user MUST be able to clear the URI / IRI history on the Terminal.	✓	✓
BR-2030	The user MUST be able to turn the automatic entry of URI / IRI's from the URI / IRI history on or off.	✓	✓
BR-2040	All the Terminal applications that use URI / IRI's MUST support a common minimum URI / IRI length.	✓	✓
BR-2050	The user MUST be able to launch the browser wherever a URI / IRI link is encountered and identified in any application. When user focuses and activates a URI / IRI the browser is launched and directed to the selected URI / IRI.	✓	✓
BR-2060	The browser MUST support the use of both URI's and IRI's.	✓	✓

3.14 MANIPULATION OF CONTENT

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2070	The browser MUST respect DRM data attached to protected content. Any actions taken on this content (i.e. copying, saving or editing) must not strip or alter the attached DRM data.	✓	✓

3.15 MULTITASKING

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2080	The user MUST be able to switch between the browser and the following applications within 2 seconds: • Media player • Operator Application • Java • Contacts • Messaging client • Telephony client • File manager • Calendar / To-Do lists	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2090	The Terminal MUST allow the browser plus any one of the following applications to run simultaneously (if supported on the Terminal) without any perceptible performance degradation to the user: • Media player • Operator Application • Java • Contacts • Messaging client • Telephony client • File manager • Calendar / To-Do lists This means that when the browser and any one of the above applications are both executing at the same time (for instance the user is playing music while browsing), then the subjective performance to the user of both applications shall not be degraded.	✗	✓
BR-2100	The user MUST be able to download a file using the browser without blocking the Telephony and Messaging applications within the Terminal. (Note: In the case of a Terminal on a GPRS/EDGE network it is assumed that the file download will suspend whist the call or message is received and then resume afterwards).	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2110	The user MUST be able to download a file without the browser blocking any other application within the Terminal. In the case when there is not enough free memory to start a download due to other applications running in the Terminal the user MUST be prompted to close one of the other applications if they want the download to start. In the case when there is not enough free memory to start another application because a download taking place the user MUST be prompted to either cancel the download or wait until the download completes before they can open the other application.	×	✓

3.16 OFFLINE / ONLINE BEHAVIOUR

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2120	The browser MUST allow the user to view Offline Web Content without initiating a data session.	✓	✓
BR-2130	Opening Offline Web Content MUST not trigger any “Connecting” screen or similar splash screen.	✓	✓

3.17 BROWSER UI CUSTOMISATION

Note: These recommendations apply to the browser applications UI and not the page content. These recommendations will be passed to the OMTP UI customisation work group.

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2140	The browser SHOULD support the ability for the operator to control the size, font, colour and images of the browser's page title bar.	×	✓
BR-2150	The browser SHOULD support the ability for the operator to control the size and colour of the browsers scroll bars.	×	✓
BR-2160	The browser SHOULD support the ability for the operator to control the size and colour of the browser's window frames.	×	✓
BR-2170	The browser SHOULD support the ability for the operator to control the size and position of any operator branding icons within the browser.	×	✓
BR-2180	The browser SHOULD support the ability for the operator to control the size and position of any state icons within the browser.	×	✓
BR-2190	The default font size and font face for the browser SHOULD be the same as the Terminal operating system's font size	✓	✓

4 REQUIREMENTS RELATING TO BROWSER PERFORMANCE

In the columns defining the browser classes a '×' indicates that the requirement does not apply to this class of browser. A '✓' indicates that the requirement does apply to this class of browser.

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2200	With no other applications being used, the Terminal MUST be able to render a set of offline 'reference' web pages provided by the manufacturer that are less than 100kb and less 220 by 176 pixels within 4 seconds.	✓	✓
BR-2210	With no other applications being used, the Terminal MUST be able to render a set of offline 'reference' web pages provided by the manufacturer that are less than 100kb and less 220 by 176 pixels within 2 seconds.	×	✓
BR-2220	The maximum time taken to start-up a pre-installed application on the Terminal from a web page MUST be less than 3 seconds.	✓	✓
BR-2230	In the case where no other applications are being used the transition from browser to another pre-installed application (and vice versa) MUST take less than 2 seconds (i.e. there shall be no undue delay or pause).	✓	✓
BR-2240	The browser MUST optimise the browsing speed. Potential mechanisms for increasing the speed are pipelining, multipart, multiple connections and persistent connections.	✓	✓
BR-2250	The browser SHOULD support at least 3 multiple concurrent connections.	×	✓

5 REQUIREMENTS RELATED TO BROWSER INTEGRATION WITH OTHER APPLICATIONS

In the columns defining the browser classes a '×' indicates that the requirement does not apply to this class of browser. A '✓' indicates that the requirement does apply to this class of browser.

5.1 OPERATOR APPLICATIONS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2260	It MUST be possible for an Operator Application to launch the browser at a given URI / IRI. This shall include the scenario where the Operator Application is running in the background.	✓	✓
BR-2270	The browser MUST be able to interact Seamlessly with all Operator Applications on the Terminal.	✓	✓
BR-2280	The Operator Application's View Context MUST be recoverable after any interaction with the Browser.	✓	✓

5.2 MEDIA PLAYER(S)

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2290	The browser MUST be able to interact Seamlessly with all multimedia applications in the Terminal (i.e. music player, video player, etc.).	✓	✓
BR-2300	The browser MUST automatically choose and launch the correct media player for a downloaded media file based upon the file's properties and type.	✓	✓
BR-2310	Where more than one media player is present on a Terminal the user MUST be able to select which media player is used to view or play a particular file type.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2320	If media streaming is supported by the Terminal the browser MUST initiate the immediate playback of a media stream when the user selects the appropriate hypertext link.	✓	✓
BR-2330	If Progressive Download is supported by the Terminal the browser MUST initiate the immediate playback of a 'downloadable' media file when the user selects the appropriate hypertext link.	✓	✓
BR-2340	It SHOULD be possible for the user to browse to a URI / IRI embedded in the meta data of a media file or media stream (for example if a URI is included in the metadata of an MP3 file).	✓	✓
BR-2350	The user MUST be able to play media encoded with the formats defined by [OMTP CODECS] CDA0 and CDV0 profiles.	✓	✓
BR-2360	The user SHOULD be able to play media encoded with the formats defined by [OMTP CODECS] CDA1 and CDV1 profiles.	✓	×
BR-2370	The user MUST be able to play media encoded with the formats defined by [OMTP CODECS] CDA1 and CDV1 profiles.	×	✓

