

---

**Source:** GSM Association (MRP)  
**Title:** Mobile Services Initiative  
**Document for:** Discussion  
**Agenda Item:** 6.2 (for handling on Tuesday)

---

The GSM Association has just announced the creation of the Mobile Services Initiative (M-Services). This initiative is intended to promote growth in the use of mobile data services and GPRS. M-Services offer the end user better services and presentation through the use of better browsers in the terminal giving enhanced graphics, clearer navigation and better layout of information. Other capabilities offered include the download of music, video, games, ring tones and screen savers as well as delivery of email and multimedia messaging to the end user.

It is intended that M-Services will use standardised solutions such as WAP, SMS, EMS and MMS. For the short-term, in order to allow some of these new services to be available to customers by Christmas 2001, some proprietary solutions will have to be used. However, it is the intention that the longer-term solution will use standardised capabilities including those from 3GPP. Also, it is intended that M-Services will be extended to 3G mobiles as these become available.

The GSMA has produced the first M-Services Guidelines document setting out the requirements for this initiative. This is attached to this liaison statement. This has the endorsement of network operators and the major mobile terminal manufacturers. The GSMA would welcome comments on this document and suggestions for the enhancement of M-Services from 3GPP.



PRD AA.35

GLOBAL SYSTEM FOR  
MOBILE COMMUNICATIONS

**Title M-Services Guidelines**

**Version 3.0.0**

**Date 31<sup>st</sup> May 2001**

**GSM Association Classifications**

**Non-Binding**

<b>Security Classification Category:</b>	
<b>Unrestricted - Industry</b>	
<b>Unrestricted - Public</b>	<b>X</b>

<b>Information Category</b>	
-----------------------------	--

***Unrestricted***

This document is subject to copyright protection. The GSM MoU Association ("Association") makes no representation, warranty or undertaking (express or implied) with respect to and does not accept any responsibility for, and hereby disclaims liability for the accuracy or completeness or timeliness of the information contained in this document. The information contained in this document may be subject to change without prior notice. Access to and distribution of this document by the Association is made pursuant to the Regulations of the Association.

© Copyright of the GSM MoU Association 2001

**Reference**

GSMA is the owner of all copyright in the M-Services Guidelines except for material contributed to the Guidelines by Openwave, as agreed between Openwave and GSMA. Openwave has granted GSMA a license to use the Openwave Material as part of the Guidelines.

**Disclaimer**

THE INFORMATION DISCLOSED IN THESE GUIDELINES IS DELIVERED "AS IS," AND ALL REPRESENTATIONS OR WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OR CONDITIONS FOR FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, TITLE AND NON-INFRINGEMENT, ARE HEREBY DISCLAIMED.

These Guidelines are provided for informational purposes.

**Intellectual Property**

No license, express or implied, is granted herein by estoppel or otherwise, to any intellectual property rights.

Openwave is the owner of IP rights without which it is not possible on technical grounds to make, sell, lease, or otherwise dispose, repair or operate equipment certain sections of these Guidelines. These IP rights are referred to hereinafter as 'Essential IP Rights' and the Openwave sections of the M-Services Guidelines are designated by the References listed in Annex D. All GSMA Members, Associate Members and suppliers of GSM handsets and equipment are eligible to receive and may apply to Openwave for a grant of a royalty-free license to Openwave's Essential IP rights in exchange for (a) a reciprocal royalty-free license for any Essential IP Rights they may hold to Openwave and all other such licensees, and (b) agreement to develop and commercially use products compliant with the M-Services Guidelines, including features utilising the Essential IP Rights. Potential licensees must also agree to validate the implementation of such products based with a compliance testing program to be developed by Openwave by 1 July 2001.

## 1. Document History

Version	Date	Brief Description
1.1	11 <sup>th</sup> April 2001	GSMA M-Services Interest Group (MSIG) provides first draft of M-Services Guidelines document. The document is based on GSMA plenary document 095/01: 'I-Services Phone Guidelines', TIM. Editor: Joerg Kramer, <a href="mailto:joerg.kramer@vodafone.com">joerg.kramer@vodafone.com</a>
2.0	11 <sup>th</sup> May 2001	Approval by M-Services Task Force
2.1	28 <sup>th</sup> May 2001	Editorial Changes (comments by GSMA members) (history, references, cover sheet, cross-references)

## Table of Contents

1.	Document History .....	3
2.	Introduction .....	4
2.1.	Background.....	4
2.2.	Scope.....	5
2.3.	Feature Roadmap.....	6
3.	Handset features.....	7
3.1.	Hardware .....	7
3.2.	Terminal HMI Guidelines and Customer Experience.....	7
3.3.	Data transmission .....	7
3.4.	Provisioning & Configuration.....	7
4.	M-Services elements .....	7
3.1	Graphical User Interface / HMI Requirements.....	7
4.1.1.	Graphical User Interface elements .....	7
4.1.2.	Other HMI recommendations.....	9
4.2.	WAP-Requirements .....	10
4.3.	Download of Content through WAP Browser.....	11
4.3.1.	WSP/HTTP GET in WAP1.2.....	11
4.3.2.	Download Fun.....	12
4.3.3.	User Agent Profiles for Downloaded Content .....	14
4.3.4.	Bookmark.....	14
4.3.5.	Navigation / Homepage .....	15
4.3.6.	Save As Feature .....	15
4.3.7.	Object download and usage during WAP session / MIME types.....	15
4.3.8.	Codecs.....	17
4.3.9.	Formats.....	18
4.3.10.	Object Download Procedure .....	20
4.4.	Advanced Messaging Services.....	22
4.4.1.	Long message .....	22
4.4.2.	Enhanced Messaging Service - EMS .....	22
4.4.3.	Multimedia Messaging - MMS.....	22
4.4.4.	E-mail (optional).....	22
4.5.	Additional M-Services elements.....	24
4.5.1.	SIM Application Toolkit - SAT .....	24
4.5.2.	SyncML Support.....	24
Annex A	<Informative> - Hardware and Terminal HMI Guidelines and Customer Experience.....	25
Annex B	<Informative> - Other HMI recommendations (WAP).....	33
Annex C	<Informative> – Provisioning & Configuration parameters .....	34
Annex D	<Normative> – References .....	36
Annex E	– Glossary .....	37

## 2. Introduction

### 2.1. Background

The concept of mobile communication is rapidly changing all over the world and the business is evolving from Voice Services to Valued Added Services.

The best example of this change is represented by the NTT DoCoMos' service *iMode*.

It is important to point out that *iMode* is not only a browsing model, indeed it is a structured system that takes into account service aspects and value chain, and provides definitions and specifications for a whole variety of factors, from handset features to service offer.

How can we replicate this success? Which are WAP basic requirements that will enable the system to offer the same level of services?

The GSM community is waiting for WAP 2.0 (that will be commercially available in the year 2002); however the standard will not be exhaustive because it is not going to explain how customers can use the services they are offered during their navigation.

Let's take for instance the download of a ringtone, which will be the operating procedure?

These services are not defined in WAP Specifications.

Note: The use of the '*M-Services*' naming does not imply any approval or commitments by mobile operators to use this specific naming.

## 2.2. Scope

The purpose of this document is to define a set of new services that have been selected as fundamental from the GSM Association and to make clear choices on services and features when there is no existing standard.

Basic elements for *M-Services* are:

- WAP June 2000 Conformance Release
- WAP 2.0 (for WML2 / XHTML Basic & provisioning)
- Graphical User Interface
- Download of media objects
- Multimedia Messaging – MMS, and optionally E-mail
- Enhanced Messaging Service - EMS
- SIM Application Toolkit
- SyncML for vCard and vCal

Most of the above-mentioned services are based on standards; should any “ad hoc” implementation be required, the correct *interworking* with the standard has to be guaranteed.

This document specifies the desired minimum requirements to meet a mass-market marketing launch campaign of M-Services for end November 2001. To reach the desired timeframe implementation of the feature roadmap as provided in Section 1.3 is required. Migration to fully standards based solutions is an essential medium term requirement (WAP 2.0).

