An introduction to Mobile Messaging

This website provides a number on the topic of mobile messaging technologies and services. Resources complement the information in the three books titled ' Mobile Messaging, 1st edition', ' Multimedia Messaging Service'.and ' Mobile Messaging, 2nd edition'.

Roots of mobile messaging in Europe: SMS

The roots of mobile messaging in Europe lie in the Short Message Service (SMS). In its initial form, SMS is a basic service for exchanging short text messages (with a maximum of 160 simple characters). The first text message is believed to have been transferred in 1992 over signalling channels of one of the major European GSM networks. Since this successful trial, SMS usage has been the subject of a tremendous growth reaching 1.5 billion SMS messages sent across the United Kingdom's four GSM networks in February 2003 (source: Mobile Data Association). Despite its limitations, SMS is widely used today and accounts for a significant part of mobile operator revenues. In its most recent form, SMS allows short text messages to be concatenated to form larger messages, and several application-level extensions have been designed on top of SMS as a transport technology. Most notably, the Enhanced Messaging Service (EMS) is a standardized extension allowing SMS messages to incorporate rich media such as polyphonic melodies, simple black and white, colour or greyscale images/animations and so on. Major phone manufacturers such as Alcatel, Motorola, Siemens and SonyEricsson have released EMS-enabled phones.

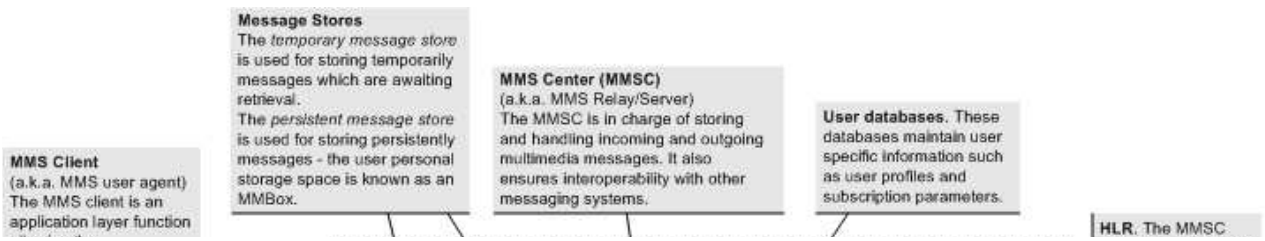
Another application-level extension of SMS is known as 'Picture Messaging' (part of Smart Messaging services). Picture messaging is a proprietary service developed by Nokia and available mainly on Nokia phones. Features offered by picture messaging are similar to the ones offered by EMS. Unfortunately, the two services have not been designed to interoperate. SMS was originally developed as part of the GSM technical specifications from the European Telecommunications Standard Institute (ETSI). SMS standardization activities were later transferred to the Third Generation Partnership Project (3GPP).