5.3 CONTACTS LIST / ADDRESS BOOK

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2380	The browser MUST be able to interact Seamlessly with all contacts list / address book applications in the Terminal.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2390	The browser MUST support the viewing and insertion of contact entries into the PIM by the selection of hypertext links to PIM files of the appropriate type.	✓	✓
BR-2400	The user MUST be able to select the current URI / IRI from the browser and add it to a contact entry in the address book.	✓	✓
BR-2410	The user MUST be able to select a URI / IRI from the content displayed in the browser and add it to a contact entry in the address book.	✓	✓
BR-2420	The browser MUST be able to add contacts into the address book (name and email) from content displayed in the browser (i.e. using telbook and email attributes on the <a> element according to [CHTML] specifications).	✓	✓
BR-2430	The user MUST be able to create a contact from a telephone number displayed on the page.	✓	✓
BR-2440	The user MUST be able to create a contact from an e-mail address displayed on the page.	✓	✓

5.4 MESSAGING

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2450	The browser MUST be able to interact Seamlessly with all messaging applications (e.g. SMS, MMS, IM, email) in the Terminal.	✓	✓
BR-2460	The browser MUST launch the messaging application based on the URI / IRI scheme of the hyperlinks.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2470	The browser MUST support a URI / IRI scheme for email.	✓	✓
BR-2480	The browser MUST support a URI / IRI scheme for MMS and SMS.	✓	✓
BR-2490	The user MUST be able to create and send an SMS to a telephone number displayed in the browser.	✓	✓
BR-2500	The user MUST be able to create and send an MMS to a telephone number displayed in the browser.	✓	✓
BR-2510	The user MUST be able to create and send an e-mail to an e-mail address displayed in the browser.	✓	✓
BR-2520	The user MUST be able to create and send an MMS to an e-mail address displayed in the browser.	✓	✓

5.5 VOICE AND VIDEO TELEPHONY

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2530	The browser MUST be able to interact Seamlessly with the voice and video telephony interface of the Terminal.	✓	✓
BR-2540	The browser MUST support the making of voice and video calls from a URI / IRI.	✓	✓
BR-2550	The browser MUST support the making of voice and video calls from a telephone number displayed in the browser.	✓	✓
BR-2560	The browser MUST support # and * for short code dialling from a URI / IRI.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2570	The browser SHOULD ask for user confirmation before initiating any call from a hyperlink.	✓	✓
BR-2580	The Terminal MUST display the number (and name if it is contained in the users contacts list) to which the call is being made.	✓	✓

5.6 FILE MANAGEMENT

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2590	The browser MUST be able to interact Seamlessly with the file manager of the Terminal (for example if the user clicks on a HTML file using the file manager the browser must initialise and display the contents of the file).	✓	✓

5.7 CALENDAR / TO DO LISTS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2600	The browser MUST be able to interact Seamlessly with the calendar / to-do application in the Terminal.	✓	✓
BR-2610	The browser MUST support the viewing and insertion of calendar entries into the PIM.	✓	✓
BR-2620	It MUST be possible to include an URI / IRI in a to-do task.	✓	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2630	When clicking on a date displayed in the browser it SHOULD be possible to open the calendar application on that specific date. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓

5.8 SMART CARD AND MEMORY CARDS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2640	The user MUST be able to browse local content in the Smart Card without connecting to the network.	✓	✓
BR-2650	Operator web content stored on the Smart Card SHALL be addressable using a standard and consistent format of URI across all Terminals. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓
BR-2660	The user MUST be able to browse local content stored in Removable Media without connecting to the network.	✓	✓
BR-2670	Operator web content stored on local Removable Media SHALL be addressable using a standard and consistent format of URI across all Terminals. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓

5.9 JAVA EXECUTION ENVIRONMENTS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2680	The browser MUST be able to interact Seamlessly (see definition of terms) with the Java execution environment in the Terminal	✓	✓
BR-2690	All installed MIDlets MUST be addressable using a standard URI address scheme from the browser. Note: OMTP are aware that a standard may not exist for this functionality at present however OMTP may require a standard to be created.	✓	✓
BR-2700	The browser MUST support MIDlets automatically installing and running from the browser by the selection of hypertext links to MIDlet files of the appropriate MIME type.	✓	✓
BR-2710	Any MIDlet downloaded via the browser MUST follow a standard installation process according to the [J2MEOTA] specifications.	✓	✓
BR-2720	MIDlets downloaded via the browser MUST install and run with minimal user intervention as described by OMA input document [EJAVA] section 1.1 MIDP OTA and Simple Links.	✓	✓

5.10 INSTALLATION OF / INTERACTION WITH PLUG-INS

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2730	The browser MUST support a 'plug-in' mechanism.	✗	✓

REQ. ID	REQUIREMENT	CLASS A	CLASS B
BR-2740	If the correct 'plug in' is installed on the Terminal the user MUST automatically be able to see the embedded 'plugged-in' content, if used, in a web page.	×	✓

6 BROWSING ENABLER REQUIREMENTS

This chapter defines the minimum requirements for a browsing enabler for both Class A and Class B browsers. According to OMTP Application Framework [OMTPAF] a browsing enabler provides:

- A transport framework for the relevant protocols required to provide browsing services
- The means for handling and parsing the browsing content, including mark-up languages, style capabilities, etc.

The main target of this chapter is developing a set of detailed technical requirements that will verify the atomic behaviour of a specific browser implementation for compliance against the specification.