### 2.3. Feature Roadmap

<b>Handset features</b>	<b>Oct 2001</b>	<b>June 2002</b>	<b>Reference</b>
GPRS/CSD	Mandatory	Mandatory	3.3
WAP Provisioning (WAP 2.0)	Mandatory	Mandatory	3.4

<b>WAP 1.2.1 Requirement</b>	<b>Oct 2001</b>	<b>June 2002</b>	<b>Reference</b>
Push	Mandatory	Mandatory	3.2
WTLS 2	Mandatory	Mandatory	3.2
WIM, WTLS 3	Optional	Recommended	3.2
UA Prof	Mandatory	Mandatory	3.2
WTAI Public	Mandatory	Mandatory	3.2

<b>Download capability over WAP (Mandatory)</b>	<b>Oct 2001</b>	<b>June 2002</b>	<b>Reference</b>
Download FUN + UAProf extension	Optional	Optional	4.3.2
SAR - WSP/HTTP GET	Recommended	Mandatory	4.3.1

<b>WAP GUI (Mandatory)</b>	<b>Oct 2001</b>	<b>June 2002</b>	<b>Reference</b>
WML Extension	Recommended	Recommended	4.1.1
Dual browser WML 1.X and WML2	Recommended	Mandatory	4.1.1

<b>Downloadable object and usage</b>	<b>Oct 2001</b>	<b>June 2002</b>	<b>Reference</b>
Ringtone	Mandatory	Mandatory	4.3.9.1
Wallpaper	Mandatory	Mandatory	4.3.9.2
Picture	Recommended	Mandatory	4.3.9.3
Game	Optional	Recommended	4.3.9.4
Java Application	Optional	Recommended	4.3.9.5
Screen saver	Recommended	Mandatory	4.3.9.2
Audio	Optional	Recommended	4.3.9.7
Skin	Optional	Optional	4.3.9.9
Video	Optional	Optional	4.3.9.8

<b>Messaging</b>	<b>October 2001</b>	<b>June 2002</b>	<b>Reference</b>
EMS	Mandatory	Mandatory	4.4.2
Email	Optional	Optional	4.4.4
Long Message	Mandatory	Mandatory	4.4.1
MMS	Recommended	Mandatory	4.4.3

<b>Additional M-services</b>	<b>October 2001</b>	<b>June 2002</b>	<b>Reference</b>
SAT Rel. 99	Mandatory	Mandatory	4.5.1
SyncML	Optional	Recommended	4.5.2
Bookmark	Mandatory	Mandatory	4.3.4

### 3. Handset features

#### 3.1. Hardware

See Annex A for possible implementation.

#### 3.2. Terminal HMI Guidelines and Customer Experience

See Annex A and B for possible implementation.

#### 3.3. Data transmission

The phone should support GPRS, support of (HS)CSD for GPRS terminals is highly recommended but optional. (HS)CSD-only terminals are not desired.

#### 3.4. Provisioning & Configuration

See Annex C for details of specific configuration parameters.

The following 'WAP Forum standardised Over The Air provisioning standards' should be supported for all profiles:

WAP 182 : Provarch 20010314 [7], WAP 183 : Provcont 20010314 [8], WAP 184 : Provboot 20010314 [9], WAP 185 : Provuab 20010314 [10], WAP 186 : Provsc 20010315 [11], WAP 187 : Transport E2Esec 20000711 [12]

Service configuration parameters must be supported by the terminal for *M-Services* menu, WAP service access, messaging access etc.

The precise values of the various parameters must be flexible but an operator must be able to control these if required.

The following must be provided

- 1) preset values (but not locked) by the terminal manufacturer according to individual Operator specification – this could include values being left blank
- 2) these parameters may be configured in the SIM card (initially or dynamically via OTA) – if so these settings must over-write any manufacturer settings
- 3) additionally the SIM card may contain flags to lock these parameters to prevent the user changing – the device must support this feature

### 4. M-Services elements

#### 3.1 Graphical User Interface / HMI Requirements

Usability and intuitiveness of the WAP browser is important, as well as the ability for application developers to understand the types of browser interfaces from which the content will be accessed. There are two recommended HMI models in the browser, depending on the keypad layout of the phone.

The first HMI model is for phones that have two programmable soft keys and a separate dedicated back or erase key. This is the preferred configuration. On these phones, one softkey or "Accept" key must control the main path of execution on the card, while the other soft key is reserved for alternate execution or "option" commands. The browser must not assign BACK or ERASE functions to a programmable soft key, unless specifically assigned by the WML content.

Soft key labels must be drawn separate from the text flow of the card.

The second HMI model is for phones that do not have a dedicated back or erase key. This configuration is not preferred, but is allowable. On these phones, the left soft key must control either the "execution" or the "option" command; the right soft key must control either the "back" or the "erase" commands.

##### 4.1.1. Graphical User Interface elements

WML 1.2.1 as defined today limits the ability of browsers to support Graphical User Interfaces (GUIs).

To enrich the user experience, the following extra functionality is required:



- ❑ Pop-up menus (specific form of single select list to conserve space on the display)
- ❑ Radio buttons (specific form of single select list to )
- ❑ Check boxes (specific form of Boolean selection)
- ❑ Push buttons (specific form of link for execution)
- ❑ Horizontal rule (a line drawn across the display to separate sections of a WML card)

Pop-up menus must be displayed near the content that causes them to be activated, allowing the user to retain context when selecting that action.

The recommended solution is the use of a WML 2 / XHTML Basic based browser which also supports WML 1.2.1 (i.e. implementation of a dual-mode browser). Although this is an interim solution, it would offer a smooth migration path to full WAP 2.0 and standardised content generation.

If, as an alternative WML1.2.1 is used, the required functionality should be provided by the use of a series of WML extensions. These GUI extensions could bridge the gap between WAP 1.2 and WAP 2.0, allowing users to gain the benefit of graphical user interfaces while WAP 2.0 is finalised and implemented. The implementation of WML extensions shall not CONFLICT with WAP2.0.

Phones that implement a graphical user interface based on these WML extensions should support two programmable softkeys and must have a dedicated key for “back” and “erase” type functions. (First preferred HMI model described above).

If making use of new wml-extensions, interoperability and backwards compatibility has to be taken into account. The following scenarios have to be considered:

- 1)M-Service compliant phone receives WAP 1.x compliant content
- 2)WAP 1.x compliant phone receives M-Service compliant content
- 3)M-Service compliant phone receives M-Service compliant content via a legacy (non OPENWAVE) WAP Gateway

All three described scenarios have to be supported in a user friendly way. If a phone does not recognize specific WML extensions then these extensions shall be ignored.

See ref [18] for more descriptive information about the WML extensions and the DTD for these extensions.

#### 4.1.2. Other HMI recommendations

Other HMI recommendations can be found in Annex B.

## 4.2. WAP-Requirements

The phone must comply with WAP June 2000 Conformance Release plus some additional features of WAP 2.0:

- Provisioning Agent
- Push
- WTLS Class 2
- UAProf
- WTAI public libraries
- WML, WMLScript, WBXML, WML2
- WDP, WTP, WSP
- WIM & WTLS class 3

The browser must support Push services and UAProf as defined in the above mentioned release. WAP Push implementation must include support for service indication and service loading.

Moreover, for UAProf, the device supplier may have a Server available in Internet. This server must be kept up-to-date with the device Default Proprieties.

The UAProf specification includes a scheme containing attributes that describe the client hardware, the browser user-agent, network characteristics and more. Some of the attributes included in the [UAProf] specification also apply to the *M-Services* compliant phone.

The GSMA PRDs on WAP shall be taken into account. Reference: GSMA PRD TW.10 [24] and SE.21 [25].

### 4.3. Download of Content through WAP Browser

The requirement is to have a download capability for multimedia objects. The WAP June 2000 Conformance Release doesn't define a complete procedure for download of objects such as Ringtones, Games, Screen Saver, etc. For Christmas 2001, the terminal must implement one of the two solutions outlined in sections 3.3.1 and 3.3.2.

#### 4.3.1. WSP/HTTP GET in WAP1.2

The preferred solution is WSP/HTTP GET in WAP 1.2: The terminal must implement Segmentation And Re-assembly (SAR), as specified in WAP-201-WTP-20000219-a.pdf, chapter 8.14. The download application **MUST** check in the WSP header that the downloaded object will fit in its memory. If that is not the case, it **SHALL** interrupt the download, displaying to the user an appropriate error message.

This method provides a smooth migration to HTTP GET in WAP 2.0 where there is no limit to the object size. The download application **MUST** check in the HTTP header that the downloaded object will fit in its memory. If that is not the case, it **SHALL** interrupt the download, displaying to the user an appropriate error message.

Where WML2 is supported, the use of object types will allow the terminal to correctly interpret how to use the downloaded object.

For the download and storage of content the 'Save As' Feature (as described in chapter 4.3.6) in WAP 1.x / 2.0 session must be provided.

