

# YES 2 EMS

An Introduction to Enhanced Mobile Messaging



**By Mobile Streams**

See also <http://www.mobileEMS.com>

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## 1. INTRODUCTION

This white paper is a brief summary of the 260 page **"Yes 2 Enhanced Messaging"** report written by Simon Buckingham and costing 495 US\$. The report looks at the messaging market for the next two years. It looks at the interim messaging standards that will be launched in-between SMS (Short Message Service) and MMS (Multimedia Messaging Services). There is no question that SMS is a success and MMS is widely supported, but the enhanced messaging market is characterized by fragmented standards. The big question which the report is designed to cover is how do we get from SMS to MMS. There are two clear streams, the WAP based stream and the SMS based stream. The WAP based stream is M-Services and the SMS based stream is Enhanced Messaging Service (EMS). The SMS based stream also includes derivatives such as Smart Messaging and Magic4. Additional technologies such as BREW and i-mode are covered and support and revenue maximization strategies for all players in the value chain are explained. The handset, platform, industry associations, content creators and other players are profiled. Applications such as celebrity voicemail and multi-format postcards are explained, and case studies given. This 260 page report is essential and unique reading for anyone engaged in the mobile messaging market. See <http://www.mobileems.com/ems.asp?link=1> for a full table of contents and to order.

## 2. MESSAGING EVOLUTION

We are living in a world of plain text with SMS (Short Message Service). This is a rudimentary, limited interface and media, as useful and popular as it is. Over time, the nature and form of mobile communication is getting less textual and more visual. Mobile messaging is evolving beyond text by taking a development path from SMS (Short Message Service) to EMS (Enhanced Messaging Service) to MMS (Multimedia Messaging Service). Mobile Streams already publishes its "SMS Express" and "Next Messaging" reports on SMS and MMS respectively and this report is designed to cover EMS and related technologies.

The nonvoice mobile communications industry is moving from text messages to icons and picture messages to photographs and blueprints to video messages and movie previews being downloaded and on to full blown movie watching via data streaming on a mobile device. This is a fundamental change and a fundamentally important change. The transition that we will see is if akin to the revolution from DOS to Windows in the computing world. It was this change that took computing from the early adopter innovator category into the early majority and onwards into the late majority mainstream status. It is the change in the services and applications brought about the upgrade in mobile networks enabled by transformation in the mobile terminals. This is what will propel nonvoice mobile services out of its current youth market insider status into something that YOUR MOTHER will be using in a few years time. Now that really will be a revolution!

The main features of this transformation are shown in the table below:

<i>Type</i>	<i>Characteristics</i>	<i>Content Reformatting for mobile necessary?</i>	<i>Applications</i>	<i>Support</i>	<i>Timeframe for Availability</i>
Text Messaging	100-200 characters	Yes	Simple person to person messaging	All phones	1990s
Smart Messaging	Simple rudimentary images and ringtones	Yes	Sending pictures and ringtones to phones	Some networks and Nokia phones only.	1999 onwards
Enhanced Messaging	Text messages plus simple media formats e.g. sound, animation, picture, text formatting enhancements	Yes	Simple person to person messaging with a visual feel	EMS standards expected to be widely adopted	2001 onwards
Multimedia Messaging	Messages in multiple rich media formats e.g. video, audio plus text	Sometimes	Simple person to person messaging with a visual feel	MMS standards expected to be widely adopted	2002 onwards

**SOURCE: MOBILE STREAMS**

Lets take a look at the various different enhanced messaging standards in turn.

### **3. SMART MESSAGING**

#### **BACKGROUND**

Smart Messaging is a protocol for exchanging information between servers and applications and Nokia mobile phones. Smart messaging is used for many different services, including Over The Air (OTA) service configuration and phone updates, menu-driven two-way information services, and the delivery of ringtones, picture messages, operator logos, group graphics and screensavers to Nokia mobile phones.

Smart Messaging is a proprietary Nokia messaging protocol, first released in 1997. The Smart Messaging specification has been updated as detailed:

<i>Timeline</i>	<i>Version Number</i>
1997	1.0.0
17 May 1999	2.0.0
18 December 2000	3.0.0

Nokia smart messaging supports many content types, including:

### **OPERATOR LOGOS**

This is where the existing operator icon (typically text such as Network Operator Name) is replaced with a Logo/ picture.

E.G.    

Operator Icons- .gif format – width = 72pixels, height = 14 pixels

### **PICTURE MESSAGES**

The ability to send visual messages from one mobile phone user to another. This is supported by the latest Nokia phones and allows users to send a picture (graphical image) and OPTIONALLY up to 121 characters of text to another user such as a picture of a birthday cake to denote Happy Birthday or the invitation to a party. Most pictures are sent from Internet sites or portals or via premium rate voice calls using Interactive Voice Response (IVR) platforms.

E.G.    

Picture Messages - .gif format – width = 72pixels, height = 28 pixels

Picture messages were introduced more recently than ringtones, operator logos and other smart messaging formats but are already very popular due to the popularity of the 3210 and 3310 phones which support it.

### **CALLER GROUP GRAPHICS**

Pictures can be assigned to phone numbers on some models. When that number calls and the Caller Line Identity (CLI) is recognized the graphic will flash on the screen.

E.G.    

Caller Group Graphics - .gif format – width = 72pixels, height = 14 pixels

### **STATIC SCREENSAVERS**

Pictures than can be set as the screen saver for the phone when it idles for a certain period of time (this is currently available on the Nokia 3310). Screensavers are exactly

the same format as picture messages but have no option to add on text. Nokia also supports animated screensavers on models such as the 3330 but these are delivered via WAP rather than SMS.



Screensavers - .gif format – width = 72pixels, height = 28 pixels

### **RINGTONES**

Ringtones are the tunes that the phone plays when someone calls it.

With the same phone often sold with the same default tune, it is important for phone users to be able to change their ringtone to distinguish it from others. As mobile phone penetration increases, and everyone has a mobile phone, unique ringtones to help determine just whose phone is ringing will become increasingly popular. Ringtones thereby point to the expected increases in personalization and individualization of mobile phones.

Mobile phones often come with a range of different ringtones built into the phone's memory that the users can choose from. However, it has become very popular to download new ringtones from an Internet site to the phone. The most popular ringtones vary considerably but tend to be popular music, television or film theme tunes.

### **FORMAT LIMITATIONS**

Smart Messaging ringtones use special content formats to overcome the limitations of the mobile phone. For example, for a Nokia phone content creators are limited to:

- Only one note at a specific time (only one track, no chords)
- 63 bpm to 900 bpm (bpm= beats per minute)
- Full, half, quarter, 1/8, 1/16 and 1/32 notes/ pauses
- Dotted notes and pauses
- A range of four octaves

With ringtones for Nokia phones, you are unable to use:

- Trioles
- Chords
- 1/64 notes and pauses
- Notes and pauses longer than a spotted full note/ pause

Nokia mobiles can play ringtones that:

- Consist of up to 3 SMS

- Use up to about 80 events (1 event= 1 note or 1 pause). This number differs with different Nokia models- some mobiles can play longer ringtones, others can't).