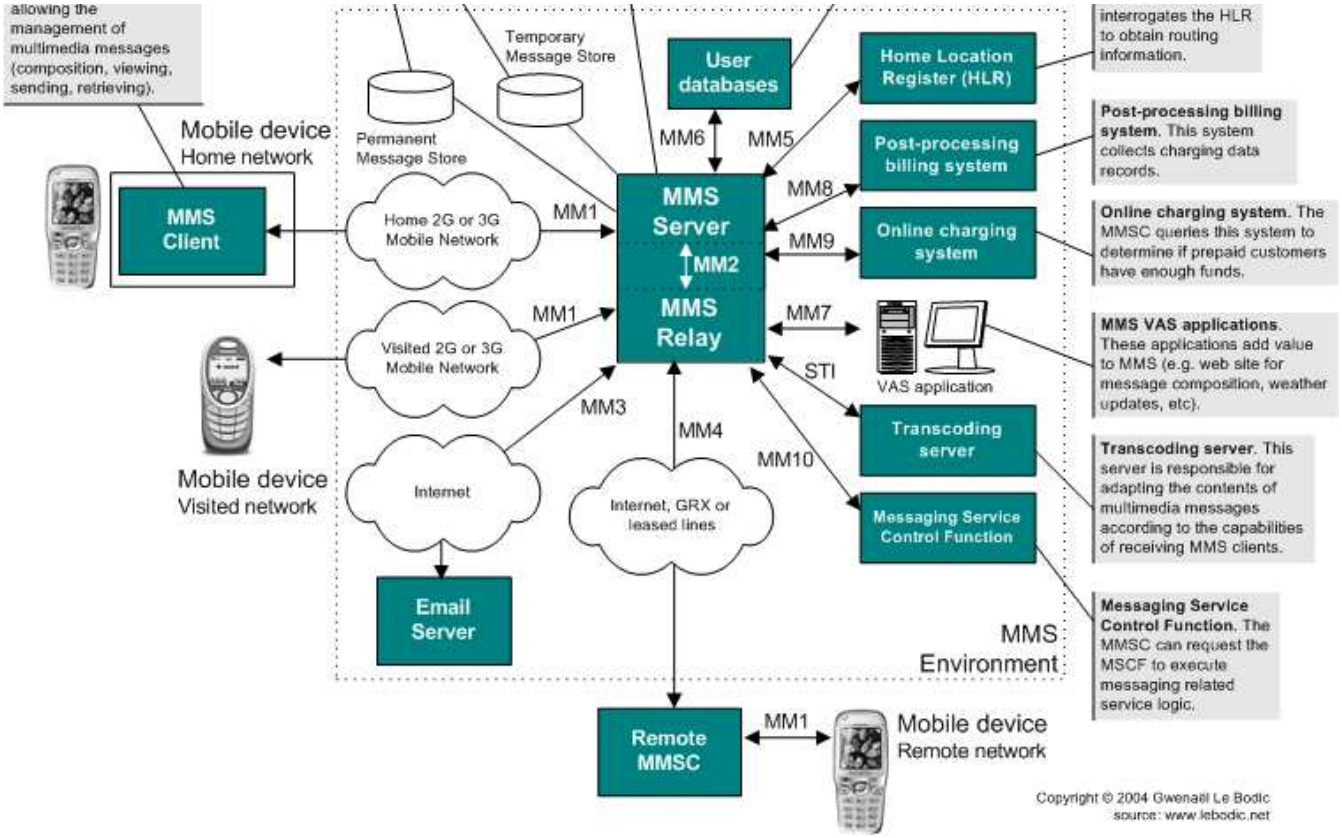
Multimedia messaging in Japan: Sha-mail and i-mode

In November 2000, J-Phone (now Vodafone K.K.), the Japanese arm of Vodafone, launched a new messaging service known as 'Sha-mail' (literally stands for 'Picture mail' in Japanese). In October 2002, it was reported that Japan's J-Phone had 7 million Sha-mail handsets operating on its network. Sha-mail is a messaging service for taking pictures with a digital camera built into a mobile phone and sending them to another Sha-mail phone or to an Internet user (electronic mail message with picture as an attachment). A service extension of Sha-mail, known as 'Movie Sha-mail', also allows recording and sending short video clips (up to 5 seconds). Sha-mail messages can be stored in Sha-mail digital albums stored in the network and managed remotely by the user via a Sha-mail phone. With Sha-mail, there is no application or monthly fee and customers are only billed for communication charges (based on volume of data). In response to the success of J-Phone's Sha-mail, NTT Docomo counter-attacked with the launch of a new i-mode messaging service known as 'i-shot'. With i-shot, users can take pictures with an i-mode phone with a built-in camera. The picture is attached to an electronic mail message (JPEG file up to 30 kB in the initial implementation) and sent to the i-shot server. The i-shot server stores the picture and sends a URL referring to it as part of an email text message to the recipient(s). During this process, the i-mode server may modify the original picture according to the recipient's i-mode device capabilities. Upon reception of the message, the user reads the text message with the i-mode mail client and can directly launch the browser to fetch the picture identified by the URL. The i-shot service is also open to the Internet. With i-shot, there is a monthly fee for accessing i-mode services, and customers pay for communication charges (based on volume of data). The success of photo messaging services in Japan seems quite encouraging for the success of MMS in other parts of the world. However, Japan is a more data-driven market with shorter handset-replacement cycles, and, therefore, one cannot transfer the Japanese experience directly to other markets.