#### 4.3.2. Download Fun

The alternative solution is to allow the deployment of download object types as described at high level below

-

For a possible implementation see references [20] and [21].

For the download feature two components are required.

1. A **download agent** or download service (Referred as local service in the diagram) to download objects into the browser.
  - A) This download agent or local service exposes a generic API (for developer) which accepts
    - a) A request to download something – passed as a URL
    - b) An MMC object name.

The download API looks like this:

proxy:download?<download URI>&<object name>

B) The download agent performs a “GET Request” to the Download application (Configured via provisioning)

2. Download Application:
  - a) Validates that the MMC object name is safe
  - b) Constructs an MMC document which is of the form

```
<?xml version="1.0"?>
<mmc status-uri="http://prov.carrier.net/">
  <method
    name="write"
    object="phone:<objectname>
    valueref="http:<url from local service>"
    Reportstatus="FALSE" />
  <method
    id="2"
    name="disconnect">
</mmc>
```
  - c). And sends this to the client.

Then the Client receives the MMC doc, downloads the object and returns to the local service on receipt of the MMC disconnection. Then the local service returns control to the next card specified by third party download application.

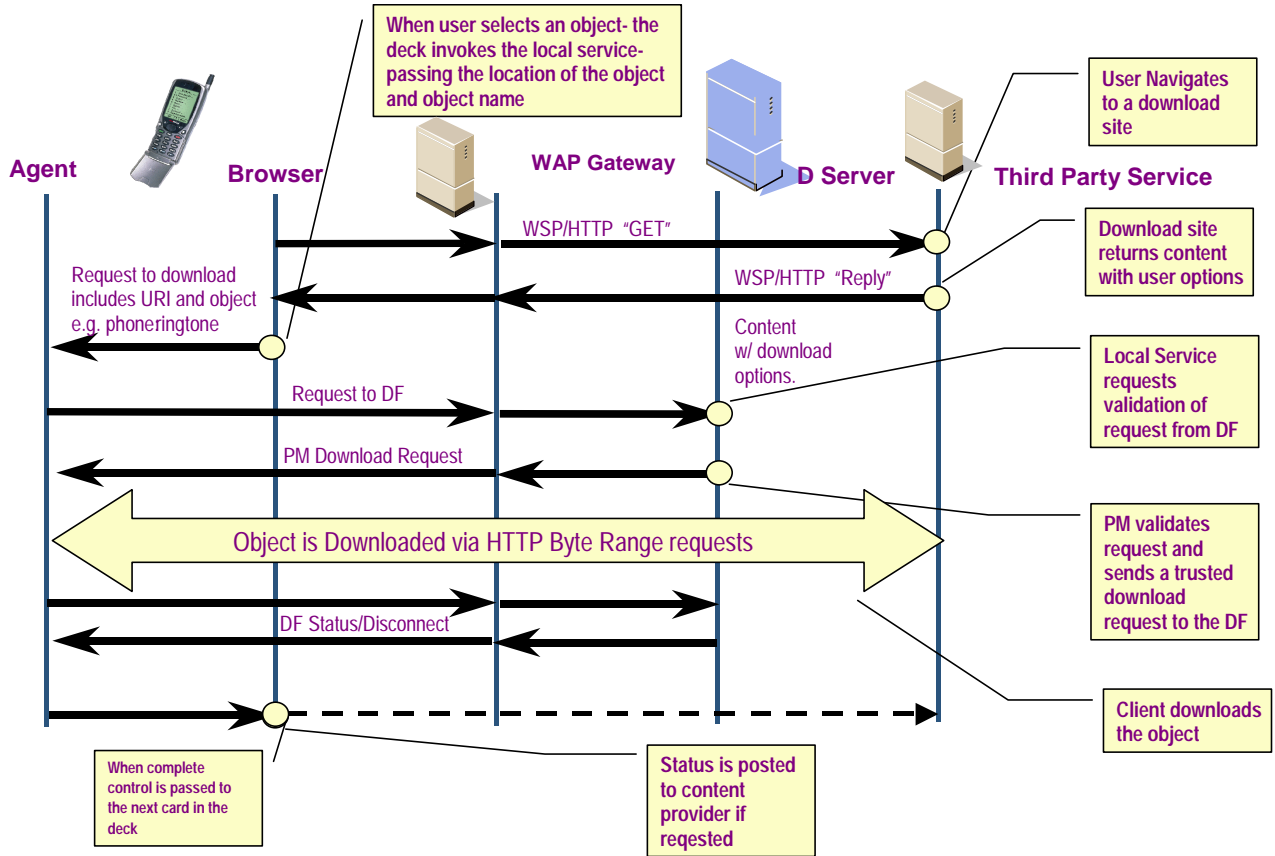
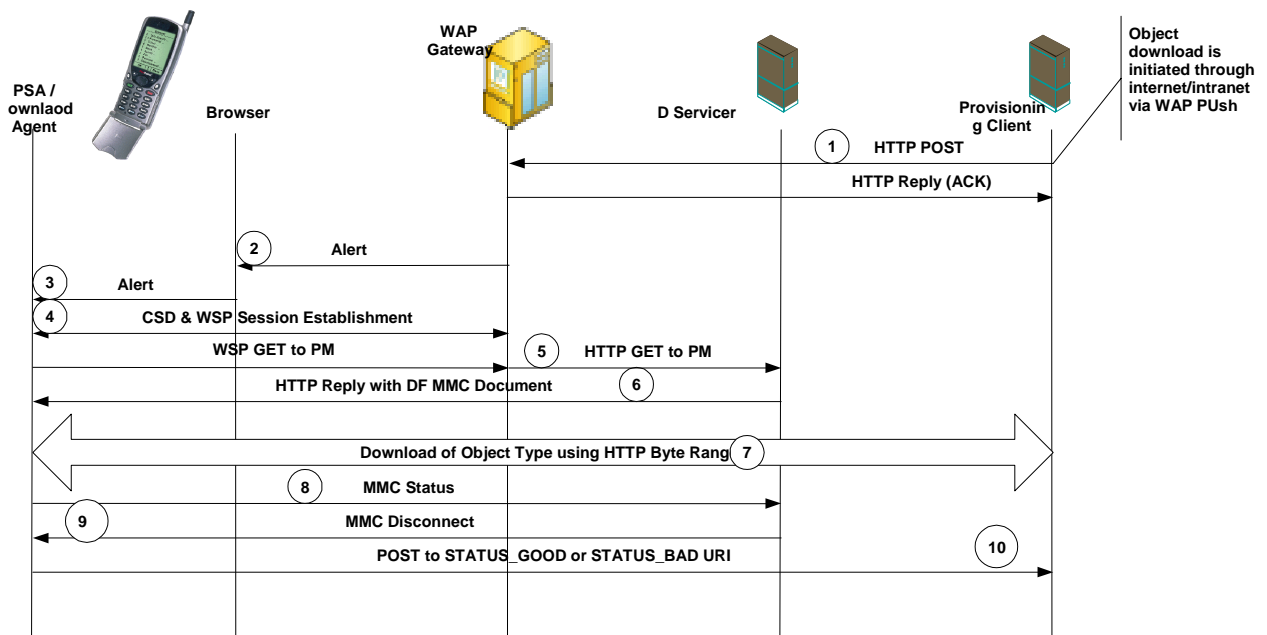


Figure 1: Download Functionality Overview

For full specification of Download see references [20] and [21].

Devices must also support network-initiated downloads, allowing content to be pushed to the phone such as by subscription. The following figure 2 shows the sequence for network-initiated downloads.