In the columns defining the browser classes a '✗' indicates that the requirement does not apply to this class of browser. A '✓' indicates that the requirement does apply to this class of browser.

Please note that a table summarising the requirements included in this chapter is provided in Annex C.

6.1 TRANSPORT FRAMEWORK

A browsing enabler MUST support the following set of protocols for providing session, transaction, datagram, and security services.

REFERENCE	PROTOCOLS	COMMENTS	CLASS A	CLASS B
BR-2750	**INTERNET STACK**	The Browsing Enabler MUST fulfil the Internet Stack based on wireless profiles of IETF-defined protocols as specified in [PROTOCOLSTACK]. Persistent connections as specified in [RFC2616] MUST be supported.	✓	✓
BR-2760	**TLS1 [TLS1]**		✓	✓

In addition the following protocol MAY be supported:

REFERENCE	PROTOCOLS	COMMENTS	CLASS A	CLASS B
BR-2770	**TRADITIONAL STACK**	The Browsing Enabler SHOULD fulfil the Traditional Stack as specified in [PROTOCOLSTACK].	✓	✓
BR-2780	**SUPPORT OF BOTH STACKS**	If the device includes a dual browser stack (WAP 1.x and WAP 2.0) WAP 2.0 stack SHALL be used by default. WAP 1.x should be use in case of failure. In this case, the device SHALL change automatically from WAP 2.0 stack to WAP 1.x stack.	✓	✓

6.2 TRUSTMARKS

Different style guides has been published to provide a set of best practices for creating mobile sites. The browsing enabler MUST be able to support web content conforming to the following style guides:

REFERENCE	PROTOCOLS	COMMENTS	CLASS A	CLASS B
BR-2790	**.MOBI [DOTMOBI]**	Sites compliant with the Switch On! Guide [DOTMOBI] MUST be supported	✓	✓
BR-2800	**MOBILEOK [MWBP]**	Sites compliant with the Mobile Web Best Practices [MWBP] MUST be supported	✓	✓

6.3 MARK-UP LANGUAGES, STYLE SHEETS AND SCRIPTING CAPABILITIES

A browsing enabler MUST support the following standard suite of mark-up languages, style formats and scripting languages. A detailed description of the features requested for each language can be found in annexes A and B.

REFERENCE	PROTOCOLS	COMMENTS	CLASS A	CLASS B
BR-2810	**WML 1.3 [WML]**	Textual format MUST be supported. "Title" attribute on the card elements and "nowrap" attribute on the p (paragraph) elements MUST be supported.	✓	✓
BR-2820	**Textual WML Script [WMLS] [WMLSLib]**		✓	✓
BR-2830	**Bytecode WML Script [WMLS] [WMLSLib]**		✓	✓
BR-2840	**Wireless CSS 1.1 [WAP CSS]**	It MUST be possible to apply style using inline style or external/internal style sheets. All the mandatory requirements described in annex A [WAP CSS] MUST be fulfilled. Additionally the :link, :focus, :visited and the :active pseudo-classes MUST be supported.	✓	✓

REFERENCE	PROTOCOLS	COMMENTS	CLASS A	CLASS B
BR-2850	**XHTML Mobile Profile 1.2 [XHTMLMP] with scripting and styling support**	All the mandatory requirements included in annex A [XHTMLMP] MUST be fulfilled Scripting in XHTML Mobile Profile documents MUST be supported as defined in [XHTMLMP]. (Requirement XHTMLMP-SCRIPT-C-001). Styling in XHTML Mobile Profile documents MUST be supported as defined in [XHTMLMP]. (Requirement XHTMLMP-STYLE-C-001). At least three external style sheets (CSS) in a single XHTML page MUST be supported. The event model for XHTML Mobile Profile (including focus and blur events) MUST be supported as defined in [XHTMLMP] (Requirements XHTMLMP-EVENT-C-001, XHTMLMP-EVENT-C-022, XHTMLMP-EVENT-C-024). Text Input Modes MUST be supported as defined in [XHTMLMP], in particular “PredictOn” and “PredictOff” modes MUST be supported (requirement XHTMLMP-INPUTMODE-C-001). XHTML pages of at least 40 KB including headers SHALL be supported. The images and other assets (External CSS) are not taken into account.	✓	✓

REFERENCE	PROTOCOLS	COMMENTS	CLASS A	CLASS B
BR-2860	**ECMAScript Mobile Profile [ECMA Mobile Profile]**		✓	✓

Although the following standards are encouraged to be supported in all the browsing enablers, for class A browsing enablers they are optional. The browsing enabler MUST support these mark-up languages is limited to sites with the trustmarks defined in chapter 6.2. They SHOULD be supported for generic web content.

REFERENCE	PROTOCOLS	COMMENTS	CLASS A	CLASS B
BR-2870	**XHTML 1.1 [XHTML]**	For sites conforming to the trustmarks defined in chapter 6.2 XHTML 1.1 MUST be supported For general web content it SHOULD be supported.	✗	✓
BR-2880	**HTML 4.01 [HTML]**	For sites conforming to the trustmarks defined in chapter 6.2 HTML 4.01 MUST be supported For general web content HTML 4.01 SHOULD be supported.	✗	✓
BR-2890	**CSS 2.1 [CSS21]**		✗	✓
BR-2900	**ECMA SCRIPT [ECMA-262]**		✗	✓

BR-2910	**WICD Mobile [WICDMobile]**	The browser enabler MUST conform with the User Agent specification [WICDMobile]	✖	✓
BR-2920	**XSL 1.0**	The browsing enabler SHALL support XSL 1.0 according to W3C	✖	✓
BR-2930	**DOM 2**	The browsing enabler SHALL support DOM 2 (Document Object Model) DHTML.	✖	✓

6.4 CACHE

A browsing enabler MUST provide mechanisms to temporarily save caches in order to increase performance and minimize the data traffic and resource consumption.