Multimedia Messaging Service (MMS)

In the late 1990s, SMS usage was booming and major mobile market players were looking for new service opportunities to exploit network resources for the coming years. It was understood that SMS was very limited and mobile messaging services had great margins for improvement. The Internet electronic mail available at this time was not optimized enough for low-bandwidth radio networks and input-limited mobile devices. Japanese photo messaging services were under development in a proprietary fashion and therefore could not meet the market demands in all parts of the world. What was then needed was a universal messaging service offering multimedia features to the mass market of mobile users. The Multimedia Messaging Service (MMS) builds up from SMS, email and emerging Internet multimedia technologies. MMS standards define a framework for the realization of services enabling the exchange of multimedia messages. MMS encompasses the identification and definition of a large number of high-level multimedia features which so far have only been provided by fixed messaging systems such as electronic mail. MMS features include the exchange of multimedia messages choreographed as 'slideshows' (similar to Microsoft Powerpoint presentations). A slideshow is constructed as a series of slides, each slide being composed of text, audio, images and/or video organized over a predefined graphical layout. The deployment and operation of MMS requires significant network resources in terms of equipment and airtime. Consequently, advanced network technologies, such as GPRS and UMTS, are desirable for MMS. The architecture of an MMS system is shown below:





Mobile Instant Messaging

Instant Messaging (IM) is today a very successful service in the Internet world. Most used services include MSN Messenger,Yahoo Messenger, AOL Instant Messenger (AIM) and more recently Skype. Instant Messaging allows users to exchange messages in a threaded fashion as part of one-to-one, one-to-many or many-to-many conversations (private and public chat rooms). Most services offer the possibility for a user to get notified about changes on the presence (e.g. availability, mood, etc.) of individuals part of a user-defined group (also known as buddy-list).

Mobile operators are enabling this service in the mobile world, either by creating their own IM community or by mobilising exiting IM services already available in the Internet world. In 2001, several large players in the mobile industry initiated activities for the standardisation of Mobile IM technologies. These activities were carried out in the context of an industry forum known as Wireless Village. Later, Wireless Village activities were transferred to another industry forum known as the Open Mobile Alliance (OMA). In addition from evolving Wireless Village specifications, OMA is also looking at alternative realizations of the Mobile IM service, relying on SIP/SIMPLE and MSRP protocols for instance.

Mobile Email

There is probably no need to described Email in the form used in the Internet world today. However, there is much to say about ongoing activities in order to adopt a mobile variant of the Email service. RIM has been one of the initial companies to adopt the technology in order to make Email available on mobile devices (e.g. Blackberry devices). Other companies have followed, all developing proprietary extensions to the Email protocols in order to enable a efficient implementation in the mobile world. Extensions to the Email protocol included for instance the possibility to get messages pushed directly to the mobile device with a notification mechanism, instead or relying on the polling mechanisms of Internet Email services. So far, Mobile Email has been a service mainly offered to professionals. However, this could well change in the future with a growing market demand in the market segment of consumer users.

Mobile messaging related publications:

G. Le Bodic, Mobile Messaging, SMS, EMS and MMS, IEEE Vehicular Technology Society News, November 2002.

G. Le Bodic, Mobile Messaging, SMS, EMS and MMS, Wiley&Sons, November 2002.

G. Le Bodic, Multimedia Messaging Service, an engineering approach, Wiley&Sons, October 2003.

G. Le Bodic, Mobile Messaging, SMS, EMS and MMS, 2nd edition, Wiley&Sons, February 2005.

M. Mostafa, Implementation solutions for the interworking between MMS and streaming, Wiley Interscience, Volume 16, Issue 10, Pages 865-973, December 2003.

L. Novak and M. Svensson, MMS - Building on the success of SMS, Ericsson Review, Issue no. 03/2001.

About the author:

Gwenaël Le Bodic is a Senior Architect for the Vodafone Group where he is responsible for defining the strategic

roadmap for the evolution of mobile messaging technologies. He is also involved in the deployment of MMS systems for large multi-operator environments and in the realization of messaging interconnection between mobile networks.

For several years, he carried out research and development studies for the telecommunication vendor Alcatel (Mobile Phone Division) in Paris, France. This included many contributions to various standardization development organizations (3GPP, OMA, etc.). He had the responsibility for the technical design of the embedded messaging solution for the first two Alcatel MMS-capable phones.

Gwenaël Le Bodic also provides lectures on the topic of mobile messaging. A forthcoming lecture for the University of Oxford will be held in June 20-21 2006 (more details for registration). He can be contacted at gwenael@lebodic.net.