This is a highly restrictive environment that limits the content creator's creativity. It is the reason why many tracks are not suitable for making ringtones out of at all. And other vendor implementations of ringtones are less functional than even this limited environment.

#### **SUMMARY AND RECOMMENDATIONS**

Many content creators have already developed Smart Messaging based services and others entering the enhanced messaging market are likely to port their content to this format in order to access the installed base of Nokia phones in Europe and Asia.

Clearly Nokia has questioned the value of implementing EMS when they already have the Smart Messaging protocol with similar features well established. Nokia's smart messaging, which does not include these features or other EMS features such as animated messages, is starting to look more and more like "dumb messaging". Not wanting to repeat the mistake it made supporting HSCSD rather than GPRS in the high speed data space, Nokia will surely wish to adopt EMS rather than spend more time updating its own Smart Messaging protocol. Nokia cannot afford to be late with MMS (Multimedia Messaging Service) devices so it is likely to focus on that. As well as leading the EMS world, Ericsson is already leading the MMS world with plans for its T68 phone. It can surely only be a question of time before Nokia adopt EMS- the company is surely smart enough to recognize a brilliant advance in features and functionality over what it can offer.

#### **4. ENHANCED MESSAGING SERVICE (EMS)**

The Enhanced Messaging Service (EMS) is the ability to send ringtones and operator logos and other simple visual messages to EMS capable handsets and additionally the ability to send and receive a combination of simple media such as melodies, pictures, sounds, animations, modified text and standard text as an integrated message for display on an EMS compliant handset.

The Enhanced Messaging Service (EMS) is a standard developed by the Third Generation Partnership Project (3GPP) to embrace and extend the ability to send ringtones and operator logos and other simple visual messages to EMS capable handsets and additionally the ability to send and receive a combination of simple media such as melodies, pictures, sounds, animations, modified text and standard text as an integrated message for display on an EMS compliant handset. There are many different potential combinations of these media. For example, when an exclamation mark appears in the enhanced message, a melody could be played. A simple black and white image could be displayed along with some text and this sound effect. As such, EMS has two main applications: person to person messaging and phone personalization.

New phones supporting EMS are needed. Support for EMS is widespread amongst terminal manufacturers such as Ericsson, Alcatel, Siemens and Motorola.

However, network modifications to support EMS are minimized. The Enhanced Messaging Service (EMS) has been standardized by extending the use of the long established and widely used User Data Header (UDH) common in SMS. The UDH makes it possible to include binary data in a normal short message prior the text message itself. EMS is an enhancement to SMS but is very similar to SMS in terms of using the store and forward SMS Centers, the signaling channel and the like to realize EMS. EMS has little or no impact on today's SMS Centers. The introduction of EMS should be totally transparent to SMS Centers since they already support the User Data Header. This is a key advantage to EMS- the fact that network operators need make no additional investments to SMS Centers or network infrastructure providing their networks already support binary 8 bit messaging and unless EMS message volumes mean investment in new SMS Center capacity. The principal modification to existing SMS Centers would be in the case that mobile network operators wanted to charge differently for EMS- in such a case, the SMS Center would need to record the relevant technical values and generate Call Detail Records for billing purposes accordingly. Some network operators have indeed started investigating whether they can change their charging policy for EMS compared with SMS. They would like to charge for one enhanced message, instead of several SMS. One EMS can be made up of several short messages.

Initially, EMS will be like smart messaging in terms of user trends. In other words, people will use websites and premium rate services to request a ringtone or operator logo for their phone. In such cases, how many other EMS capable phones that are out there is largely irrelevant- all that matters is that the individual wants to participate in the whole cool ringtones services world. In the later stages, as EMS devices ship from several vendors in large volumes, EMS transactions will start to involve person to person messaging, like SMS. People will use the ability to add simple media extensions to EMS as a means to send more creative and interesting text messages to each other. This later person to person capability is what EMS was originally designed for, unlike Smart Messaging which only supports the forwarding of picture messages from phone to phone.

The sender of an enhanced message composes the message on their EMS compliant device. Text can be entered by the EMS user who decides when or where to insert other media such as pictures or sounds. In practice, it will be challenging to design an intuitive user interface for enhanced message composition from a handset which may only be able to store a few basic images. Some handset vendors believe that the majority of the enhanced messages will be created directly in the phones because nowadays, even the low-end phones have relatively large displays. Early indicators are however that the picture editors in EMS phones are difficult to use, hence composition of enhanced messages is likely to therefore be principally something that is driven from Internet sites.

## 5. TIMESCALES FOR EMS

When a new service is introduced, there are a number of stages before it becomes established. EMS service developments will include standardization, trials, content creation, availability of terminals, application development, and so on. These stages for EMS are shown in the table below:

<i>Date</i>	<i>Milestone</i>
2000	Continuing EMS standardization work
Early 2001	First EMS terminals are announced (at CeBIT/ GSM World Congress)
2001	Continuing EMS standardization work for EMS release 5
Mid to Late 2001	Commercial volumes of EMS terminals begin shipping
Mid to Late 2001	EMS is used for ringtones and operator logos primarily
2002/ 3	EMS will have reached critical mass in terms of installed base of EMS capable terminals
2002/ 3	EMS will start being used to add simple media extensions to person to person text messages

**SOURCE: MOBILE STREAMS**

## 6. EMS BACKGROUND

EMS has developed in several milestones, as shown in the table below:

<i>Date</i>	<i>Milestone</i>
2000	EMS Release 99 agreed
May 2001	Cross handset support announced by 4 vendors
May 2001	3GPP work plan for Release 5 of EMS agreed
June 2001	Release 4 of EMS spec 3G TS 23.040 agreed
June 2001	EMS adopted by the 3GPP2 for CDMA

**SOURCE: MOBILE STREAMS**

### INCEPTION BY ERICSSON

The Enhanced Messaging Service (EMS) came about as a submission to the standards committees by Ericsson. Ericsson presented the outline structure of EMS to the relevant ETSI/ 3GPP committees and stated that they would only commit more resource to propagating EMS if the handset vendors all committed to supporting it. All of the major handset vendors with the exception of Nokia who reserved their position did commit to supporting the concept of EMS. On this basis, Ericsson submitted EMS to the 3GPP which embraced and has since greatly extended it. Hence the EMS standards have evolved and



are now stable and complete as part of the 3<sup>d</sup> Generation Partnership Project (3GPP) technical specification: 3G TS 23.040, "Technical realization of the Short Message Service (SMS)".

#### **RELEASE 99**

The original release (called Release 99) of EMS was fairly limited in its features and functionality- it was supporting features such as text messages plus very simple pictures and sounds mainly. It did contain much of the text formatting and the like but was mainly about sending messages with multiple simple media, rather than about customization and personalization of phones. One of the main reasons for limited initial release was that Nokia's objections meant that changes to EMS went to a manual vote whereas in the usual course of standardization, a simple majority vote is held.

#### **ALCATEL, ERICSSON, MOTOROLA AND SIEMENS COMMIT TO SUPPORTING EMS**

On 29<sup>th</sup> May 2001, the following press release was published; "Alcatel, Ericsson, Motorola and Siemens have announced today that they will implement EMS (Enhanced Messaging Service). They will work together to ensure interoperability between their products and also in the evolution of the EMS standard.