The following requirements MUST be supported:

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-2940	**Support for HTTP Cache Specification [RFC 2616]**	The browsing enabler MUST satisfy the cache specification described in Chapter 13 [RFC 2616] and support the cache-control header described in section 14.9 [RFC 2616] All the content received with a cache validator or an explicit expiration time received in a successful HTTP response MUST be cached. Non-expired cached content (according to server specified expiration time) MUST be used without validating with the origin server, unless explicitly requested. Expired cache content MUST NOT be used unless it has been validated with the origin server.	✓	✓
BR-2950	**Minimum cache size:** **Class A 300 KB** **Class B 500 KB**	The cache size can be modified within the range defined by the manufacturer. The browsing enabler MUST discard non-expired cached content to make space for newer content whenever needed.	✓ - **300 KB**	✓ - **500 KB**

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-2960	**Persistent Cache**	The browsing enabler MUST support a domain-specific persistent cache which is accessible only by content originating from specific domains as provisioned either at factory setting or over the air. The browsing enabler SHALL NOT allow the end user to remove content stored in the domain specific cache, such as cookies, web pages, images, etc.	✓	✓

6.5 STATE MANAGEMENT (COOKIES)

A browsing enabler MUST offer the possibility to maintain state information about a session between the terminal and the origin server via cookies.

The following requirements MUST be supported:

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-2970	**Support for HTTP State Management [RFC 2965]**	The browsing enabler MUST fulfil the specification defined in [RFC 2965]. Set-cookie2 and cookie headers MUST be supported. Max-age attribute MUST be supported and used to calculate the cookies' age using the rules specified in [RFC 2616].	✓	✓

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-2980	**Minimum amount of cookies that can be stored simultaneously:** – **Class A: 20** – **Class B: 50**	New incoming cookies MUST accumulate until they expire or are discarded (resource permitting). The browsing enabler MUST discard older cookies (even if they are not expired) to make space for newer ones whenever needed. Discarding MAY be done for example using a least-recently-used algorithm or an oldest cookie algorithm**.**	✓ **- 20**	✓ **- 50**
BR-2990	**Cookie-Size Supported: 4096 bytes**		✓	✓

6.6 URI SCHEMES, IRI SCHEMES AND WTAI

Different Uniform Resource Identifier schemes are used to identify different types of resources. The browsing enabler MUST support the URI and IRI schemes listed below:

REFERENCE	URI / IRI SCHEME	COMMENTS	CLASS A	CLASS B
BR-3000	**HTTP URI Scheme [RFC 2616]**	http://	✓	✓
BR-3010	**HTTPS URI Scheme [RFC2818]**	https://	✓	✓
BR-3020	**TEL URI Scheme [RFC3966]**	tel:	✓	✓

REFERENCE	URI / IRI SCHEME	COMMENTS	CLASS A	CLASS B
BR-3030	**MMSTO, SMSTO AND SMS URI Schemes**	mmsto: smsto: sms:	✓	✓
BR-3040	**MAILTO URI Scheme [RFC2368]**	mailto:	✓	✓
BR-3050	**RTSP URI Scheme [RFC2326]**	rtsp://	✓	✓
BR-3060	**WTAI URI Scheme**	The following URIs prefixes must be supported: – wtai://wp/mc – wtai://wp/sd – wtai://wp/ap	✓	✓
BR-3070	**Minimum URI length supported: 1024 characters**	The browsing enablers MUST be able to support URIs of at least 1024 characters in length.	✓	✓
BR-3080	**Internationalized Resource Identifiers** **[RFC 3987]**		✓	✓

6.7 *ADVERTISING OF BROWSING ENABLER CHARACTERISTICS*

Whenever a browser makes a request to a remote sever, it provides information about its capabilities. The table below describes the information that the Browsing Enabler MUST provide on each request:

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-3090	**Support for User Agent Header Field**	The browsing enabler MUST use the user agent header field to advertise the remote server of the terminal model. The user agent field SHALL clearly contain the manufacturer name, model and software version. The user agents corresponding to different software versions of the same Terminal SHALL be based on a common user agent header foundation. When the Terminal version number is not sufficient to determine a unique Terminal, especially in case of a specific customisation version for mobile operators, the user agent SHALL contain the customisation version number.	✓	✓

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-3100	**Support for Profile Header Field**	The browsing enabler MUST use the profile header filed to provide a link to the user agent profile. The URI provided is unique per product and MUST be indefinitely hosted on the manufacturer site. Whenever a UAProf parameter changes the browsing enabler MUST either use the profile-diff header to advertise of the change or refer to a different URI in the profile header.	✓	✓
BR-3110	**User Agent Profile [UAProf] Support**	The UAProf MUST comply with the mandatory requirements defined in [UAProf]. The user agent profile MUST include at least the following essential UA Profile Components: – Hardware Platform – Software Platform – Browser User Agent – Network Characteristics – WAP Characteristics – Push Characteristics All attributes pertaining to supported features MUST be included.	✓	✓

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-3120	**Support for the Headers:** – **Accept,** – **Accept-language,** – **Accept-charset,** – **Accept-encoding**	The browsing enabler MUST use the Accept, Accept-language, Accept-charset and Accept-encoding headers to advertise browsing enabler characteristics.	✓	✓

6.8 DOWNLOADING

Mobile browsers offer the option to download content to the terminal. This section describes the mechanisms that MUST be supported in the browsing enabler.

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-3130	**Support for download based on direct links**	Content referred in <a> elements can be downloaded. The HEAD method must be used to retrieve information about the element (such as media type and size) before downloading the content.	✓	✓
BR-3140	**Support for OMA Download 1.0 [OMADL]**	OMA Download 1.0 must be supported as specified in [OMADL].	✓	✓

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-3150	**MIDP OTA Support [MIDPOTA]**	Whenever possible the Java Application Descriptor [MIDPOTA] should be used for Java MIDlet downloads as defined in [OMADL].	✓	✓

6.9 MIME TYPES

The following media types MUST be supported by the browsing enabler.

