

A Picture Speaks a Thousand Words – From SMS to MMS

a report by

Friedhelm Rodermund

*Project Manager, 3GPP Terminal Standards, Mobile Competence Centre (MCC),
European Telecommunications Standards Institute (ETSI)*



Friedhelm Rodermund is currently Project Manager for 3G Partnership Project™ (3GPP) Terminal Standards at the Mobile Competence Centre (MCC) of the European Telecommunications Standards Institute (ETSI). He works with the 3GPP Technical Specification Group Terminals and with the 3GPP Working Group T2 (Terminal Services and Capabilities), which is responsible for a large part of the multimedia messaging service (MMS) standard. Currently, he is also employed by Vodafone D2 and, prior to his current assignment, was project manager at Mannesmann Mobilfunk for type acceptance of GSM™ base stations and was also involved in other projects in the area of GSM infrastructure. Mr Rodermund studied electrical engineering at the University of Aachen, Germany, one term of which was spent on computer engineering at the University of Trondheim, Norway.

The mobile telecoms industry is placing great confidence in the new multimedia messaging service (MMS), which allows users of mobile phones to send and receive messages using various media formats such as text, images, audio and video. As global subscriber growth is slowing, increased revenue has to originate from an increase of average revenue per user (ARPU), which operators hope to achieve via greater customer spending on data services. To assess the potential of MMS and its ability to generate new and long-term revenue streams, it is worth first examining the earlier generations of mobile messaging: short message service (SMS) and enhanced messaging service (EMS).

SMS

The first generation of wireless messaging service, SMS, is extremely popular today. It is estimated that, globally, there will be 100 billion SMS messages sent per month by the end of 2002.¹ For many GSM™² operators, SMS accounts for between 10% and 20% of their revenue. Considering its restrictions, such as the limited message length and the somewhat inconvenient method of entering characters via the handset's keypad, it was not expected to be such a tremendous success.

SMS was developed in the early to mid 1990s by the standardisation body's special mobile group under the auspices of the European Telecommunications Standards Institute (ETSI). The messages are transmitted via a signalling channel that is normally used to exchange information between handset and network in addition to the actual traffic-like speech and data. The capacity of the signalling channel is limited, which is one of the reasons why SMS supports a maximum message length of only 160 characters per message. Some networks support concatenated messages, which multiplies the number of characters that can be transmitted. SMS is a store-and-forward service, which means that, if the

recipient is not available, the message is stored in the SMS service centre.

EMS

EMS was the first step in the evolution from SMS and enables the user to send and receive richer message content.

The first enhanced messaging solution was Nokia's proprietary 'Smart Messaging', which was only available on Nokia handsets. Starting in early 2000, a standardised EMS solution was created by the 3rd Generation Partnership Project (3GPP).³ It includes several features such as text formatting, colour pictures (with a maximum of 255 x 255 pixels), animations, polyphonic sounds and vector graphics that enable the sending of simple drawings, handwritten symbols and special characters. The combination of different media in one message is also possible, which could allow, for example, the sending of a text message together with a picture, a self-edited SMS message and/or playing a song, tune or melody.

A major advantage of EMS is that the operator does not need to invest in new infrastructure to be able to offer this enhanced messaging experience to the customer. EMS is based on SMS protocols and can be supported by the existing SMS service centres.

A customer wishing to use this service would need to purchase an EMS-enabled handset. The majority of mobile handset manufacturers are going to support EMS and many EMS-enabled models are already on the market; however, it will take some time for the penetration of EMS phones to reach the critical mass that will allow the service to flourish.

Industry opinion about the future role of EMS is divided. In light of the 'dawn' of MMS, some predict only a short lifespan for EMS, while others project that EMS will still play an important role in the

1. *Logica.*

2. GSM™ is a registered trademark of the GSM Association.

3. 3GPP™ is a trademark of ETSI registered for the benefit of the 3GPP organisational partners.

messaging arena alongside MMS. Nevertheless, by offering a range of attractive messaging features, EMS has good potential to contribute to the continued growth of messaging revenues.

customers. The required new main network element – the MMSC – has, among other things, the tasks of storage and handling of incoming and outgoing messages. Unlike SMS, which uses the

MMS allows users to send and receive messages exploiting a large array of the media types available today... while also making it possible to support new content types as they become popular.