EMS adds powerful new functionality to the popular text-based SMS (Short Messaging Service). Using EMS, mobile phone users can add life to their Text Messages in the form of images, melodies, and animations. Users will now be able to enjoy collecting and swapping images, ring signals and other melodies between the handsets of some of the world's leading suppliers.

Because the EMS standard is open, operators and content suppliers alike will be able to introduce appealing new value-added services such as screensavers, images and ring melodies that can be easily downloaded from the Internet. By the end of January 2001, SMS was used to send more than 20 billion text messages per month worldwide. EMS messages are sent over the same infrastructure as regular SMS messages, thus keeping investments to a minimum and allowing for quick and easy deployment of the service. EMS provides an important evolutionary step between SMS and full Multimedia Messaging Service (MMS).

The EMS standard was defined by 3GPP (3rd Generation Partnership Project), the same standardization body from which the worldwide success of GSM and the standardization of SMS (Short Messaging Services) originated. It is a completely open standard that may be supported by any manufacturer in the interests of interoperability between consumers.

EMS enabled telephones will begin shipping from the end of Q2 this year, however, because EMS is obviously tied to new product launches, this timescale will vary across manufacturers."

Basically these handset vendors are collaborating to ensure that the 3GPP EMS standard is widely deployed so that customers with one phone type can send messages to customers with another phone type. Nokia, currently the leading handset vendor continues to support and push its proprietary Smart Messaging alternative, although Nokia is expected to adopt EMS in the next year or so. Nokia has hindered the development of the EMS standard not just by not supporting it but by raising objections and observations about the EMS standards in the 3GPP committees that discuss EMS, starting with the inception of EMS itself and continuing at the most recent meetings. Today's press release and move is clearly a statement by the other vendors that Nokia's stance will not prevent EMS from being a standard- and this public support from a group of handset vendors whose market share is comparable to that of Nokia ensures that EMS will be a widely supported success.

#### **RELEASE 4**

In June 2001, release 4 of the EMS specification was approved. To download the release 4 EMS specifications, visit: [http://www.3gpp.org/ftp/Specs/2001-06/Rel-4/23\\_series/23040-430.zip](http://www.3gpp.org/ftp/Specs/2001-06/Rel-4/23_series/23040-430.zip). In this document, the EMS specification can be found in sections 3.10 and 9.2.3.24.10.

The Release 4 feature set will most likely be available in the first handsets appearing on the market in Q4 2001. This means that the most advanced EMS functionality will not be available in initial EMS handsets. Phones supporting EMS version 5 are likely to be announced at CeBIT 2002.

Release 4 of EMS was mainly based on just message to message short melodies. Release 5.0 supports longer, richer ringtones and the like and presents a major upgrade to make more Smart Messaging like functionality available within EMS, thanks to the submissions by Magic4 that were led by Alcatel and supported by other handset vendors.

#### **RELEASE 5**

In June 2001, release 5 of the EMS specification was agreed. EMS Release 5 looks at investigating and supporting the following features:

- Line or vector based image formats
- New monophonic and polyphonic Sound formats
- Means of sequencing various elements
- Further Image formats
- More complex elements (forms, menus, session ID etc)
- Other new data formats
- Alternative compression techniques
- Support for using EMS in CBS (Cell Broadcast, see [www.mobilecellb.com](http://www.mobilecellb.com))

The listed items shall ensure interoperability and shall be implemented in a way that will ensure backwards compatibility.

The latest version- release 5- now contains many new features that are likely to appeal to the young people who are looking for the next new feature. The planned enhancements to EMS include a wider palette of colors, support for animated messages, improvements in the ways sounds are handled such as support for polyphonic sounds, support for objects such as sound clips embedded into enhanced messages and a myriad of other technical features including alternative compression techniques, support for forms, menus and session IDs etc.

Release 5 was supported by leading handset manufacturers such as Alcatel, Ericsson, Siemens and Motorola, along with the likes of Vodafone, One2One, France Telecom and Telia in the operator community and Materna, Magic4 and Swapcom in the developer community. Nokia had previously stated some objections to EMS version 5 but later dropped them. However, despite being agreed, release 5 itself will not be totally stable until towards the end of 2001. Whilst this does mean that further minor changes are possible to this release of the EMS standards, the wide support for the standard itself and the enhancements to it should mean that EMS is successfully deployed.

EMS phones were originally due to be available now such as the Ericsson T20e and phones from Motorola but these have been delayed for this latest release. This does however mean that the manufacturers are already quite far along the deployment path and that EMS will be delivered imminently. (Mobile Streams has tested stable EMS prototype devices for several months).

Many teenagers will be gagging to get hold of animated messages, simple media combinations and other EMS features. With these technical enhancements and widespread support, enhanced messaging has been enhanced and so too has messaging itself.

#### **CDMA ADOPTS EMS AS STANDARD**

In a momentous step, last week the CDMA world in the form of the 3GPP2 standards body adopted the Enhanced Messaging Service (EMS) standards that were originally developed by the 3GPP. The 3GPP took over from ETSI in setting standards for the GSM/ W-CDMA/ UMTS world, whereas the 3GPP2 is the equivalent standards body for the CDMA/ cdma2000 world.

Qualcomm, the leading developer of CDMA, has developed BREW (Binary Runtime Environment for Wireless) as its preferred multimedia content format for CDMA. This is profiled below.

According to the CDMA Development Group, there are about 100 million CDMA phones in the world (about one fifth of GSM's level). Asia-Pacific is the largest region with 40 million, followed by US and Canada with over 34 million and Latin America with over 16 million.

Ericsson, a small CDMA handset vendor is known to be implementing EMS on its CDMA handsets. Support for EMS from other CDMA handset vendors is less clear.

The implications are that EMS content and services such as ringtones and picture messages will be available on CDMA phones as well as GSM ones. Sources have told Mobile Streams that getting EMS implemented within TDMA standards will be a struggle. Nokia has implemented its proprietary Smart messaging alternative to Enhanced messaging on its GSM phones and TDMA phones, leaving the total mobile market fragmented between the EMS and smart messaging protocols.

## 7. FEATURES AND FUNCTIONALITY

The Enhanced Messaging Service (EMS) is based upon the standard SMS, but with formatting added to the text. The formatting permits the message to contain animations, pictures, melodies, formatted text, and vCard and vCalendar objects. Objects may be mixed together into one message. The data formats in the features below shall be supported (i.e. the UE (User Equipment or simply EMS capable mobile handset) shall behave in a predictable manner when receiving such data) but the features are supported subject to the capabilities of the UE.

### TEXT FORMATTING

The following text formatting features are supported by EMS:

Alignment:

- Left
- Centre
- Right

Font size :

- Normal
- Large
- Small

Style:

- Normal
- **Bold**
- *Italic*
- Underlined
- ~~Strikethrough~~

### PICTURES

## **BASIC PICTURES**

It is possible to include either a small (16 x 16 pixels), large (32 x 32 pixels) or pictures of variable size. These pictures have neither animation nor grey scale; they are plain black and white. All pictures are user defined.