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-3160	**text/vnd.wap.wml** **text/vnd.wap.wmlscript** **text/html** **application/xhtml+xml** **application/vnd.wap.xhtml+xml** **text/css** **text/ecmascript** **text/plain**		✓	✓
BR-3170	**audio/aac** **audio/amr** **audio/midi** **audio/mpeg** **audio/sp-midi**	Audio MIME types are based on [OMTP CODECS].	✓	✓
BR-3180	**image/gif** **image/jpeg** **image/png** **image/vnd.wap.wbmp**	Graphic MIME types are based on [OMTP CODECS].	✓	✓

REFERENCE	REQUIREMENT	COMMENTS	CLASS A	CLASS B
BR-3190	**video/mp4** **video/mpeg4**	Video mime types are based on [OMTP CODECS].	✓	✓
BR-3200	**text/x-vCard** **text/vCard** **text/x-vCalendar** **text/calendar**		✓	✓
BR-3210	**application/vnd.oma.dd+xml**		✓	✓

6.10 HINTS (INFORMATIVE)

OMTP User Experience group identified a set of requirements that are not covered by any standard. This chapter tries to define example mechanisms to satisfy these requirements. These examples exist to clarify UE requirements. The examples can also be used to drive contributions to the relevant SDOs via formal liaisons or to directly influence terminal implementations.

- Example 1: Form filling and predictive text (Requirements BR-0290, BR-0300).

  In order to facilitate the inputting of text in elements included in web forms (e.g. textbox), it would be convenient to have mark-up attributes providing Hints on the content type expected for that element and suggest possible sources of the input data (e.g. phonebook).

  A. If a text input element requires a phone number to be input, it should be possible to use a parameter in the style applied to that element that specifies that a phone number is expected. The mechanism could be similar to the WAP-input extensions defined in WCSS [WCSS], or the text input modes defined in [XHTMLMP]:

     When the user put the focus on text input element that requires a phone number to be inputted, the browser automatically gives the user the option to access numbers stored in the phonebook.

- Example 2: Page Layout (Requirements BR-0450, BR-0470).

In order to maximize browsing experience, the user should be informed about any possibility to improve page rendering (e.g. change orientation mode or Full Screen Mode).

In order to maximise browsing experience, the HTML HEAD element could potentially be used. This element contains data not considered as document content since browsers do not usually render the HEAD content. the dir attribute specifies the text direction and is part of the HEAD element, it is not directly rendered but informs the browser that the text should be rendered left-to-right or right-to-left. t is possible that an attribute to specify the optimal layout could be included in the HEAD element, allowing the user to be informed of options to improve rendering of the page.

7 DEFINITION OF TERMS

TERM	DESCRIPTION
FOCUSABLE ELEMENTS	Those elements of a web page that support hyperlinks or user input.
FOCUS FRAME	A name given to the graphical mechanism used to highlight that a particular object within a web page has focus. The Focus Frame is often implemented by inversing the colour of the object that has focus or by drawing a wire-frame box around the object.
FULL SCREEN MODE	A mode whereby an application uses of the whole of the Terminals display (excluding critical UI elements such as soft-keys). This may include overwriting the screen area used to provide a status bar, signal strength indicator, battery indicator or other similar UI Widgets.
HINT(S)	A non-binding suggestion of how something may be rendered or interpreted in the mark up language.
MAIN MENU	The menu from which the device applications are launched. The main menu can also link to other applications, content or URIs. The main menu can be hierarchical in structure.
MOBILE ENABLED WEB SITE(S)	Web sites that follow the W3C Mobile Web Best Practices document [MWBP].
NORMAL DISPLAY MODE	The default screen mode used by the majority of applications on a Terminal. Typically any application using the Normal Display Mode will share the display with several system applications that provide a status bar, signal strength indicator, battery indicator and other similar UI Widgets.
OFFLINE WEB CONTENT	Content that is stored internally within the Terminal, Smart Card or Removable Media.
OPERATOR APPLICATION(S)	A trusted operator application that is installed on the Terminal to provide a bespoke branded operator user interface.
OPERATOR PERSISTENT CACHE	A part of the cache that is reserved for use by operator web content only.

TERM	DESCRIPTION
PROGRESSIVE DOWNLOAD	A method of delivering audio/video to a user that involves playing the downloaded portion of a file while the download is still in progress. Also referred to as “pseudo-streaming”.
REMOVABLE MEDIA	External memory device such as an SD card, memory stick, etc.
SEAMLESS OR SEAMLESSLY	Being perfectly consistent and coherent. When applied to a Terminal, this term implies that the Terminal’s UI when the user transitions between different applications will be quick, consistent and coherent. Specifically, the UI behaviours defined below are considered not to be ‘seamless’: • ‘Pop-ups’ which delay transitions • ‘Splash’ Screens which delay transitions • Any loss of context between applications • Any other undue delay
SMART CARD	Tamper-resistant device (including trusted-by-the-operator memory and a trusted-by-the-operator execution environment) that can communicate with the Terminal through its interface. The operators issue Smart Cards in the form of Security or User Identification modules. Possible types of Smart Cards are: SIM (GSM), R-UIM (CDMA); or an application as the USIM (UMTS).
TERMINAL	Used as an alternative term for a cellular telephone or handset.
VIEW CONTEXT	The user’s current viewable position and interaction state within an application. For example, within a browser application the term View Context is the current position of the page text on the screen and the element that currently has focus.
WIDGET	A single user interface element. For example button and check box are both Widgets. Also known as a Control in Microsoft terminology.

