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## Module One: MMS Overview – MMS – Europe, USA and the world

### Overview

This section looks at two questions :

- How has mobile messaging evolved at different parts of the world and
- How does this evolution affect the uptake of MMS especially in the context of Europe v.s. North America

### **ASIA**

Multimedia Messaging Services established – success being seen with photo messaging etc. Korea, Japan are good examples of leading players. Other markets are also advanced in the use of SMS (like India, China and Philippines).

### **EUROPE**

Multimedia Messaging now emerging, major operator either have just or are about to launch service. Primarily focused on Photo Messaging. Interoperability is recognised as a critical success factor and the expectation is to have a degree of interoperability early 2003.

### **NORTH AMERICA**

The market is only now beginning to establish a basic text messaging market with patchy interoperability. Some carriers are known to be looking at launching MMS in the near future.

When trying to understand why these markets are as described above there are two clear factors that affect a markets adoption of services. These are Culture and Technology:

Market	Culture	Technology
Asia	Technology hungry, intrigued by novelty. Highly driven technology savvy youth culture High entry cost for the Internet, mobile data services a more reachable medium. Workable value chain, operators demands on revenue share minimal, opportunity for content owners to make money.	In many cases the markets are operated in a monopoly with a single dominant technology so interoperability of services not an issue.
Europe	Strong peer to peer technology aware youth market. To date price sensitivity is low. Internet awareness is high but not that of the US.	Single GSM standard enabling interoperability even in a multi operator market.
North America	Very high internet awareness. User experience expectations driven by internet experience so often mobile data is viewed as inferior. The low cost of internet (often free) sets the expectation for service pricing, if I can get it free on the web why should I pay for it on my phone? Consumers are familiar with email and Instant Messaging. AOL has an IM client on some phones. This familiarity will undoubtedly affect preference when looking at mobile messaging solutions – more comfort with familiarity. US mobile data market is business oriented as opposed to Europe's consumer orientation.	Fragmented in both carriers and technology. This presents a relatively difficult environment to deliver mass market solutions such as messaging.

**SMS/MMS in the non GSM world (example USA)**

If you are based in the USA, SMS (text messaging) may be not as familiar to you as it is in Europe. Similarly, if you are in Europe / Asia – you might wonder how SMS (and by extension MMS) would be used in the USA?

To answer this question – we first look at other related concepts:

- Cellular data transmission technologies
- The difference between markets using the UK and the USA as illustrative cases.
- Interoperability

### **SMS - explained in terms of IM (Instant Messaging)**

If you are new to SMS, the best way to understand SMS - is to compare it to IM (Instant Messaging) – in that sense, SMS is similar to instant messaging – with one key difference - IM is a presence technology – i.e. it is normally based on detecting if the recipient is on line and sending a message to online users – in contrast SMS messages are sent irrespective of the user being online or not. Of course, the transmission mechanisms, standards etc are different between the two.

SMS/MMS are store and forward i.e. the message is 'left' for the recipient for some period of time if they are unavailable. With IM it is realtime the messaging cannot be 'left' you work on an awareness of presence.

Before we explore further, some more thoughts -

- For the purposes of this discussion, we could treat SMS as a text message supporting 160 characters and MMS as text plus multimedia (colour images, sound etc). Thus, MMS = richer SMS.
- When we refer to the USA, we are referring to 'non GSM' (see below for GSM) in general. We use UK and USA as illustrative examples but similar principles apply to other markets.
- This discussion is not applicable to voice – phone calls have always been possible across networks. We are talking here of data services.

The power of SMS lies in its interoperability i.e. with very few limitations, you can in theory, send an SMS message to anyone.

### **Why is interoperability not easy in the USA?**

In a nutshell – the lack of common standards and many carriers (in summary a highly fragmented market). Although this applies to cellular mobile data technologies in general, we consider here the impact of differing standards on SMS and MMS only.

### **What standards are applicable here?**

Cellular data transmission standards. Technologies like SMS, WAP, Java etc are at the application level in their normal mode of usage. They are based on underlying cellular data transmission technologies. There are two main techniques for cellular data transmission – GSM and CDMA.

GSM and its successors are popular in Europe and Asia vs. CDMA, which is dominant in North America.

GSM - (Global System for Mobile) originated in Europe and is the dominant system of mobile communications in the world. In some form, it is present in most continents including North America. GSM is a digital system and has a relatively long history (the study group was founded in 1982). The GSM Association provides functional and interface specifications for functional entities in the system but not the actual implementation.

CDMA - (Code Division Multiple Access) comes from a Military/Defence background and is currently used by major cellular carriers in the United States, where it is largely patented by Qualcomm.