## **EXTENDED PICTURES**

In EMS release 5, it will be possible to include extended pictures. These pictures may be black and white, greyscale or color bit maps. The picture size is a maximum of 255 x 255 pixels. These pictures may be transmitted in a compressed form.

## **ANIMATIONS**

### **PREDEFINED**

There are number of predefined animations. These animations are not sent as animation over the air interface, only the identification of them. As soon as the position of the animation in the SM (Short Message) data is reached, the animation corresponding to the received number shall be displayed in a manner which is manufacturer specific.

### **USER DEFINED**

The user-defined animations consist of 4 pictures and there are two different sizes of these animations. The picture size of the small animations are 8 x 8 pixels and the large 16\*16 pixels. These animations are sent over the air interface.

### **EXTENDED ANIMATIONS**

In release 5, it will be possible to include extended animations. These may be black and white, greyscale or color bit maps. The maximum size of a single animated frame is 255 x 255 pixels. The repetition of these animations may be controlled by the originator. These animations may be transmitted in a compressed form.

## **SOUNDS**

### **PREDEFINED**

There are a number of predefined sounds which will be embedded in phones. These sounds are not transferred over the air interface, only the identification of them. There are 10 different sounds that can be added in the message, and as soon as the sound mark is in focus (on the display), the sound will be played.

Within EMS, there are 10 different predefined sounds including low and high chimes and chords, Ding, TaDa, Claps, Drum and Notify. Additionally, user defined sounds are possible which can be transferred over the air and take up to 128 bytes. There are a number of predefined sounds. Each sound number corresponds to a specific sound. The presentations of these sounds are manufacturer specific.

### **USER DEFINED**

The sender can define their own melodies for uses as ringtones using the iMelody format. These melodies are transferred as Short Messages and can take up to 128 bytes.

### **EXTENDED SOUNDS/ MELODIES**

In EMS release 5, it will be possible to transfer monophonic melodies of nearly unlimited length using the iMelody format. These may be transmitted in a compressed form.

### **IMELODY**

Within EMS, iMelody is used as the standard for defining user defined melodies. In fact, only a subset of iMelody is used for EMS ringtones. The iMelody standard is available for free download from the standards body that standardized it- the Infrared Data Association (IrDa). ([www.irda.org](http://www.irda.org)). The document itself is called "Specification for Ir Mobile Communications (IrMC)". The iMelody specification has been released in several stages, as follows:

The working group on this standard comprises Motorola, Nokia and Ericsson, indicating that Nokia is likely to adopt the iMelody standard for its ringtones at some future point. The specification itself is only four pages long.

An iMelody ringtone is basically a text-based melody representation. The sound of a melody is transmitted in a subset of the iMelody format. The maximum size of one melody is 128 bytes, including header and footer information. The iMelody format is a minimal set of tones that can be used to transfer melodies between devices. The iMelody format also specifies duration of each individual tone. The definition can be extended by defining new formats for polyphonic, DTMF etc. and is expected to be extended in this way.

### **VCARD AND VCALENDAR**

The release 5 of the EMS standard will include the ability to send business card and calendar notifications over the air using the vCard and vCalendar Internet formats.

## 8. COMPARISON BETWEEN NOKIA SMART MESSAGING AND EMS

To better understand the differences between EMS and NSM features, lets compare the two:

<i>Feature</i>	<i>Smart Messaging Support</i>	<i>Enhanced Messaging support</i>	<i>Normal</i>
Ringtones	Yes	Yes	
Operator Logos	Yes	Yes	
Picture Messages	Yes	Yes	
Person to person messages enhanced with simple media effects such as text formatting and sound effects	No	Yes	
Static Screensavers	Yes	Yes	Nokia 3310 only
Animated Screensavers	Yes	Yes	Nokia 3330 only
Picture Quality	72 x 14 for operator logos and 72 x 14 for picture messages	6 x 16 for small pictures and 32 by 32 pixels for large pictures	
Ringtones Quality	Low	Medium	Nokia ringtones are unsophisticated, EMS is preparing for polyphonic support
Installed Base	Hundred million plus handsets	Less than one million handsets	EMS is new and numbers will increase rapidly
Worldwide support	GSM plus TDMA	GSM plus CDMA	CDMA support is agreed at standards level only
Operator Logo network code needed	Yes	No	The network identifier is needed to replace a Nokia operator logo, this is not necessary with EMS
VCard	Yes	Yes	
VCalendar	Yes	Yes	

**SOURCE: MOBILE STREAMS**

The Nokia Smart Messaging protocol does not provide any mechanism to protect copyrighted material from unauthorized proliferation, such as marking content as copyright-protected.

## **9. THE CASE FOR EMS**

In a research note called "The Path To Multimedia Messaging", an investment bank UBS Warburg issued a sceptical note on EMS, as follows:

"We believe that EMS' impact will be limited. The combination of the handset vendors supporting EMS only accounts for 30% of the total market; Nokia has half of the remaining 70% and is not supporting EMS.

As such, we believe that the outlook for EMS is likely to be one of too little, too late. EMS is arriving just before true mobile packet data, which will enable more powerful and potentially more cost-effective messaging services such as MMS. Furthermore, without the support of Nokia, EMS faces a long struggle to gain the foothold it needs to be a useful service- a struggle that will be rendered irrelevant by newer technologies."

Everyone in the mobile industry is unified around the potential for MMS (Multimedia Messaging Service). The big question is how we get from the SMS world to the MMS world- will it be via EMS based on SMS or M-Services based on WAP? We are very, very positive about the potential for EMS. Many people are asking us- why invest in EMS when smart messaging is already out there. These are the reasons why.

### **1. No new network infrastructure is needed.**

This is a key advantage to EMS- the fact that network operators need make no additional investments to SMS Centers or network infrastructure providing their networks already support binary 8 bit messaging and unless EMS message volumes mean investment in new SMS Center capacity.

### **2. Incremental Revenues**

EMS gives network operators and services providers the chance to generate new revenue streams by extending services to non-Nokia phones. Initially, EMS will be like smart messaging in terms of user trends. In other words, people will use websites and premium rate services to request a ringtone or operator logo for their phone. In such cases, how many other EMS capable phones that are out there is largely irrelevant- all that matters is that the individual wants to participate in the whole cool ringtones services world. In the later stages, as EMS devices ship from several vendors in large volumes, EMS transactions will start to involve person to person messaging, like SMS. People will use the ability to add simple media extensions to EMS as a means to send more creative and interesting text messages to each other. This later person to person capability is what



EMS was originally designed for, unlike Smart Messaging which only supports the forwarding of picture messages from phone to phone.

### 3. Open Standard with Cross Vendor Support

Widely supported by Ericsson, Motorola, Siemens, Alcatel and others.

### 4. Feature Rich Standard with Compelling Services

Release five is feature rich.

5. SMS is Slowing, MMS will be late.

6. It is highly likely that Nokia will support EMS in the not too distant future.

SMS growth rates are already slowing as young people have started to get a little tired of simple plain text. Meanwhile MMS is a totally different proposition requiring GPRS bearers, optimally a color screen, plus camera type accessories preferably. Despite the early availability of the T68 from Ericsson in late 2001 which supports EMS and MMS, there are no concrete MMS terminal plans that have been announced. MMS is three years from a critical mass of installed terminals, hence the need for EMS as an interim for low end terminals and to train the users on beyond text services.