8 ABBREVIATIONS

ABBREVIATION	DESCRIPTION
APN	Access Point Name
ASCII	American Standard Code for Information Interchange
CHTML	Compact HTML
CSS	Cascading Style Sheet
DRM	Digital Rights Management
ECMA	European Computer Manufacturers Association
GIF	Graphics Interchange Format
GSMA	GSM Association
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
IETF	Internet Engineering Task Force
IM	Instant Message
IRDA	Infra Red Data Association
IRI	Internationalised Resource Identifier
JPEG	Joint Photographic Experts Group
MIDP	Mobile Information Device Profile
MIME	Multipurpose Internet Mail Extensions
MMS	Multimedia Message Service
MTLD	Mobile Top Level Domain
OMA	Open Mobile Alliance
OMTP	Open Mobile Terminal Platform
OTA	Over The Air

ABBREVIATION	DESCRIPTION
PDP	Packet Data Protocol
PIM	Personal Information Manager
PS	Packet Switched
SDO	Standards Development Organisation
SMS	Short Message Service
SSL	Secure Sockets Layer
TLS	Transport Layer Security
UAPROF	User Agent Profile
UE	User Experience
UI	User Interface
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UTF	Unicode Transformation Format
W3C	World Wide Web Consortium
WAP	Wireless Access Protocol
WCSS	Wireless Cascading Style Sheet
WICD	Web Integration Compound Document
WML	Wireless Markup Language
XHTML	Extensible Hypertext Markup Language

9 REFERENCED DOCUMENTS

NO.	DOCUMENT
[CHTML]	Compact HTML for Small Information Applicances http://www.w3.org/TR/1998/NOTE-compactHTML-19980209/
[CSS21]	CSS 2.1 Specification http://www.w3.org/TR/CSS21
[DOTMOBI]	dotmobi Switch On! Web Browsing Guide http://mtld.mobi/
[ECMA-262]	"ECMAScript Language Specification", Third Edition http://www.ecma-international.org/publications/standards/ECMA-262.HTM
[ECMA MOBILE PROFILE]	"ECMAScript Mobile Profile", Version 1.0. URL: http://www.openmobilealliance.org/release_program/docs/Browsing/V2_3-20050614-C/OMA-WAP-ESMP-V1_0-20050614-C.pdf
[EJAVA]	"OMA-MAE-2002-0011-Addingjavatowebpages-20021216.htm", Kaori Nakai, Peter Stark, December 2002, http://www.openmobilealliance.org/
[HTML]	HTML 4.01 Specification http://www.w3.org/TR/html4/
[J2MEOTA]	"Over The Air User Initiated Provisioning Specification for the Mobile Information Terminal Profile", Mobile Information Terminal Profile, v2.0 (JSR-118), November 2002, http://jcp.org/en/jsr/detail?id=118
[MWBP]	W3C Mobile Web Best Practices http://www.w3.org/TR/mobile-bp/
[MIDPOTA]	"Over The Air User Initiated Provisioning Recommended Practice", version 1.0 http://java.sun.com

No.	Document
[OMA]	Open Mobile Alliance http://www.openmobilealliance.org/index.html
[OMADL]	Generic Content Download Over The Air v1.0 http://www.openmobilealliance.org
[OMTPAF]	OMTP Application Framework http://www.omtp.org/docs/OMTP_Application_Framework.pdf
[OMTP Codecs]	OMTP Codecs 1_0, Release 1 http://www.omtp.org/docs/OMTP_Codecs.pdf
[PROTOCOL STACK]	Enabler Release Definition for Browser Protocol Stack Version 2.1” http://www.openmobilealliance.org
[RFC2119]	Key words for use in RFCs to Indicate Requirement Levels http://www.ietf.org/rfc/rfc2119.txt
[RFC2326]	Real Time Streaming Protocol (RTSP) http://www.ietf.org/rfc/rfc2326.txt
[RFC2368]	The mailto URL scheme http://www.ietf.org/rfc/rfc2368.txt
[RFC 2616]	IETF Hypertext Transfer Protocol - HTTP/1.1 http://www.ietf.org/rfc/rfc2616.txt
[RFC 2965]	IETF HTTP State Management Mechanism http://www.ietf.org/rfc/rfc2965.txt
[RFC 3987]	Internationalized Resource Identifiers http://tools.ietf.org/html/rfc3987
[RFC3966]	The tel URI for Telephone Numbers http://www.ietf.org/rfc/rfc3696.txt

No.	Document
[TLS1]	"RFC2246 The TLS Protocol Version 1.0", T. Dierks, C. Allen, January 1999, http://www.ietf.org/rfc/rfc2246.txt
[UAProf]	User Agent Profile 1.1 http://www.ietf.org/rfc/rfc2246.txt
[W3C]	World Wide Web Consortium http://www.w3.org/
[WAP CSS]	Wireless CSS Specification Version 1.1 http://www.openmobilealliance.org/release_program/docs/Browsing/V2_3-20050614-C/OMA-WAP-WCSS-V1_1-20040609-C.pdf
[WICDMobile]	Web Integration Compound Document Mobile 1.0 http://www.w3.org/TR/WICDMobile/
[WML]	Wireless Markup Language Version 1.3" http://www.openmobilealliance.org
[WMLS]	WMLScript Language Specification http://www.openmobilealliance.org
[WMLSLib]	WMLScript Standard Libraries Specification http://www.openmobilealliance.org
[WTAI]	Wireless Telephony Application Interface Specification http://www.openmobilealliance.org
[WTLS]	Wireless Transport Layer Security http://www.openmobilealliance.org
[XHTML]	XHTML 1.0 The Extensible HyperText Markup Language (Second Edition) http://www.w3.org/TR/xhtml1/

No.	Document
[XHTMLMP]	XHTML Mobile Profile v1.2 http://www.openmobilealliance.org

A. HTML/XHTML SUPPORT

The table below lists for each HTML/XHTML element those attributes that MUST be properly handled and supported by the browsing enabler. This table is intended to be a baseline with the minimum functionality that MUST be offered by a browsing enabler when supporting HTML/XHTML.