MMS

After EMS, the next stage of messaging evolution is MMS, which delivers an even richer messaging experience. MMS allows users to send and receive messages exploiting a large array of the media types available today, e.g. text of almost unlimited length, images, audio and video clips, while also making it possible to support new content types as they become popular. MMS supports standard image formats such as Graphics Interchange Format (GIF) and Joint Picture Expert Group (JPEG), video formats such as Motion Picture Expert Group (MPEG) 4 and audio formats and Musical Instrument Digital Interface (MIDI). Multimedia elements can be combined into a composite single message. Messages can be sent either to a mobile phone or to an e-mail address, which offers the customer a wide range of users with which to communicate.

It is expected that end-users will adapt easily to MMS, since it can be recognised as an advanced form of SMS. Compared with e-mail, MMS users receive messages without having to log on, open in-boxes or attachments and, like SMS, MMS is quick and easy to use.

As a logical extension of SMS and EMS, the MMS standard was developed by the 3GPP and the WAP Forum, now part of the Open Mobile Alliance (OMA). As far as possible, existing protocols (e.g. WAP, Simple Mail Transfer Protocol (SMTP)) and existing message formats (e.g. Synchronised Multimedia Integration Language (SMIL) and Multipurpose Internet Mail Extensions (MIME)) have been used for the realisation of MMS. It is envisaged that later MMS versions will also support non-WAP, standard Internet protocols for communication between terminals and Multimedia Message Service Centres (MMSCs), such as http over Transmission Control Protocol/Internet Protocol (TCP/IP).

Unlike the situation with EMS, operators will have to invest in new infrastructure to offer MMS to their

transmission over the signalling channel, multimedia messages are transmitted over traffic channels. Several bearers could be used; however, it is expected that most of the MMS implementations currently being launched will be based on GPRS. This allows operators to increase revenues from their existing networks, at the same time preparing customers for the transition to 3G.

MMS can use 2G and 2.5G networks as bearer, but is also seen by many as a central driver of the 3G business case. Using the high-capacity traffic channels of a 3G network will lead to a further step in the service experience as far as speed and quality are concerned. This will particularly affect the transmission of video clips, which are expected to play an important role in the MMS business case.

Looking at the systems that are currently launched, many have been surprised that, on the MMS infrastructure side, Ericsson and Nokia have established an early lead. Nevertheless, the traditional messaging manufacturers that are dominating the SMS infrastructure market are confident that they can increase their market share in the near future.

As always, whenever a new technical standard is introduced, special attention has to be given to interoperability issues. To ensure interoperability between MMSCs and handsets from different manufacturers and to ensure the smooth introduction of MMS in the market, an MMS Interoperability Group (MMS-IOP) has been founded by the main industry players and has recently become part of OMA.

Vast Opportunities for Content Providers

Unlike SMS, where user-to-user messaging represents the overwhelming majority of use, MMS will involve a substantial amount of material created by value-added service providers (VASPs). Especially in the initial phase, user-to-user messaging will not

play a large role due to low handset penetration. Content is, of course, crucial. It will be important for operators to form partnerships with the right content providers, not to mention offering them sufficient financial encouragement.

In order to provide technical support for the provision of third-party content, the MMS standard provides a standardised interface from VASP to the MMSC. Support is also given to necessary reverse-charging mechanisms, enabling the recipient to pay for receipt of messages from a VASP.

Around the capabilities provided by MMS, operators and third-party service providers are enabled to offer such compelling services as entertainment of various kinds, advertising, animated weather forecasts, adult services, 'traffic-cams' – which provide subscribers with realtime traffic information and pictures – and animated e-cards with musical accompaniment.

Another important driver for MMS will be personalisation, including the download of ring tones, wallpapers and screen savers. Examples for possible business applications include stock quotes that can be viewed as diagrams, images for the medical profession and sending photos for field engineers or estate agents, who can instantly send pictures of houses or properties back to their offices or directly to their customers. A few of the recently launched MMS services already include the streaming of video clips. This allows, for example, football fans to watch the latest goal of their favourite team on their mobile phone, or the viewing of film previews.

It is felt to be of the greatest importance for the availability of attractive content to secure the rights of copyright holders. With this intention, work is continuing in 3GPP and OMA on providing standard mechanisms for digital rights management (DRM). A first DRM solution is already available from OMA.