Many teenagers will be gagging to get hold of animated messages, simple media combinations and other EMS features. With EMS, messaging is greatly enhanced. Lets all say Yes to EMS!

A third party, **Magic4**, is also supplying EMS software to manufacturers to help them to implement EMS. (see [www.mogaic4.com](http://www.mogaic4.com)). Magic4 is following a dual strategy- licensing its pure EMS and Magic4 client technologies to handset vendors whilst simultaneously working with the 3GPP standards committees to try to have its enhancements incorporated into the EMS standards. Much of the functionality that was incorporated into EMS release 5 was based on technology originally developed by Magic4. Magic4 has also developed a pure EMS client which most of the licensees apart from Philips are thought to have taken. Magic4 is still pushing its full format to the mobile industry- explaining the advantages of forms etc. This will likely be standardized within EMS too at some point.

## 10. M-SERVICES

There has been a battle between WAP based services and SMS based services for the pre MMS entertainment and messaging markets. The M-Services Initiative takes the WAP/ GPRS track to deliver screensavers, ringtones and the like, whereas the SMS camp has taken the EMS track. WAP has been used for information services and clearly the idea behind M-Services is to try to tap into some compelling entertainment applications that

currently run over SMS, in a similar way to how Nokia Smart Messaging and SMS value added services developed. Information services via mobile have never been popular but entertainment ones have always.

In May 2001, Openwave announced that it was making the Download Fun technology available to GSM network operators everywhere, as the following statement from Openwave explains: "Of particular significance during the fourth quarter, the Company announced its support of the GSM Association's Mobile Services Initiative (M-Services). This initiative was created to accelerate deployment and adoption of mobile Internet services within the GSM community this year. Openwave is contributing two key components: first, WML extensions enabling a highly intuitive graphical user interface (GUI), and second, an end-to-end architecture, called Download Fun, supporting the secure download of consumer-oriented content, such as ringtones, images and wallpapers." These two technologies- Download Fun and the graphical microbrowser- were named as "M-Services".

What seems to have happened is that the WAP Forum was looking at its meetings for a way to breathe new life into WAP and to a certain extent reinvent and reinvigorate and rename it. As a WAP Forum main board member, Openwave participated in these discussions very heavily and made available its graphical microbrowser technology that has been shipping in some phones such as the Siemens SL45. This technology was then offered to the GSM Association who decided to endorse it and get operator support for the initiative. Faced with a carrier initiative sponsored by the main industry group, the handset vendors quickly mouthed their support for the initiative, as the following quotes demonstrate.

#### **DESCRIPTION**

According to the GSM Association: "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 DoCoMo's 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 offers. How can we replicate this success? What are WAP the 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."

This is the reason why M-Services was developed. This reason does not take into account i-mode's success which is marginally associated with the end to end technology and much more related to the commercial business model which M-Services does not even mention.

"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 release 5  
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 outlined in the table below is required. Migration to fully standards based solutions is an essential medium term requirement (WAP 2.0).

As such, M-Services simplistically bunches existing technologies together and stipulates when they will be delivered. This is completely unnecessary since these technologies would have been embedded anyway. These engineers have clearly not got past the stage of realizing that technologies are irrelevant, are long as they are of interest to consumers and profitable for all in the value chain. M-Services is a complete folly and the clearest indication of the lack of understanding that the Europeans have over the Japanese success.

## **OUR ANALYSIS**

M-Services Initiative Fails to Take The Initiative

The GSM Association, supported by all and sundry in the GSM mobile industry, announced its Mobile Services Initiative which allows "operator community to provide clear guidance to handset manufacturers and software developers on the needs of consumers of Mobile Internet services going forward".

"The M-Services initiative was undertaken by the GSM Association to enable GPRS users to experience a new level of consistently available services through the Mobile Internet," said GSM Association CEO Rob Conway. "These services could include enhanced graphics, music, video, games, ringtones, screensavers and other compelling services, which will be brought easily to the mobile screens of consumers."

Manufacturers such as Alcatel, Ericsson, Motorola, Nokia, Sagem, Samsung and Siemens have quickly come out in support of the M-Services initiative.

Mobile Streams concerns with the M-Services Initiative are multiple but include:

1. Many of these services are already and better offered over SMS bearers rather than WAP/ GPRS, including ringtones, screensavers and the like.
2. The likes of Nokia claim to support the M-Services Initiative yet persist with their proprietary smart messaging solutions. Statements made by these companies have been quite lukewarm about M-Services and many handset vendors are highly unlikely to implement Openwave's graphical browser under any circumstances since that company is a competitor to them in many areas.
3. Openwave Systems offered its "intellectual property" to the initiative- hardly surprising since it pulls off a sweet deal to get its untried, unwanted and unnecessary WAP-based ringtones and other services into new prospect networks- the chance to sell yet more one time platforms that customers will never use.
4. Network operators such as Vodafone, BT, ONe2One, TIM, Telefonica and France Telecom stepped up to praise the initiative- many of these operators cannot even microbill let alone share revenues fairly with content creators.
5. The initiative does nothing to improve business models- which is the reason why the mobile Internet is failing.
6. The Japanese mobile players- DoCoMo and the handset vendors are absent- and they are the only people who understand how to make the mobile Internet profitable.
7. The Multimedia Messaging Service (MMS) already provides all of these applications, and over GPRS.
8. The initiative is top down industry led rather than creating an open model and allowing end users to decide- this is a legacy of the traditional telecoms world.
9. It is not the role of the GSM Association to endorse vendor consortia like this. The GSM Association has seriously damaged its credibility by expanding its traditional role of backing 3GPP standards and coordinating issues such as GPRS roaming (roaming is a key area that the association is actively involved with).
10. Putting a graphical microbrowser onto WAP is akin to putting an elastoplast on 99% burns. There is little reason to "flog a dead horse", proving that in some cases it is better to do nothing than intervene in this way and merely postpone the inevitable failure of unprofitable initiatives such as M-Services.

This initiative allows the industry to pat itself on the back once more and say that it is taking measures to try to make the mobile Internet profitable. However, it treats the symptoms and not the cause for the mobile Internet's problems. Unfortunately, this simply takes the industry down the wrongful WAP track. Never has the statement "The road to hell is paved with good intentions" sounded so true.

## **SUMMARY**

Mobile Streams strongly believes that the SMS-roadmap to MMS for enhanced messaging is the optimal one rather than the WAP-based M-Services. This is due to the proven business case for SMS-based services and the vibrancy of currently proprietary SMS-based ringtones compared to the unprofitable WAP services. Content suppliers who are making dollars for every SMS based ringtone are unlikely to port their services to a GPRS bearer. Connecting WAP/ GPRS based services to a premium rate Interactive Voice Response (IVR) platform in order to make good money from such services is difficult technically compared to the established means of linking IVR and SMS.

It is likely that the consumer oriented handsets that ship at Christmas 2001 will support EMS whilst the higher end GPRS phones may have the Graphical WAP browser that the M-Services Initiative agreed. It is essential that handset vendors do not delay the deployment of EMS handsets whilst they try to incorporate new browsers- as stated, the EMS phones are already largely ready for deployment- and should be upgraded to release 5 of EMS and shipped in good time for the crucial Christmas sales period.