ELEMENTS		ATTRIBUTES
HYPERTEXT	**A**	CLASS, ID, STYLE, ACCESKEY, HREF, NAME, ONBLUR, ONFOCUS, TABINDEX
TEXT	**ABBR**	CLASS, ID, STYLE
	ACRONYM	CLASS, ID, STYLE
	ADDRESS	CLASS, ID, STYLE
	BLOCKQUOTE	CLASS, ID, STYLE, CITE
	BR	CLASS, ID, STYLE
	CITE	CLASS, ID, STYLE
	CODE	CLASS, ID, STYLE
	DFN	CLASS, ID, STYLE, ALIGN
	DIV	CLASS, ID, STYLE
	EM	CLASS, ID, STYLE
	H1 … H6	CLASS, ID, STYLE, ALIGN
	KBD	CLASS, ID, STYLE
	P	CLASS, ID, STYLE, ALIGN
	PRE	CLASS, ID, STYLE
	Q	CLASS, ID, STYLE, CITE
	SAMP	CLASS, ID, STYLE
	SPAN	CLASS, ID, STYLE
	STRONG	CLASS, ID, STYLE
	VAR	CLASS, ID, STYLE
STRUCTURE	**BODY**	CLASS, ID, STYLE, BACKGROUND, BGCOLOR

ELEMENTS		ATTRIBUTES
	HEAD	LANG
	HTML	LANG, VERSION
	TITLE	
LIST	**DL**	CLASS, ID, STYLE
	DD	CLASS, ID, STYLE
	DT	CLASS, ID, STYLE
	LI	CLASS, ID, STYLE, VALUE
	OL	CLASS, ID, STYLE, START
	UL	CLASS, ID, STYLE
BASIC FORMS	**FORM**	CLASS, ID, STYLE, ACTION, ENCTYPE, METHOD
	INPUT	CLASS, ID, STYLE, ACCESSKEY, DISABLED, NAME, ONBLUR, ONFOCUS, TABINDEX, TYPE, VALUE, SIZE
	LABEL	CLASS, ID, STYLE, ACCESSKEY, FOR
	OPTION	CLASS, ID, STYLE, SELECTED, VALUE
	SELECT	CLASS, ID, STYLE, MULTIPLE, NAME, ONBLUR, ONFOCUS, TABINDEX
	TEXTAREA	CLASS, ID, STYLE, ACCESKEY, COLS, NAME, ONBLUR, ONFOCUS, ROWS, TABINDEX
BASIC TABLE	**CAPTION**	CLASS, ID, STYLE, TITLE
	TABLE	CLASS, ID, STYLE, TITLE, SUMMARY, TITLE, WIDTH, CELLPADDING, CELLSPACING
	TD	CLASS, ID, STYLE, TITLE, ABBR, ALIGN, COLSPAN, ROWSPAN, VALIGN
	TH	CLASS, ID, STYLE, TITLE, ABBR, ALIGN, COLSPAN, ROWSPAN, VALIGN
	TR	CLASS, ID, STYLE, TITLE, ALIGN, VALIGN

ELEMENTS		ATTRIBUTES
IMAGES	**IMG**	CLASS, ID, STYLE, TITLE, ALT, HEIGHT, SRC, WIDTH
IMAGE MAP	**AREA**	CLASS, ID, STYLE, ACCESSKEY, ALT, COORDS, HREF, ONBLUR, ONFOCUS, SHAPE, TABINDEX
	MAP	CLASS, ID, STYLE, NAME
OBJECT	**OBJECT**	CLASS, ID, STYLE, ACCESKEY, ALIGN, BORDER, CLASSID, DATA, HEIGHT, NAME, TABINDEX, TYPE, WIDTH
	PARAM	NAME, TYPE, VALUE
METAINFORMATION	**META**	CONTENT, CHARSET, HTTP-EQUIV
LINK	**LINK**	HREF, REL, TYPE
BASE	**BASE**	HREF
FORMS	**FIELDSET**	CLASS, ID, STYLE, TITLE
	OPTGROUP	CLASS, ID, STYLE, TITLE, LABEL
PRESENTATION	**B**	CLASS, ID, STYLE
	BIG	CLASS, ID, STYLE
	HR	CLASS, ID, STYLE, COLOR
	I	CLASS, ID, STYLE
	SMALL	CLASS, ID, STYLE
SCRIPT	**NOSCRIPT**	
	SCRIPT	CHARSET, DEFER, SRC, TYPE
STYLE	**STYLE**	MEDIA, TYPE,

The browsing enabler MUST also support the following intrinsic events for the listed elements according to the DOM event model:

EVENTS		ELEMENTS SUPPORTING THE EVENT
INTRINSIC	**LOAD**	BODY

EVENTS		ELEMENTS SUPPORTING THE EVENT
EVENTS	**CLICK**	A, IMG, INPUT, OBJECT, OPTION, TEXTAREA
	FOCUS	A, LABEL, INPUT, SELECT, TEXTAREA
	BLUR	A, LABEL, INPUT, SELECT, TEXTAREA
	SUBMIT	FORM
	RESET	FORM

B. CSS SUPPORT

The table below lists for each the pseudo-classes that MUST be supported by style-sheets by the browsing enabler for devices supporting WCSS, CSS, or both.