Download API Initiated Download Fun



## Figure 2: Network-Initiated Sequence for Download

### 4.3.3. User Agent Profiles for Downloaded Content

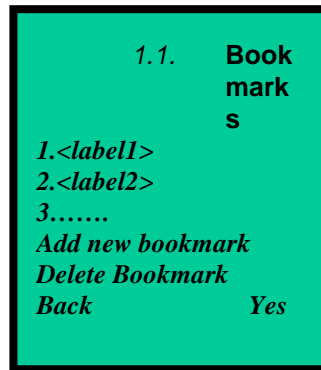
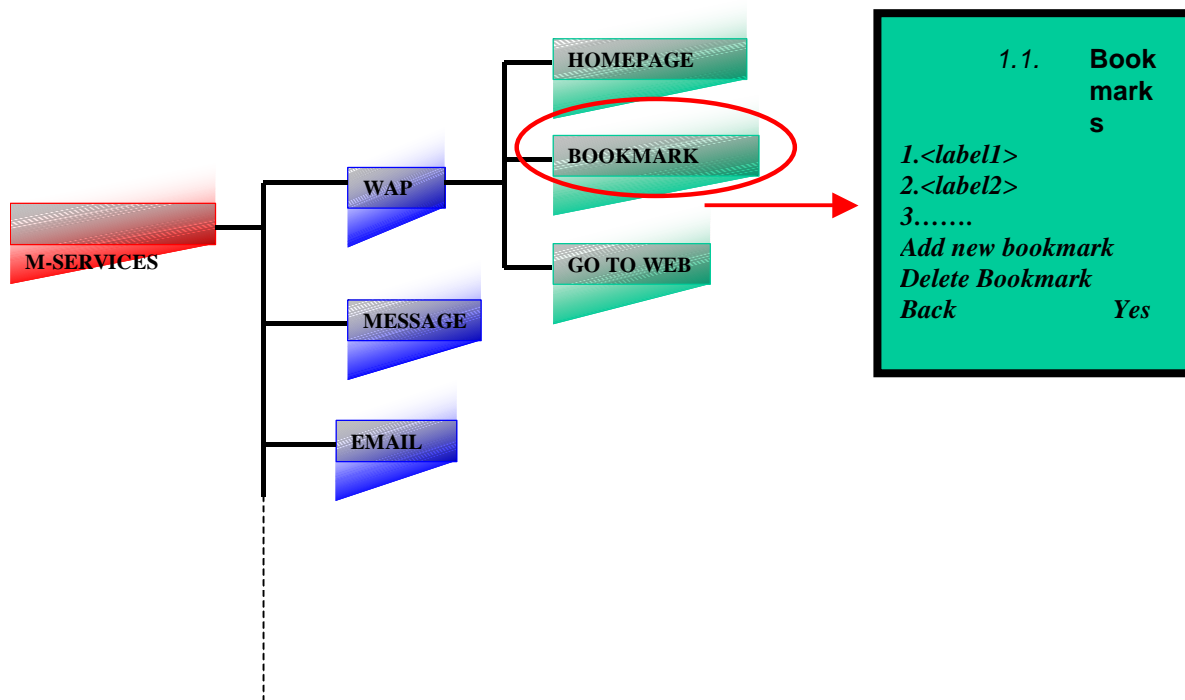
The UAProf must also indicate if the phone has the capability to download and use downloadable objects. In the case of the “Download Fun “ solution, devices must support the following UAProfile elements for the objects they support. See the table of UAProf attributes for fun objects in reference [21]. Specific examples are also included at the end of the reference.

### 4.3.4. Bookmark

The phone should be able to support local bookmarks. For these phones, the following requirements apply:

- ❑ The phone must store at least a list of 50 bookmarks.
- ❑ The phone must support the *WAP Forum standardised Over The Air provisioning mechanism* for bookmarks (STARTPAGE)
- ❑ There are two different ways to insert an URL in the list.
- ❑ The first one is used when the customer knows the URL of the site.
- ❑ Ability to create sub-folders for bookmarks.

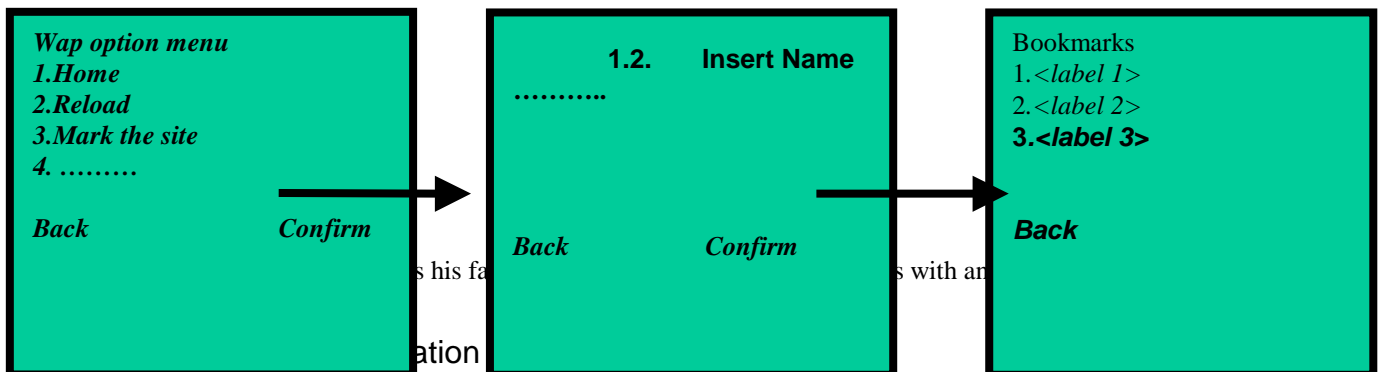
The phone menu may be structured as follows:



The display shows “http://” by default and the customer types the URL.

The second option is used when the customer is navigating in a site and decides to store that site in the list.

The WAP option menu enables the user to store the URL in the list of items.



When the user decides to browse a WAP page from the Navigation menu the HTTP:// string has to be inserted automatically.

#### 4.3.6. Save As Feature

During navigation the browser shall offer an option for storing media elements of the wml deck (e.g. WBMPs)

#### 4.3.7. Object download and usage during WAP session / MIME types

The binary objects that *M-Services* offer to the customer are defined in this chapter.

The device must support the following MIME descriptors [13], [4], which have to be supported as downloadable object:

Object	MIME TYPE
--------	-----------



Ringtone	Audio/MP4; Application/MIDI; Audio/WAV; Audio/iMelody [15]
Wallpaper	Image/(W)BMP; Image/gif (optional); Image/jpg; Image/png
Picture	Image/(W)BMP; Image/gif (optional); Image/jpg; Image/png
Game	Open
Java Application	Application/jar; Application/jad
Screen saver	Image/jpg; Image/gif (optional)
Audio	Audio/MPEG4; Audio/mp3; Audio/WAV
Skin	Application/skin
Video	Video/mp4 (MPEG4)

#### 4.3.8. Codecs

The codecs associated with each MIME media type are defined in the table below.

<b>Object</b>	<b>Codec Specification</b>
Ring Tone	MIDI, 8-Level Polyphonic MIDI
Graphic	GIF 87a, 89 (with animation), PNG, WBMP
Natural Image	JPEG. Baseline DCT, non-differential, Huffman coding, as defined in Table B.1, Symbol 'SOF0', [1].
Audio	PCM and optionally AAC, MP3
Video	The video codec shall be H.263 baseline (Profile 0, Level 10), [2], [3]. The MP may support ISO/IEC 14496-2 MPEG-4 video, Simple Visual Profile, Level 0.

## 4.3.9. Formats

### 4.3.9.1. Ringing Tone

Any object designed for notification of an incoming call and a SMS/EMS is defined as Ringing Tone. Four kinds of ringing tones are accepted -

- MIDI format (.mid)
- Audio MP4
- Polyphonic MIDI, 3 or more levels (.pol)
- IMelody [15]

The phone must be able to store (10 as a minimum) and play them. The operations allowed for Ringing Tone are download, play, save, delete and forward.

### 4.3.9.2. Wallpaper / Screen Saver

Any object designed to be displayed as a background image (JPEG, BMP, WBMP, GIF 87a, 89 (with animation)) when the phone is in idle screen is intended as Wallpaper.

The device must be able to show a preview of the wallpaper without storing it. The device must be able to store (10 as a minimum), forward and delete wallpapers and screen savers. If used in idle mode screen, the display of the object shall be compatible with the continuous display of the selected PLMN according to GSM TS 02.07 and TS 02.30.

### 4.3.9.3. Picture

Any object designed for user's viewing (as in a photo album) is defined as a Picture. JPEG and (optionally) Animated GIF (GIF87a and GIF89) have to be supported. The device must be able to download, store, delete and forward pictures.

### 4.3.9.4. Game

Any object designed for the user's interaction. The operations available for Games are download, store, play and delete.

### 4.3.9.5. Java Application

The term Java Application defines any KJAVA application complying with MIDP 1.0 / CLDC (J2ME) standards. For downloading of Java applications the recommended practice for 'Over The Air User Initiated Provisioning Recommended Practice' should be followed [26]. Support of Java applications is optional. If KJAVA is supported, the phone must have at least 100 Kbytes available for all the applets. The operations available for the java applet are download, store, play and delete. 3GPP standards MExE shall be used [14].

### 4.3.9.6. Speech

Any object designed to be rendered as a voice sample at the users phone. The AMR codec shall be supported for narrow-band speech. The file format shall be MP4. The operations allowed for voice files are download, store, play, forward and delete.