## **11. QUALCOMM BREW**

<http://www.qualcomm.com/brew/>

### **INTRODUCTION**

BREW stands for Binary Runtime Environment for Wireless. BREW is an application execution environment. The BREW platform is an end to end solution that confers benefits to developers, network operators and handset vendors.

QUALCOMM is licensing BREW to handset manufacturers and applications developers at no cost and provides developers with a Windows-based Software Development Kit (SDK) that includes an emulator and several other development tools. CDMA handset vendors face a choice between embedding BREW and/ or EMS into their handsets.

BREW is useful for the CDMA world and does simplify the delivery of applications on CDMA phones. Since QUALCOMM is developing WCDMA chipsets it is planning to support BREW with those chips too- this would be the possible market entry for BREW to Europe.

BREW is new and therefore there are not many phones out there that support it. It is similar to, if far richer than, EMS in this regard. The format is useful for content creators

or service providers into Japan and Korean markets where CDMA is strong, particularly given the equitable revenue sharing relationships that exist.

BREW is brewing nicely.

## **12. SUMMARY**

Messaging is evolving beyond plain text. However the mobile content market is becoming more and more complicated as new formats are developed beyond simple smart messaging. Companies that want to maximize their revenues from the enhanced messaging space need to support multiple formats.

This whitepaper has an accompanying detailed report and a related Internet site at <http://www.mobileEMS.com> to keep readers up-to-date with the very latest developments in the world of mobile communications in general and enhanced messaging in particular. mobileEMS.com is intended to supplement the detailed information in this report with updates and any corrections. All comments, clarifications and discussions regarding the contents of this report in particular or mobile messaging in general are welcomed by Mobile Streams at [messaging@mobileStreams.com](mailto:messaging@mobileStreams.com).

## **ALSO PUBLISHED BY MOBILE STREAMS**

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### **Next Messaging: From SMS to EMS to MMS – Simon Buckingham**

**Published: December 2000 (275 pages)**

Messaging is evolving beyond text to enhanced text and simple pictures to full multimedia messages. This report plots this evolution path and is an essential resource for those working with SMS who are looking to maintain their position in the future. The transition from text messaging to multimedia messaging is as important for mobile phones as the transition from DOS to Windows was for the PC.

**For more information visit: <http://www.NextMessaging.com>**

**Price: 495\$US**

**ISBN: 1929105290**

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### **Success 4 GPRS – Simon Buckingham**

**Published: August 2001 (255 pages)**

Just how important is GPRS? This new comprehensive report will tell you all that you need to know.

**For more information visit: <http://www.mobileGPRS.com>**

**Price: 495\$US**

**ISBN: 1929105258**

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### **Yes 2 Prepay – Gerald T. Christensen**

**Published: August 2000 (175 A4 pages)**

Written by Mobile Streams' Prepaid expert, Gerry Christensen, this 131 page report has been designed to help product and service providers and those investing in systems/solutions to make more informed business decisions.

**For more information visit: <http://www.mobilePREPAY.com>**

**Price: 495\$US**

**ISBN: 192910541X**

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### **Success 4 WAP – Simon Buckingham**

**Published: February 2001 (200 pages)**

The Wireless Application Protocol (WAP) is a hot topic that has been widely hyped in the mobile industry and outside of it. Mobile Streams originally produced its first WAP book, "Data on WAP", in July 1999. Due to rapid changes and developments this book was reissued as "Yes 2 WAP" in May 2000 and as "Success 4 WAP" in February 2001.

**For more information visit: <http://www.yes2WAP.com>**

**Price: 495\$US**

**ISBN: 1929105355**

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**YES 2 3G – Simon Buckingham**

**Published: February 2001 (283 pages)**

"YES 2 3G" presents an optimistic look at tremendously exciting possibilities that Third Generation/ UMTS technologies and applications enable. Timescales, profiles of all the major infrastructure vendors including the Japanese vendors, every mobile multimedia application, "At home with your futurephone"- mobile communications in the next few years, 3G Talking Points, all the 3G contracts awarded, the standards, handset alliances and partnership opportunities and much, much more are included in this report.

**For more information visit: <http://www.mobile3G.com>**

**Price: 495\$US**

**ISBN: 1929105339**

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**Mobile Positioning – Stephen M Dye and Dr Frank Baylin**

**Published: April 2001 (273 pages)**

"Mobile Positioning" is a book about mobile positioning systems- in particular, the Global Positioning System (GPS), non-GPS location techniques and Cell Broadcast. Although the book focuses primarily on the Global Positioning System (GPS), appendixes cover other non-GPS location schemes and Cell Broadcast in considerable detail.

**For more information visit: <http://www.MobilePositioning.com>**

**Price: 495\$US**

**ISBN: 1929105398**

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**Messaging Metrics – Simon Buckingham**

**Published: March 2001 (127 pages)**

The intention of this report, "Messaging Metrics", is to satisfy the large number of requests that Mobile Streams receives from its customers such as infrastructure vendors, investment banks, research companies, journalists and the like for detailed quantitative and qualitative information on the growth of mobile messaging services such as text messaging (SMS), enhanced messaging (EMS) and multimedia messaging (MMS).

**For more information visit: <http://www.mobileSMS.com>**

**Price: 495\$US**

**ISBN: 1929105371**

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**SMS Tech – Simon Buckingham****Published: July 2001 (199 pages)**

“SMS Tech” is a report supporting the wide array of SMS related technologies and services that have been developed, particularly as application developers and operators alike have refocused WAP investments in SMS. Everyone wants help developing SMS applications and deploying them. “SMS Tech” covers all of these and many other issues in detail. It presents a roadmap for continued SMS success over the next couple of years.

**For more information visit: <http://www.mobileSMS.com>****Price: 495\$US****ISBN: 1929105495**

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**SMS Express – Simon Buckingham****Published: July 2001 (228 pages)**

This report is intended to show the how to maximize the use of, and therefore the revenue from, the Short Message Service. “SMS Express” covers the marketing and commercial aspects of SMS and as such is aimed at product managers, content providers, service providers and the like.

**For more information visit: <http://www.mobileSMS.com>****Price: 495\$US****ISBN: 1929105479**

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**Data on Bluetooth – Simon Duncan****Published: July 2001 (207 pages)**

Data on Bluetooth is the first report of its kind aimed at helping those implementing and deploying Bluetooth applications, services and products to gain the maximum business benefit from the technology. It aims to help with Bluetooth-related investment decisions by providing a clearer picture of the extent to which Bluetooth is in a position to deliver on its promises and the ways in which its potential can best be exploited.

**For more information visit: <http://www.mobilebluetooth.com>****Price: 495\$US****ISBN: 1929105452**

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NOTE: To order any of the above publications, please visit our secure online ordering form at <https://www.mobilesms.com/ordering.asp>

## **LINKS TO RELATED INTERNET SITES**

### **WEBSITES FROM MOBILE STREAMS**

Mobile Streams operates more than 120 different live websites relating to mobile data. The sites include:

[www.mobile3G.com](http://www.mobile3G.com)

All about the third generation of mobile phones- offering mobile multimedia.