SELECTORS		ELEMENTS SUPPORTING THE SELECTOR
PSEUDO-CLASSES	**LINK**	A
	VISITED	A
	ACTIVE	A, IMG
	FOCUS	A, INPUT, SELECT, TEXTAREA

The table below list the CSS properties that MUST be properly handled and supported by the browsing enabler. This table is intended to be a baseline with the minimum functionality that MUST be supported by a browsing enabler:

ELEMENTS		PROPERTIES
BOX MODEL	**MARGIN**	MARGIN-TOP, MARGIN-RIGHT, MARGIN-BOTTOM, MARGIN-LEFT, MARGIN
	PADDING	PADDING-TOP, PADDING-RIGHT, PADDING-BOTTOM, PADDING-LEFT, PADDING
	BORDER WIDTH	BORDER-TOP-WIDTH, BORDER-RIGHT-WIDTH, BORDER-BOTTOM-WIDTH, BORDER-LEFT-WIDTH, BORDER-WIDTH
	BORDER-COLOR	BORDER-TOP-COLOR, BORDER-RIGHT-COLOR, BORDER-BOTTOM-COLOR, BORDER-LEFT-COLOR, BORDER-COLOR
	BORDER-STYLE	BORDER-TOP-STYLE, BORDER-RIGHT-STYLE, BORDER-BOTTOM-STYLE, BORDER-LEFT-STLYE, BORDER-STYLE
	BORDER	BORDER-TOP, BORDER-RIGHT, BORDER-BOTTOM, BORDER-LEFT, BORDER

ELEMENTS		PROPERTIES
COLORS AND BACKGROUNDS	**FOREGROUND COLOR**	COLOR
	BACKGROUND COLOR	BACKGROUND-COLOR
	BACKGROUND IMAGES	BACKGROUND-IMAGE, BACKGROUND-REPEAT, BACKGROUND-ATTACHMENT, BACKGROUND-POSITION
	BACKGROUND	BACKGROUND
FONTS	**FAMILY**	FONT-FAMILY
	STYLE	FONT-STYLE
	VARIANT	FONT-VARIANT
	WEIGHT	FONT-WEIGHT
	SIZE	FONT-SIZE
	FONT	FONT
TEXT	**INDENTATION**	TEXT-INDENT
	ALIGNMENT	TEXT-ALIGN
	DECORATION	TEXT-DECORATION
	TRANSFORMATION	TEXT-TRANSFORM
	WHITE-SPACE	WHITE-SPACE
VISUAL EFFECTS	**VISIBILITY**	VISIBILITY
VISUAL-FORMATTING	**DISPLAY PROPERTIES**	DISPLAY
	FLOAT POSITIONING	FLOAT
	FLOAT FLOW CONTROL	CLEAR
	CONTENT WIDTH AND HEIGHT	WIDTH
		HEIGHT

ELEMENTS		PROPERTIES
		VERTICAL-ALIGN
USER INTERFACE (ONLY IN CSS2.1)	**OUTLINE**	OUTLINE
	OUTLINE-WIDTH	OUTLINE-WIDTH
	OUTLINE-STYLE	OUTLINE-STYLE
	OUTLINE-COLOR	OUTLINE-COLOR

The table below list for each the WCSS extensions that MUST be properly handled and supported by the Browsing Enabler.

ELEMENTS		PROPERTIES
EXTENSIONS	**MARQUEE**	DISPLAY, -WAP-MARQUEE-STYLE, -WAP-MARQUEE-LOOP, -WAP-MARQUEE-LOOP – WAP-MARQUEE-DIR, -WAP-MARQUEE-SPEED
	ACCESS KEYS	-WAP-ACESSKEY
	INPUT	-WAP-INPUT-FORMAT, -WAP-INPUT-REQUIRED

C. BROWSING ENABLER CLASSES SUMARY

CATEGORY	REFERENCE	CLASS A	CLASS B
TRANSPORT FRAMEWORK	INTERNET STACK	✓	✓
	TLS1	✓	✓
	WTLS	✓	✓
	TRADITIONAL STACK	OPTIONAL	OPTIONAL
TRUSTMARKS	.MOBI	✓	✓
	MOBILEOK	✓	✓
MARK-UP LANGUAGES, STYLE AND SCRIPTING CAPABILITIES	WML 1.3	✓	✓
	WML Script	✓	✓
	Wireless CSS 1.1	✓	✓
	XHTML Mobile Profile 1.2	✓	✓
	ECMAScript Mobile Profile	✓	✓
	XHTML 1.1	OPTIONAL	✓[1]
	HTML 4.01	OPTIONAL	✓[1]
	CSS 2.1	OPTIONAL	✓
	ECMA SCRIPT	OPTIONAL	✓
	WICD MOBILE	OPTIONAL	✓
CACHE	Support for HTTP Cache Specification	✓	✓
	Minimum cache size	300Kbytes	500Kbytes
COOKIES	HTTP State Management	✓	✓
	Amount of Cookies supported	20	50

[1] Mandatory for .mobi or mobileOK sites. Recommended for generic web content.

CATEGORY	REFERENCE	CLASS A	CLASS B
	Cookie-Size Supported: 4096 bytes	**4096 bytes**	**4096 bytes**
URI SCHEME	**HTTP URI Scheme**	✓	✓
	HTTPS URI Scheme	✓	✓
	TEL URI Scheme	✓	✓
	SMSTO AND SMS URI Schemes	✓	✓
	MAILTO URI Scheme	✓	✓
	RTSP URI Scheme	✓	✓
	WTAI URI Scheme	✓	✓
ADVERTISING OF BROWSING CHARACTERISTICS	**Support for User Agent Header Field**	✓	✓
	Support for Profile Header Field	✓	✓
	UAProf Support	✓	✓
	Support for the Headers: – **Accept** – **Accept-language** – **Accept-charset** – **Accept-encoding**	✓	✓
DOWNLOADING	**Download based on direct links**	✓	✓
	Support for OMA Download 1.0 [OMADL]	✓	✓
	MIDP OTA Support [MIDPOTA]	✓	✓
MIME TYPES	**text/vnd.wap.wml** **text/vnd.wap.wmlscript** **text/html** **application/xhtml+xml** **application/vnd.wap.xhtml+xml** **text/css** **text/ecmascript** **text/plain**	✓	✓

CATEGORY	REFERENCE	CLASS A	CLASS B
	audio/aac **audio/amr** **audio/midi** **audio/mpeg** **audio/sp-midi**	✓	✓
	image/gif **image/jpeg** **image/png** **image/vnd.wap.wbmp**	✓	✓
	video/mp4 **video/mpeg4**	✓	✓
	text/x-vCard **text/vCard** **text/x-vCalendar** **text/calendar**	✓	✓
	application/vnd.oma.dd+xml	✓	✓