### 4.3.9.7. Audio

MPEG-4 AAC and MP3 (optional) to be supported. If MPEG-4 AAC is supported the MPEG-4 file format shall be used. The operations allowed for audio files are download, store, play, forward and delete.

### 4.3.9.8. Video

Video/mp4 (MPEG-4) (optional). The operations allowed for video files are download, store, play, forward and delete.

### 4.3.9.9. Skin

The Skin describes any package of graphical elements which change the 'look and feel' of the browser.

### 4.3.9.10. Presentation

A scene description used to present downloaded objects to the user, e.g. spatial and chronological synchronization of two related objects. SMIL to be supported for presentation (optional).

### 4.3.9.11. Vcard

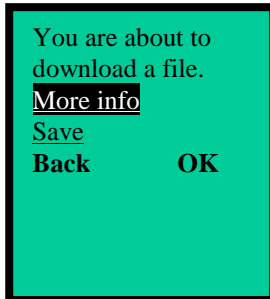
Vcard to be supported (optional). The operation required is entry into address book (SIM or terminal).

#### **4.3.9.12.Bookmark**

Bookmark entry to be supported (optional).The operation required is entry into Bookmarks

#### 4.3.10.Object Download Procedure

At the start of an object downloading procedure the device should show the user a screen like the following:

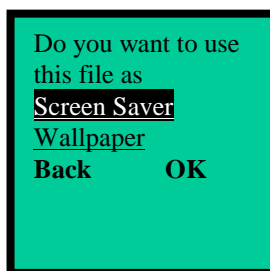


- By selecting the option More info the device will indicate the object details (name, size, copyright information, etc);
- By selecting the option Save the device should download and

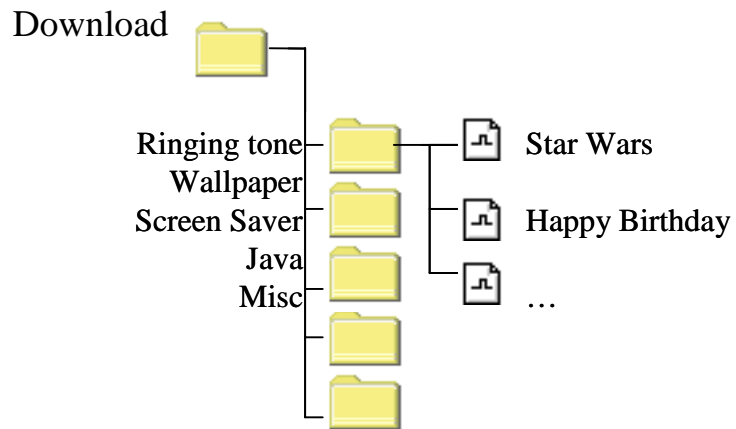
save the object in the appropriate memory portion, depending on the MIME type descriptor. At the end of this process the device should ask the user how he intends to use the object; for example, at the end of the download of an object with the MIME type description "Audio/wav " the device should ask the user if he wishes to set it as a ringtone.

In case of multiple usage of the same MIME type, the device should offer multiple options to the user.

For example, in the case of a GIF that could be used both as a screen saver and as a wallpaper, the device should show the following screen:



The user should be enabled to manage the object memory storage as a directory, having therefore the possibility to delete, forward and use the objects.  
Example:



This approach will simplify the user's procedure for email creation. This object (in observance of the existing copyright rules) can be sent via email as an attachment.

## 4.4. Advanced Messaging Services

### 4.4.1. Long message

The user should be enabled to write a Long SMS (up to 640 characters) in a single text entry dialogue. (so called concatenated SMS according to [15])

The application will subdivide this Long SMS in several ordinary SMS (max 160 characters each) and send them separately. The receiver must be enabled to recreate the Long SMS assembling the short messages in the right sequence and preferable show the message as one long SMS.

Before the long message is sent the terminal must notify how many SMS is actually sent and give user a possibility to cancel the sending operation.

### 4.4.2. Enhanced Messaging Service - EMS

The device has to comply with the 3GPP specification TS 23.040 [15] V4.2.0 (2001-03) available at [www.3gpp.org](http://www.3gpp.org) or 23.040 V3.5.0 (2000-12).

### 4.4.3. Multimedia Messaging - MMS

MMS shall be the preferred messaging solution for *M-Services*. When MMS is supported, the terminal client shall comply with the WAP 209 [4] WAP-MMS message encapsulation proposed SCD Version 8 – February 2001 or newer in terminals, 3GPP MMS specifications, TS 23.140 [13] and the standardised presentation format language SMIL. SMIL is optional when a message is created.

### 4.4.4. E-mail (optional)

This specification regards functionality and setting of the mail client into the *M-Services* proposed browser. It represents a guideline to implement communication protocol and specific functionality.

If e-mail is supported the E-mail client must implement:

- POP3 protocol with extended protocol command (top, uid, etc.) to read e-mails (see ref [23]);
- SMTP protocol to send e-mails.

Support of IMAP4 is optional.

The following functionality should be supported :

- Offline Read of Email (POP3 and optionally IMAP4)
- Offline queue for send of email (POP3 and optionally IMAP4)
- Authentication (e.g., password protection; POP3 and optionally IMAP4)
- Download just message headers without message body (POP3 and optionally IMAP4)
- Selective download of e-mail (POP3 and optionally IMAP4)
- Guarantee of serial execution of pipelined commands (POP3; and optionally IMAP4 for servers that guarantee serial execution )

If IMAP4 is supported the following additional functionality should be supported:

- Storage of email in server maintained hierarchical folder structure
- Creation and modification hierarchical folder structure
- Offline assignment of email to folders
- Selective Synchronization of folders
- Per-folder detection of new mail
- Show all server- and user-defined folders
- Selective download of headers
- Discovery of hierarchical message structure (embedded multipart MIMEs within multipart mimes;
- Discovery of types of each part of message
- Selective download of individual message parts (allows user to download specific attachments;)
- Limit number of bytes to download for message body
- Handle of black list e.g. which messages are downloaded from server – the rules shall be defined in terminals and transferred to server when messages are downloaded

#### 4.4.4.1. Sending Mail

For HMI related recommendations see also Annex A.

The user is able to send an e-mail selecting the appropriate menu item:

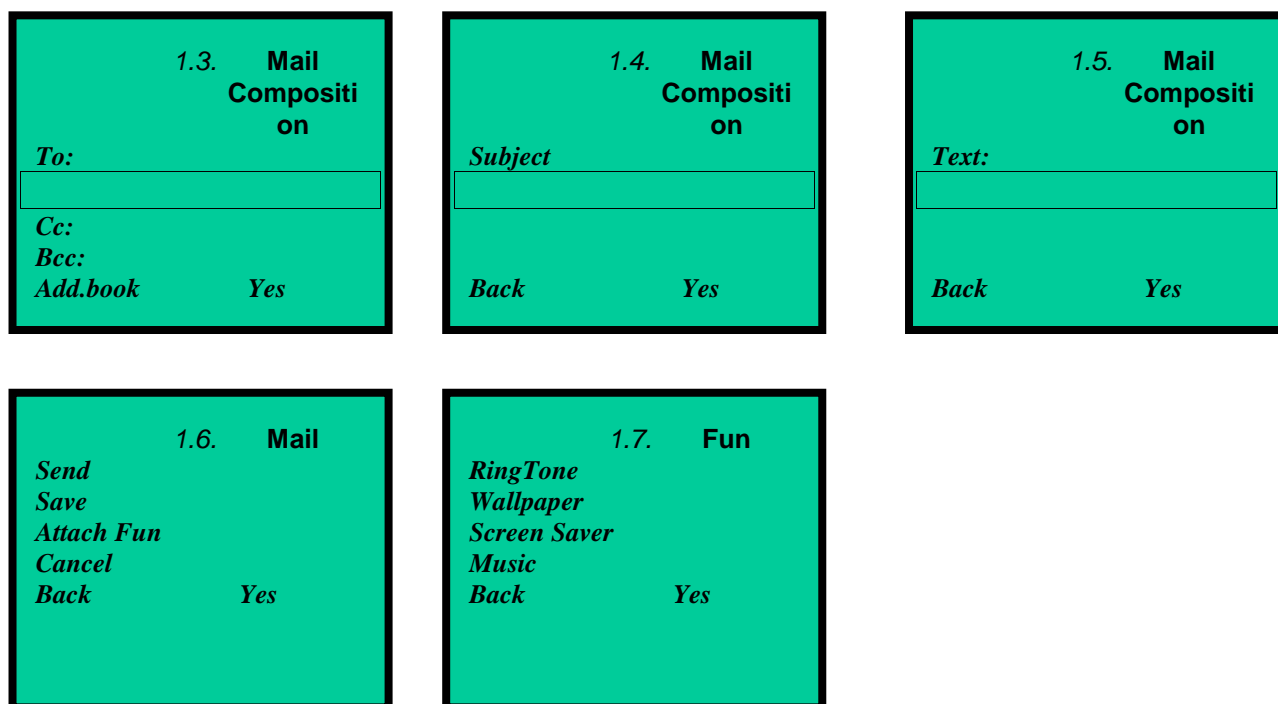
*Mail composition*

To send an e-mail, the user may fill the following fields:

- **To:** (destination address - min of 6 characters, no maximum)  
 The recipient can be selected from Address Book  
 Different addresses must be tagged by the “;” symbol
- **Cc:** (carbon copy)  
 Same requirements as above
- **Bcc:** (blind carbon copy)  
 Same requirements as above
- **Subject:** (subject of the e-mail)  
 The subject may be omitted
- **Body:** (text body)  
 The message can include text signature, ringtones, wallpaper, and in general any object downloadable over WAP. To attach signature, the user may select an item in the menu and read the signature previously configured into the mobile phone or predefine that signature is automatically added to every outgoing message. The signature can have max. 15 characters. To perform the attach function, the user must have access to the dedicated storing area for downloaded objects.  
 Select *Send* to send the e-mail.  
 The mail client must handle error messages or info messages.

If the device phonebook supports the email field, full interaction between e-mail Client and Phonebook is required: upon receipt of an email the user should be enabled to store the sender's address; when sending an e-mail, the user should be enabled to get the destination address from the phonebook.

For example the device should show the following screen:



#### 4.4.4.2.Receiving Mail

When the user wants to connect to the mail server to download new e-mails, the client implementation must show only the header of the e-mail (sender and subject).

The user must be enabled to mark the mail(s) of interest and download it (them)

Once the mail has been downloaded, the user can delete it (client side deleting).

The user should be enabled to receive mail with an attachment containing downloadable fun object, which can be executed or saved in the mobile phone memory.

If the user receives a mime type which can't be processed because it is not compatible with his device settings, then he should receive the e-mail showing at least the properties of the attached file.

Client mail features can therefore be summarised as follows:

- download the e-mail header only- subject, sender, size and attached file name;
- download the selected e-mail (fields). Once the text is read, the e-mail is marked as read (e.g. bold and not bold);



- The mail that have been read and the objects that have been downloaded will be deleted from server repository according with the relative parameters configured in mail setting menu.

#### **4.4.4.3.Replying to mail**

The Reply function has to be permitted. By selecting this function the e-mail address and subject header are automatically entered in the appropriate recipient field.

The letter "R:" (which stands for "reply") may appear at the beginning of the subject header. This custom should be localised for the user's language preference.

#### **4.4.4.4.Forwarding mail**

The Forwarding function has to be permitted. By selecting this function the subject header is automatically entered in the appropriate recipient field.

The letter "F:" (which stands for "forward") may appear at the beginning of the subject header. This custom should be localised for the user's language preference.

#### **4.4.4.5.Phone to**

The user must be able to dial a number typed in a text message, if any, by selecting an item menu *Call number*. No checking is however available to detect wrong numbers.

#### **4.4.4.6.Mail to**

The user must be enabled to send an email to the mail address typed in the message, if any, by simply selecting the address: the mail composition form will appear on the screen and therefore the email can be typed and sent. Mail client must also recognize URLs prefixed with the mailto: scheme.

#### **4.4.4.7.Wap to**

When the user selects an URL contained in a text message, he can have immediate connection to WAP services and therefore direct access to the above mentioned URL.

### **4.5. Additional M-Services elements**

#### **4.5.1. SIM Application Toolkit - SAT**

The mobile shall support SIM Application Toolkit release 99 (GSM 11.14 ver. 8.3.0 rel 1999)

#### **4.5.2. SyncML Support**

The phone should provide a SyncML 1.0 conformant client communicating (i.e. all SyncML MUSTs must be implemented, including use of the RespURI tag).

Content types of vCard and vCal must be supported.

The following Sync types must be supported:

- 200 Client initiated Fast Sync
- 201 Client initiated Full Sync – Typically on first sync.
- 205 Client initiated Server Refresh

## Annex A <Informative> - Hardware and Terminal HMI Guidelines and Customer Experience

### A1 Hardware

#### Access and other Keys

In order to ensure the necessary convenience, immediate access to *M-Services* has to be guaranteed. This can be achieved in two ways:

- by a dedicated key
- by a soft-key. In this case no changes to the soft-key can be made by the user.

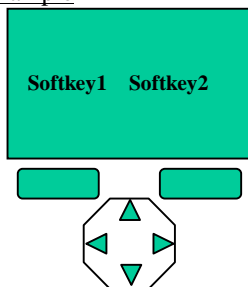
The appearance of the hard key (colour, text) will be discussed bilaterally between individual mobile operators and manufacturers.

Any implementation shall be customisable by the operator.

In order to increase the usability, a simple way to access WAP Services is required. A dedicated key that allows access directly to the *M-Services* Home Page is recommended. A button long press could be also used.

In order to ensure an easy navigation, the device should have at least two soft keys, a back/clear key (can be "End" key), plus four navikeys.

#### Example



#### Display

A graphic black&white display is accepted. Grey tones and colour display would definitely be preferable, especially for high tier.

The display must have at least 4 lines (16 characters each line) for the browser but 6 lines would be highly recommended; browser control soft keys and icons should not be placed in the above 4 lines which must be dedicated to the service.

The display must be a minimum of 57 pixels tall and 80 pixels wide (assumes characters are drawn with average 7x4 font and includes status indicator area, soft key area, and space between lines).

The display is recommended to be at least 98 pixels tall and 96 pixels wide (assumes characters are drawn with average 9x5 font and includes status indicator area, soft key area, and space between lines).

#### Memory

The phone must have at least dedicated memory available for applications and services. The specific amount of memory will depend on the applications and target market for the specific device. The phone memory has to be subdivided in two separate main sections:

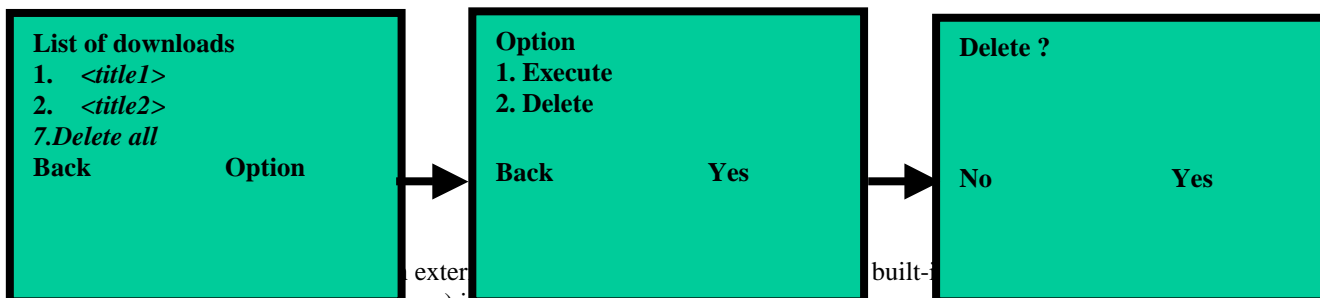
- a) Persistent Storage Memory;
- b) Cache Memory;

defined as follows:

#### Persistent Storage (a)

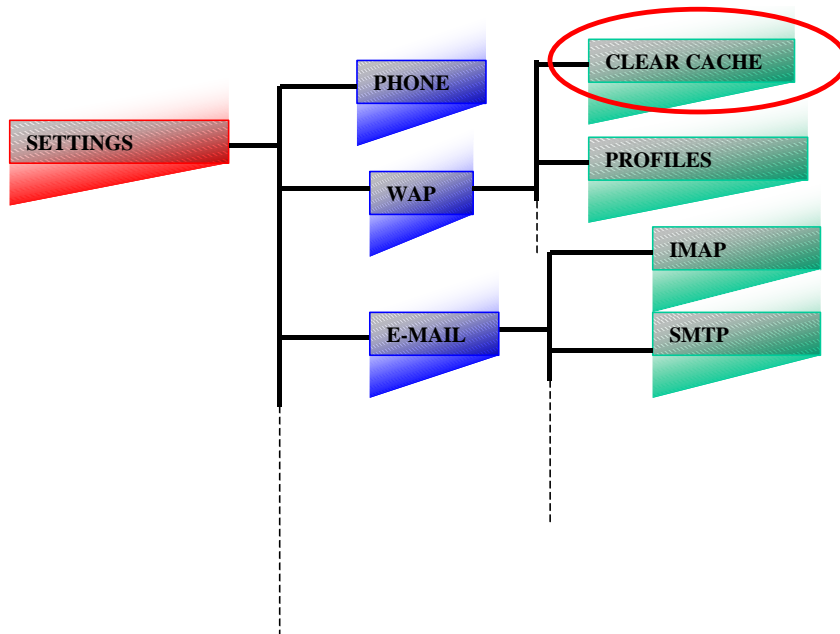
The persistent storage memory application has to enable the storage of every download operation carried out by the customer. The size of this download memory is not defined, however the device should be able to store at least 20 ringing tone and 20 wallpaper.