[www.mobile4G.com](http://www.mobile4G.com)

Fourth Generation Mobile Virtual Reality!

[www.mobiledatashop.com](http://www.mobiledatashop.com)

Buy mobile data hardware and software from this one stop mobile data shop.

[www.mobileDRM.com](http://www.mobileDRM.com)

Digital Rights Management- content copyright control over mobile networks, an essential enabler in 3G mobile phones

[www.mobileEMS.com](http://www.mobileEMS.com)

The ability to send a combination of simple melodies, pictures, sounds, animations, modified text and standard text as an integrated message for display on an EMS compliant mobile phone.

[www.mobileFirst.com](http://www.mobileFirst.com)

Your on ramp to the mobile Internet with news, personalization, community, interactivity, search.

[www.mobileGPRS.com](http://www.mobileGPRS.com)

All about the General Packet Radio Service.

[www.mobileInsiders.com](http://www.mobileInsiders.com)

The Insiders Programme - Mobile Streams Platinum customer package

[www.mobileIPOs.com](http://www.mobileIPOs.com)

Track the mobile Initial Public Offerings that are taking place in 2001 around the world with our extensive analysis

[www.mobilelatestnews.com](http://www.mobilelatestnews.com)

The latest strategic News by Mobile Streams

[www.mobileMMS.com](http://www.mobileMMS.com)

All about Multimedia Messaging

[www.mobilePatents.com](http://www.mobilePatents.com)

A database tracking patents awarded to mobile companies and news about patent disputes

[www.mobileScreenSavers.com](http://www.mobileScreenSavers.com)

Screensavers for your mobile phone!

[www.mobileSMS.com](http://www.mobileSMS.com)

All about the Short Message Service.

[www.mobileStreams.com](http://www.mobileStreams.com)

Our company's corporate website with all the information about our people, products and partners

[www.mobileViruses.com](http://www.mobileViruses.com)

Virus Protection on mobile phones and devices

[www.mobileVMS.com](http://www.mobileVMS.com)

Voice Mail Systems

[www.mobileVoiceXML.com](http://www.mobileVoiceXML.com)

Voice XML

[www.mobilewap.com](http://www.mobilewap.com)

The ultimate WAP search engine.

[www.nextmessaging.com](http://www.nextmessaging.com)

All about SMS, EMS and MMS messaging

[www.operatorlogos.com](http://www.operatorlogos.com)

Operator Logos for Nokia Phones

[www.picturemessaging.com](http://www.picturemessaging.com)

Send simple images between mobile phones! A picture paints a thousand words so test out the next generation of mobile messaging!

[www.ringtones.com](http://www.ringtones.com)

Change the way your phone rings. Turn your phone into a personal jukebox!

[www.wirelessClueless.com](http://www.wirelessClueless.com)

Your reality check on the rhetoric that surrounds the mobile Internet

[www.mobileWAPng.com](http://www.mobileWAPng.com)

All about the Wireless Application Protocol (WAP)

[www.directspread.com](http://www.directspread.com)

About the direct spread 3G airlink!

[www.email4mobiles.com](http://www.email4mobiles.com)

Email on your mobile phones

[www.FutureFoneZone.com](http://www.FutureFoneZone.com)

All about the next five years of mobile phones. View the exclusive photo gallery of 3G concept phones.

[www.Games4mobile.com](http://www.Games4mobile.com)

All about games for mobile phones. Traditionally game playing has been tethered to the television or the PC, but increasingly gaming is getting mobile.

[www.links2mobile.com](http://www.links2mobile.com)

Links 2 thousands of mobile sites

[www.mobile2home.com](http://www.mobile2home.com)

Remote access to your home from your mobile phone!

[www.mobile3GSM.com](http://www.mobile3GSM.com)

Live news feeds from the 3GSM World Congress in Cannes

[www.mobile4mobile.com](http://www.mobile4mobile.com)

The website for mobile comms professionals- workshops, conferences, reports, jobs- its all here

[www.mobileamericanews.com](http://www.mobileamericanews.com)

The website to visit for the latest news on the American mobile market

[www.mobileasianews.com](http://www.mobileasianews.com)

All about mobile communications news in Asia

[www.mobileAus.com](http://www.mobileAus.com)

Mobile News from Australia

[www.mobileBilly.com](http://www.mobileBilly.com)

Mobile billing systems

[www.mobileBluetooth.com](http://www.mobileBluetooth.com)

All about Bluetooth, a short area network standard.

[www.mobileCAMEL.com](http://www.mobileCAMEL.com)

Customized Application for Mobile Enhanced Logic

[www.mobilecasestudies.com](http://www.mobilecasestudies.com)

Every month a new case study from a mobile network operator

[www.mobileCDMA.com](http://www.mobileCDMA.com)

All about the CDMA mobile networks popular in the USA and Korea.

[www.mobileCebit.com](http://www.mobileCebit.com)

Hot news from the CeBIT show

[www.mobilecellbroadcast.com](http://www.mobilecellbroadcast.com)

All about Cell Broadcast, a means to broadcast the same message to customers with a mobile phone in certain areas

[www.mobileChatting.com](http://www.mobileChatting.com)

Chat and community services on mobile phones

[www.mobileChinaNews.com](http://www.mobileChinaNews.com)

News from the Chinese mobile market

[www.mobileChtml.com](http://www.mobileChtml.com)

All about Compact HTML, the protocol used by i-mode in Japan

[www.MobileConferences.com](http://www.MobileConferences.com)

All about mobile communications conferences being held around the world.

[www.mobileConn.com](http://www.mobileConn.com)

All about mobile network Connectivity

[www.mobileconsultancy.com](http://www.mobileconsultancy.com)

About mobile communications consulting companies

[www.mobileContentWorld.com](http://www.mobileContentWorld.com)

Content is king- read all about the mobile content industry here

[www.mobileCorporateEmail.com](http://www.mobileCorporateEmail.com)

Send and receive email from your corporate email account on your mobile phone/ device

[www.mobileCorporations.com](http://www.mobileCorporations.com)

All about mobile deployments in corporations

[www.mobileCSD.com](http://www.mobileCSD.com)

All about Circuit Switched Data

[www.mobileCustCare.com](http://www.mobileCustCare.com)

Using mobile phones to provide customer care

[www.mobileDataEvolution.com](http://www.mobileDataEvolution.com)

Understand the evolution paths for GSM, TDMA and CDMA

[www.mobileddevelopers.com](http://www.mobileddevelopers.com)

Your mobile application development community covering all technologies from SMS to WAP to GPRS to 3G

[www.mobileDiscuss.com](http://www.mobileDiscuss.com)

Interactive discussion on mobile topics such as SMS, WAP, GPRS, 3G etc.

[www.mobileDispatches.com](http://www.mobileDispatches.com)

All about Mobile Streams' monthly series of white papers about mobile communications services.

[www.mobileEagents.com](http://www.mobileEagents.com)

Mobile Electronic Agents

[www.mobileEIR.com](http://www.mobileEIR.com)

All about Equipment Identity Registers

[www.mobileEnablers.com](http://www.mobileEnablers.com)

Embedded Handset Enablers e.g. PKI, DRM etc.