MMS also offers opportunities for application developers. Examples for MMS applications are an originating application, such as a Web-based MMS creation service that helps the subscriber to compose and send an MMS message, or a terminating application, which could be a photograph album. In addition, so-called processing applications could be used by companies subsidising the sending of MMS messages in return for adding their company logo to the message before it is delivered to its final destination.

In order to make MMS successful, it is crucial that

the operators adopt a sensible approach to pricing and that MMS tariffs have mass market appeal. Consumers must feel comfortable that the MMS costs in their phone bills are predictable. Volume-based pricing, charging per message and flat rates are the three pricing strategies that are currently being offered to MMS subscribers in Europe. It would, however, seem that most operators are following a recommendation from the GSM Association (GSMA) for an event-based charging model combined with volume classes. As a pricing example, Vodafone Germany charges €0.39 for a message up to 30Kb in size and €0.99 for messages of up to 100Kb.

Handsets

It will take some time for the penetration of MMS handsets to reach mass market levels and a penetration rate of 20% to 25% is hailed by many as the critical point at which MMS usage will take off. Although increasing numbers of MMS devices are becoming available now, it may not be until the end of 2003 that significant penetration is reached.

The first MMS-enabled phones were originally offered at the upper end of the price scale. For the creation of a mass market, however, it is crucial to offer MMS-enabled devices priced at consumer level. These prices are already falling and, in Europe, heavily subsidised MMS-enabled phones are already available for less than €100. This will certainly help the MMS service uptake but does conflict with the strategy of many operators to cut handset subsidies.

The small range of MMS-enabled models that is currently available will be enhanced soon by several new models announced by major handset manufacturers. Handset manufacturers have also promised to solve the current problem of the low availability of handsets, e.g. Nokia predicts that 50% of its handsets will be MMS-enabled by the end of 2002. There are signs that MMS is already having a healthy effect on the handset upgrade market. Users are attracted by the colour displays and MMS capabilities. Data suggests that sales of integrated camera handsets will rise from six million in 2001 to 23 million units in 2003.⁴

Early Indicators and Outlook

First reports about the MMS uptake from early MMS launchers are promising. According to recent data, 46 commercial MMS offerings were in operation in Europe and Asia by 1 October 2002.⁵

4. Yano Research Institute Ltd.

5. EMC.

A early indicator for the potential of MMS can be found in Japan, where J-Phone launched a photo-messaging service in June 2001. So far, they have managed to sell more than five million handsets, which means that some 40% of their subscriber base has handsets capable of photo-messaging. Japan is a more gadget-driven market, with much shorter handset-replacement cycles, and therefore one cannot transfer the Japanese experience directly on to other markets. Nevertheless, these figures suggest a positive outlook.

In Europe, Vodafone Germany reported that MMS has generated a stronger demand than SMS in its early stages. They expect to have at least one million MMS customers by the end of the third quarter of 2003. Recently, an agreement was struck between Vodafone Germany and T-Mobile Germany to allow the sending of picture messages between the two networks. Interconnection of MMS networks is an essential condition to accelerate this boom.

MMS will enable operators to increase their data revenues and leverage their GPRS and Wideband Code Division Multiple Access (w-CDMA) investments. Some analysts predict that MMS will

not make an impact until the end of 2003; however, when it does take off, industry observers believe that it could add €4 to €5 per subscriber per month to the average operator's income. It is predicted that MMS traffic will reach 25 million messages per month in December 2002, and that global revenues from MMS will reach around US\$20 billion by 2006.⁶

Conclusion

Building on the success story of SMS, EMS and MMS are enhancing the user's messaging experience significantly. With MMS, communication between individuals will become much more visual, which increases the emotional value of the message and the desire to share it. Like SMS, MMS can become a true mass market service that is used by both private and business customers and it could play a central role in offsetting the trend in declining revenues by driving the move to data services. MMS could become the key business-case driver for GPRS and also a central driver of the 3G business case. If content, interoperability, roaming and pricing issues are resolved, 2003 will be the year in which MMS makes a serious impact. ■

6. *Mobile Streams*TM



Mobile Cohesion

Hydra

*A persistent or multifaceted problem
that can only be solved through a multi
disciplined approach*

Hydra FrameworkTM

Enabling a new generation of premium mobile data services

www.mobilecohesion.com