The customer should also have the possibility to delete a single element from the list of the downloaded items.



**Cache memory (b)**

The phone should have at least 50 Kbytes cache memory available for WAP operations.  
This type of memory will enable storage of Wap pages opened by the customer during his navigation.  
Deletion of cache memory contents should take place either automatically (when cache is full, oldest items are deleted to make room for new items) or manually performed by the customer.



For e-mail services, there are two usage models. Phones which are intended to be used in offline mode (no network coverage, e.g., in an underground subway) must have at least 128 KB of cache memory for the mail client. Phones sold to users who make extensive use of e-mail should have at least 256 KB of memory for the mail client. Phones targeted at casual users in online mode (network coverage generally available during use) must have at least 64 KB of memory.

Cache memory must be maintained between power-cycles of the phone.

**WAP Push Alert Inbox**

A specific alert indicator (status bar icon, etc.) for WAP Push alerts has to be supported. The default alert inbox has to store at least 10 alerts. The WAP Push Inbox must be managed in the same way of the SMS inbox.

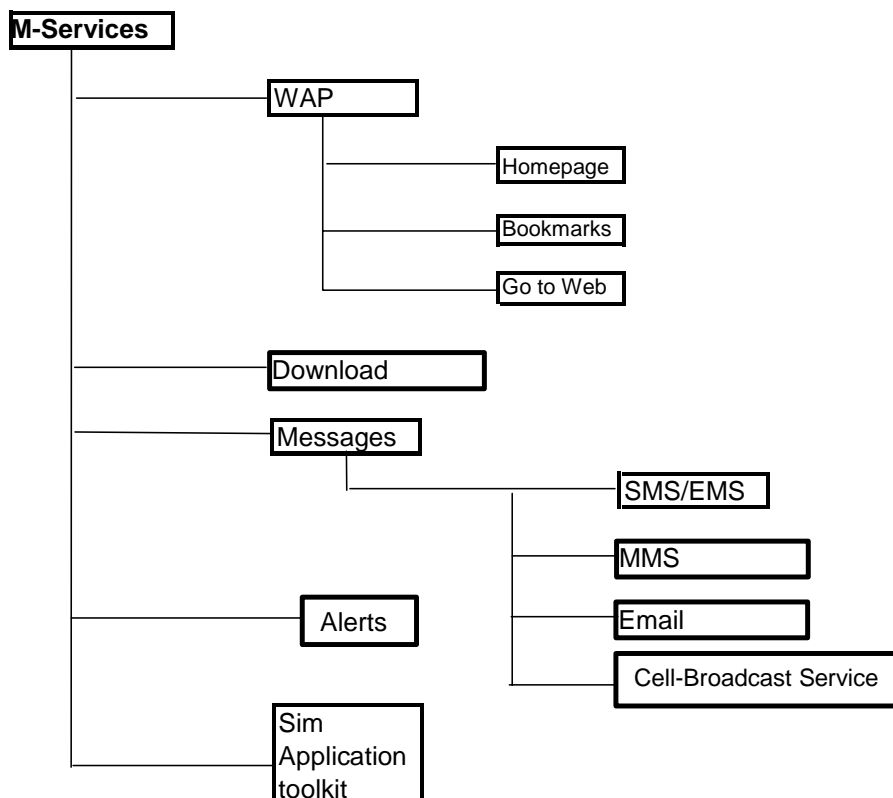
## A2 Terminal HMI Guidelines and Customer Experience

The HMI guidelines contained in this section describe a set of requirements that terminal suppliers should endeavour to adhere to whenever possible.

*A primary feature for the HMI, is for a minimum number of key presses to access and utilise revenue generating functions and applications on the terminal.*

### M-Services Menu

The following is the proposed Menu structure presented to the user when the *M-Services* Key is pressed (subject to being over-ridden by SIM supporting e.g. CPHS).



### **Browsing and WAP**

#### *Browsing*

The terminal design should make it simple for the customer to operate/navigate the browser utility. The browser design should be simple and intuitive for the customer. The customer should be able to access the browser utility via a single key press.

The customer experience should be one that enables the customer to simply (for example):

- Quickly launch the browser and load the home page
- insert URL addresses
- bookmark and search the favourites list
- navigate around the web page
- select items

#### *WAP*

The customer experience should be such that they are unaware that they have invoked WAP, only that the application that they have launched (e.g., mobile internet) has succeeded.

## **Messaging**

### *Generic Messaging Settings*

For all messaging applications on the terminal, the HMI should support a single key press to (in this order):

- Send a message
- Forward a message
- Write a message
- Read a message
- Voicemail

### *Message Editor*

Above all the message editor must be deemed simple to use, and fast for composing messages by the customer. Preferably, the terminal should support only a single editor that can be used for all types of messaging supported by the terminal.

- Messaging templates should be provided as an option for all types of messaging services.
- The customer should be able to capture, store and call a phone number that is included in a message.
- The customer should be able to capture, store and launch a hyperlink that is included in a message.
- Phone book and address book entries should be simple and intuitive to grab when sending messages.
- Once a multimedia message has been composed, send then save options should be presented, executable by a single key press.
- Distribution lists should be simple to access, and simple to be dynamically defined or edited by the customer whilst composing a message.
- Predictive text should be supported and be easy to switch on and off. Predictive text should also have a learning ability i.e. the customer can add words to the dictionary.
- Multi language "Speech to text" should be supported as a method of text entry.
- One-to-many message distribution should be supported, with the ability to group, add, and delete names in the phone book.
- If the terminal has a touch screen, then the terminal should support multi language character recognition.

*SMS*

The customer experience for SMS should be that it is the fastest, or equal fastest, method of sending text messages to another customer. It should be simple to compose, send and receive text messages.

A single icon should be displayed on the screen to launch the SMS application.

*Multimedia Messaging Services (MMS)*

The MMS application should be able to be invoked by the customer via a single key press, or a single icon should be displayed on the screen to launch the SMS application.

The MMS customer experience should be described as:

- Quick to launch MMS application (preferably single key press)
- Simple to compose and send multimedia messages; including customer generated content
- Clear and simple messages to inform the customer of any reasons why the message could not be sent, and what are the alternatives.

### **Phone/Address book and Personal Information Management (PIM)**

A single icon should be displayed on the screen to launch the PIM application. Suppliers should set a maximum target of 2 keystrokes from the main menu to access the PIM application. Preference is for a dedicated key, or soft key.

- The customer should have the option to search the phonebook by letter or number.
- The facility to send a message from the phonebook should be specified. This should include the ability to send contact details from the phonebook.
- The ability to copy the phonebook from the SIM to the terminal and vice versa.
- The phonebook should support at least 200 entries, with default storage to the SIM.
- There should be the capability to OTA synchronisation using for example, syncML that will synchronise all PIM functionality.
- Voice tag entry should be supported throughout the PIM application.
- Should be able to store multiple contact numbers and email addresses against a single name entry.
- Should be able to launch all messaging services from the PIM application.

The customer experience of using the phonebook in the PIM, should be

- Quick to launch
- Simple to search
- Simple to launch a messaging application (e.g., MMS) from the PIM.

### **Gaming**

The terminal should be able to down load new games, or extensions to existing games, from the Internet. In addition the terminal should be able to save and/or pause the game, if the terminal receives a call, or the customer wants to initiate a call.

A single icon should be displayed on the screen to launch a list games held on the terminal.