[www.mobileEnhancedData.com](http://www.mobileEnhancedData.com)

All about Enhanced Data Rates for Global Evolution (2.75G or EDGE)

[www.mobileExhibitions.com](http://www.mobileExhibitions.com)

Exhibitions in the mobile communications industry

[www.mobileFaxmail.com](http://www.mobileFaxmail.com)

Mobile Faxmail services

[www.mobileFiletransfer.com](http://www.mobileFiletransfer.com)

Transferring files over mobile networks

[www.mobileFinlandNews.com](http://www.mobileFinlandNews.com)

Hot stories from a hot mobile market

[www.mobileGPS.net](http://www.mobileGPS.net)

All about the Global Positioning System (GPS)

[www.mobileHSCSD.com](http://www.mobileHSCSD.com)

High Speed Circuit Switched Data

[www.mobileimode.com](http://www.mobileimode.com)

i-mode the NTT DoCoMo Japanese mobile Internet phenomenon

[www.mobileInstantMessages.com](http://www.mobileInstantMessages.com)

All about accessing instant messaging on mobile phones

[www.mobileIPworld.com](http://www.mobileIPworld.com)

The increasing use of the Internet Protocol (IP) in the mobile world

[www.mobileIVR.com](http://www.mobileIVR.com)

All about Interactive Voice Response (IVR)

[www.mobileJargonBuster.com](http://www.mobileJargonBuster.com)

Your guide through the mobile acronym jungle!

[www.mobileJobdispatch.com](http://www.mobileJobdispatch.com)

Dispatching jobs to mobile workers

[www.mobilejoblinks.com](http://www.mobilejoblinks.com)

All about recruitment services for the mobile industry.

[www.mobileJP.com](http://www.mobileJP.com)

News from the Japanese mobile market

[www.mobileMags.com](http://www.mobileMags.com)

Magazines and newsletters about mobile communications

[www.mobileMarkups.com](http://www.mobileMarkups.com)

Mobile Markup Languages

[www.mobileMcommerce.com](http://www.mobileMcommerce.com)

All about Mobile Commerce.

[www.mobileMExE.com](http://www.mobileMExE.com)

All about the Mobile Station Application Execution Environment.

[www.mobileMiddleware.com](http://www.mobileMiddleware.com)

All about developing mobile applications more quickly and easily!

[www.mobileMMD.com](http://www.mobileMMD.com)

All about downloading music onto your mobile phone!

[www.mobileMMI.com](http://www.mobileMMI.com)

All about user interfaces and the Man Machine Interface (MMI)

[www.mobilenewsletters.com](http://www.mobilenewsletters.com)

All about newsletters for the mobile communications industry.

[www.mobileOSA.com](http://www.mobileOSA.com)

All about Open Services Access (OSA)

[www.mobileOutsourcing.com](http://www.mobileOutsourcing.com)

All about outsourcing mobile platforms!

[www.mobilepacket.com](http://www.mobilepacket.com)

How to make a Packet out of Mobile Packet!

[www.mobilePKI.com](http://www.mobilePKI.com)

Public Key Infrastructure for mobile networks

[www.mobilePlanners.com](http://www.mobilePlanners.com)

Mobile network planning

[www.mobilePortalWorld.com](http://www.mobilePortalWorld.com)

All about mobile portals

[www.mobilePositioning.com](http://www.mobilePositioning.com)

All about GPS and non GPS positioning system technologies and applications.

[www.mobilePrepay.com](http://www.mobilePrepay.com)

All about prepayment- a form of paying for mobile phone service in advance of using it.

[www.mobilePressReleases.com](http://www.mobilePressReleases.com)

Press Releases

[www.mobilepublications.com](http://www.mobilepublications.com)

All about publications for the mobile phone professional.

[www.mobileRemoteLANaccess.com](http://www.mobileRemoteLANaccess.com)

Remote Access to Local Area Networks

[www.mobileRetailers.com](http://www.mobileRetailers.com)

Selling mobile phones and equipment over the Internet



[www.mobileRoamers.com](http://www.mobileRoamers.com)

Taking your mobile phone overseas

[www.mobileServiceEng.com](http://www.mobileServiceEng.com)

Field service engineers using mobile networks

[www.mobileSIMtoolkit.com](http://www.mobileSIMtoolkit.com)

All about SIM Application Toolkit!

[www.mobiless7.net](http://www.mobiless7.net)

All about Signaling System number Seven (SS7)

[www.mobileSuppliers.com](http://www.mobileSuppliers.com)

Who is supplying whom with what for key technologies

[www.mobileSyncML.com](http://www.mobileSyncML.com)

The SyncML synchronization standard

[www.mobileSysInt.com](http://www.mobileSysInt.com)

Systems Integrators who will make corporate data available over mobile networks

[www.mobiletelemetry.com](http://www.mobiletelemetry.com)

All about Telemetry.

[www.mobileTesters.com](http://www.mobileTesters.com)

Testing network coverage

[www.mobileThirst.com](http://www.mobileThirst.com)

The thirst quencher for your mobile phone- all the mobile services you could ever need on one website....

[www.mobileUMTS.com](http://www.mobileUMTS.com)

All about the Universal Mobile Telephone System!

[www.mobileUsim.com](http://www.mobileUsim.com)

3G Smart Cards

[www.mobileUSSD.com](http://www.mobileUSSD.com)

All about the Unstructured Supplementary Services Data.

[www.mobileValueChains.com](http://www.mobileValueChains.com)

End to end delivery of mobile services

[www.mobileVentureCap.com](http://www.mobileVentureCap.com)

VC investments in the mobile industry

[www.mobileVHE.com](http://www.mobileVHE.com)

All about the Virtual Home Environment

[www.mobilevideoworld.com](http://www.mobilevideoworld.com)

All about video services on mobile phones

[www.mobileVNOs.com](http://www.mobileVNOs.com)

Mobile Virtual Network Operators

[www.mobilevoiceportal.com](http://www.mobilevoiceportal.com)

Voice driven mobile portals

[www.mobileVOIP.com](http://www.mobileVOIP.com)

All about using mobile networks to transmit voice over IP (VOIP)

[www.mobileWcdma.com](http://www.mobileWcdma.com)

Wideband CDMA

[www.mobileWebBrowsing.com](http://www.mobileWebBrowsing.com)

Access the Internet on your mobile phone

[www.mobilewebtone.com](http://www.mobilewebtone.com)

The Internet equivalent to today's dial tone.

[www.mobilewhitepapers.com](http://www.mobilewhitepapers.com)

All about Mobile Streams FREE White Papers.

[www.mobileworking.com](http://www.mobileworking.com)

Using mobile communications to change the way you work

[www.mobileworkshops.com](http://www.mobileworkshops.com)

Workshops about mobile communications

[www.mobileXhtml.com](http://www.mobileXhtml.com)

eXtensible HTML on mobile phones

[www.mobileYearly.com](http://www.mobileYearly.com)

Mobile Streams' predictions for the year ahead

[www.nonvoice4novices.com](http://www.nonvoice4novices.com)

All about the mobile data revolution.

[www.nonvoicenews.com](http://www.nonvoicenews.com)

About Mobile Streams' monthly newsletter, Nonvoice News

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