The customer experience for gaming should be similar to that of comparable portable game products available at time of launch. It should be simple to

- Download new games
- Save and pause games

### **Personalisation of HMI**

- Ring tones, logos and caller group pictures should be easy to receive, store and execute either by SMS or WAP.
- Logos and caller groups should be able to be colour coded if colour is supported.
- Keypad lock should be simple to use with a minimum of 2 keystrokes.
- Animation should be able to be selected by the customer to personalize their terminal equipment. An example of this is a screen saver.

### **Call Diverts**

- The menu structure should offer divert to voicemail.

### **Email Diverts**

The menu structure should encourage the customer to nominate several email or unified messaging (UM) diverts.

### **Default settings**



- Acknowledge receipt of any message.
- Reply to any message.
- Divert email/UM when UE is powered off.
- Predictive text on.

### **Terminology**

Where possible, common terminology for terminal functions should be defined internationally.

### **Hard Key, Soft Keys and Customer Configurable Shortcuts**

There should be a minimum of 2 soft keys supported on the terminal. The soft keys should be customer programmable such that the customer can create shortcuts to their two most favoured services or applications. Voice tag shortcuts through the HMI should be programmable by the customer.

### **Display, Graphics and Icons**

The HMI must be easy to use and be visually clear whether it is displayed in colour or monochrome, portrait or landscape, and must be scalable according to pixel density of the display. A colour screen is preferred for *M-Service*s terminals. Screen real estate and functionality should be used to their best advantage. The display should support automatic scaling of graphics and text where appropriate.

### **Menu Navigation**

- The menu navigation method should be consistent throughout the whole HMI. It preferably should be based on a “Forward”, “Back”, “Up”, “Down” and “Select” approach.

### **Key Presses**

- A primary feature for the HMI, is for a minimum number of key presses to access and utilise revenue generating functions and applications on the terminal.

### **Location**

- There must be an indication of where the customer is in the HMI tree.

### **Call Records**

- The HMI should support a single key press to list all called, received and missed calls.
- For a MT call, if the caller’s details are stored in the phonebook, then the name and number should be displayed.
- The call records should be easy to erase either as a group or individually.
- After a MT call has completed, the customer should always be offered the chance to store an unknown number or address in the phone/address book.

## **Annex B <Informative> - Other HMI recommendations (WAP)**

Also in line with bridging the gap between WAP 1.2 and WAP 2.0, a number of user interface conventions are defined by the browser. These conventions allow application developers to better predict how their content will be rendered on devices and allows users to become more familiar with browsers on mobile devices.

- ❑ A titlebar is necessary in order to facilitate navigation and give immediate information about the exact positioning in the WAP menu. The titlebar must scroll with the content on the page, allowing more usable display space on each card.
- ❑ Softkeys should be able to display icons.
- ❑ Softkey labels must appear out of the text flow and near the physical key to which they correspond.
- ❑ **The browser must treat hyperlinks as inline content, i.e. the browser should not insert a new line before each link.**
- ❑ Hyperlinks must appear as underlined text and not bracketed. The brackets strongly discourage hyperlinking text in the middle of a sentence.
- ❑ Selection lists must be numbered with their appropriate access key.
- ❑ Pushbuttons must appear with the label inside of the button, rather than to the side (as in radio or checkboxes). Its important that they be readily distinguished from text entry boxes.
- ❑ Forms must appear on a single screen, rather than having labels and inputs broken out onto separate screens.
- ❑ If the content author redefines the backward navigation button (i.e., the "prev" <do> type), the browser must redefine the button that normally performs the back function.

## Annex C <Informative> – Provisioning & Configuration parameters

### C1 WAP profiles

The Device must have at least five profiles, where each parameter in each profile is individually configurable.

The profile parameters are:

Home page:

Primary IP :

Secondary IP:

WAP security off (port (9201)) / WAP security on (port 9203)

Connection type: USSD, SMS, CSD, HSCSD, GPRS

### GPRS / CSD handsets access parameters

The following parameters are also included but have been subdivided in two different sections, since they vary in accordance with the connection used, either CSD or GPRS:

CSD	GPRS
Switch Prompt Indication: YES/NO	
Tel. Number:	APN:
Line type: ISDN/analogue:	Username:
Username:	Pw:
Pw:	Gprs Linger time:
Csd Linger time	

### Bearer selection

The terminal will use the GPRS bearer as preferred way to access the WAP services. In case of lack of GPRS coverage, the phone shall prompt (if the Switch Prompt Indication is YES) the user if he wants to use GSM CSD connection. The preferred line type is ISDN. In case of unsuccessful call-setup, the phone will prompt the user if he wants to use the analogue line type or retry the ISDN line type.

The following features are mandatory and must be available for both CSD and GPRS connections:

- MO and MT SMS during a WAP and GPRS session;
- MO and MT Voice Call during a WAP session.

Note: Currently it is not possible to open 2 calls in WAP session when CSD is used

- MO and MT Voice Call during a GPRS session => when terminal supports GPRS Class B mode of operation
- MT USSD sessions during a WAP session.

### C2 Multimedia Messaging Service - MMS

A separate settings in the terminal which are independent from WAP settings. These settings are same as described in chapter 0 WAP Profiles.

Additional field is:

- MMS Relay/Server URI

**C3 E-mail parameters**

If e-mail is supported, then the XXXX fields in the following table must be filled in order to access the service.

Connection	CSD	GPRS
Tel. Number	XXXXXX	
APN		XXXXXX
Line type	Analog/digital	
DNS	XXXXXX	XXXXXX
Username	XXXXXXXX	XXXXXXXX
Password	XXXXXXXX	XXXXXXXX
<b>EMAIL Server Setting</b>		
Email Protocol	IMAP4/POP3	
SMTP	xxx.xxx.xxx.xxx	
<b>E-mail Client Setting</b>		
IMAP4/POP3	xxx.xxx.xxx.xxx	
EMAIL Address	<a href="#">XXXX@XXXXXX.XX</a>	
E-mail account ID	XXXXXXXX	
E-mail account password	XXXXXXXX	
Leave mail on the server	Yes/no	

When the user accesses the e-mail client for the first time, an identification prompt should appear, requesting the user to insert **username** (E-mail account ID) and **password** (E-mail account password), if they are not available in the setting options, in order to allow and start connection to the mail server host.

Device should provide the option to save either username or both username and password, in the appropriate setting options fields, so that these data are not requested every time the user accesses the service.

The same procedure should be done for the email address setting.

## **Annex D <Normative> – References**

- [1] (JPEG) - Digital compression and coding of continuous-tone still images – requirements and guidelines, (9/91), ITU-T Recommendation T.81 (also published as ISO/IEC International Standard 10918-1), <http://www.w3.org/Graphics/JPEG/itu-t81.pdf>
- [2] ITU-T Rec. H.263 (02/98). Video coding for low bit rate communication.
- [3] ITU-T VCEG, Annex X, Profiles and Levels Definition, ITU-T Recommendation H.263
- [4] WAP-209-MMS Encapsulation. Version 17-February-2000. WAP MMS Message Encapsulation MMS Specification Change Document.
- [5] GSM 11.14 ver. 8.3.0 rel. 1999
- [6] GSM TSC 02.07 and TSC 02.30
- [7] WAP 182 : Provarch 20010314
- [8] WAP 183 : Provcont 20010314
- [9] WAP 184 : Provboot 20010314
- [10] WAP 185 : Provuab 20010314
- [11] WAP 186 : Provsc 20010315
- [12] WAP 187 : Transport E2Esec 20000711
- [13] 3GPP MMS : TS 23.140
- [14] 3GPP MEXE : TS 22.057 and TS 23.057
- [15] 3GPP EMS : TS 23.040 V4.1.0
- [16] MIDP 1.0 / CLDC (J2ME) standards
- [17] SyncML 1.0
- [18] M-Services Openwave Specification OPWV 101: WML Extensions for Graphical User Interface
- [19] Intentionally blank
- [20] M-Services Openwave Specification OPWV 102: Download Fun Protocol
- [21] M-Services Openwave Specification OPWV 103: UAProf Details for Download Fun Objects
- [22] M-Services Openwave Specification OPWV 104: Fun Object naming Convention
- [23] Internet Engineer Task Force (IETF) RFCs 1939 and 2449
- [24] GSM Association Permanent Reference Document TWG WAP TW.10
- [25] GSM Association Permanent Reference Document SerG WAP SE.21
- [26] Over The Air User Initiated Provisioning Recommended Practice – SUN Microsystems – Version 1.0 – April 12, 2001

## **Annex E – Glossary**

- to be edited -