### Evolution of standards and applications supported

How have these standards evolved and what applications do they support?  
Besides the two terms above, it is also necessary to understand the generations of networks and the applications they enable. Apart from the 'analogue vs. digital difference', the crucial difference is bandwidth. Obviously, as you go towards 3G – the bandwidth increases and the applications supported also become richer.

Network Type	Description
1G networks	Early analogue cellular networks from the 1980s
2G networks	<p>For example, GSM (Global System for Mobile) – currently dominant in Europe – data speeds of approx 9.6kbps Mainly voice applications and also SMS.</p> <p>CDMAOne(Code division Multiple Access) – originally developed by Qualcomm in the USA but also used worldwide.</p> <p>TDMA(Time division multiple access) also used in the USA.</p>
2.5G networks	<p>For example, GPRS (General Packet Radio Service) in Europe. Theoretical maximum speeds of up to 115 kilobits per second (kbps) are possible with GPRS, which is about 10 times as fast as GSM (9.6Kbps). In reality, this is around 20-30Kbps. Data applications such as still images are possible over GPRS.</p> <p>For CDMA, the equivalent is CDMA2000 1X. CDMA2000 can be deployed in several phases. CDMA2000 1X supports speeds of 144Kbps, which is in the same ballpark as GPRS.</p>
3G	<p>Evolving networks with speeds of 384Kbps, in theory. Possible applications include video streaming.</p> <p>W-CDMA(Wideband Code Division Multiple Access) also known as UMTS(Universal Mobile Telecommunications System) is the dominant standard here.</p> <p>The second release of CDMA 1X, called 1XEV-DO is also a path adopted for 3G.</p>

### Implications for SMS and MMS

What does this mean for SMS and MMS ?

To recap,

- SMS and MMS are mobile cellular data technologies. So, they have to be based on one of the 2G/2.5G technologies above with SMS being based on 2G and above and MMS being based on 2.5G and above.
- MMS requires data bearer technologies that support higher transmission rates such as GPRS. It is not practical to run MMS applications on GSM(although some have claimed to do so). MMS is better suited to one of the 2.5G technologies above. MMS can also be delivered on top of 3G bearer technologies.

In case of SMS, the underlying data technologies are 2G(GSM, TDMA and CDMAOne). Europe and Asia have only one(GSM). USA has three (GSM,TDMA and CDMAOne).

For MMS, in the GSM world, the underlying data technology is GPRS(2.5G). For CDMA, it would have to be a variant of CDMA supporting higher data transmission rates, as is claimed by some companies.

Where GSM and non-GSM networks co-exist as in the case of USA, there are more than one 2.5G technologies to worry about. Hence, a homogenous standard(such as GSM in 2G leading to GPRS in 2.5G) is better from an applications perspective.

### **The UK market**

So, how does the UK market look?

There are at present<sup>1</sup> four main operators in the UK – mmO2 (BT Cellnet), Vodafone, Orange and T-Mobile.

- All four have existing GSM networks (2G)
- All four have launched GPRS (2.5G), additionally Orange have operated HSCSD for some time (prior to any GPRS service in the UK) providing data rates comparable to the GPRS rates seen to date.
- Two have launched MMS commercially (Orange and T-Mobile) and other two expected to launch by end 2002.
- SMS is interoperable i.e. you can send SMS messages from one network to another.
- Thus, a fairly homogenous market.

### **The USA market**

And, how does the USA market look?

For 2G technologies -

- Verizon, Sprint are using CDMA
- Nextel uses a custom made network called Iden, which was developed by Motorola.
- AT&T is a combination of tdma and GSM
- Cingular is also a combination of tdma and GSM.
- Voicestream/T-Mobile is GSM.

The choice of 2G technology is a dominant factor in choosing 2.5G and 3G technologies. AT&T and Cingular have launched GPRS services. CDMA operators are using CDMA variants like CDMA2000 1X.

*If you compare the USA vs. UK market, you see the problems of a fragmented market quite clearly.*

### **Implications for the user**

And, what does all this mean for the user?

Users do not care for technology – they are concerned with what they can do with it (or rather they can't do as in this case).

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<sup>1</sup> Hutchinson are to enter the UK market when they launch there 3G operation “3”

The fragmented USA market, both in terms of carrier and technology, make creation of mass-market services difficult. SMS interoperability is patchwork at best. It is also expected that similar issues will be faced as MMS is introduced into the US market.

The pricing of messaging services in the US is still an issue, many carriers still charge for both sent and received. Contrast this with Europe (sender only pays, normally around 11p in the UK).

So, coming back to the original question, how would MMS be supported in a non-GSM world – the answer is using some form of 2.5G technology (in practice, some variant of CDMA) but capable of supporting a higher bandwidth. The related issue is how it fits well in the mobile ecosystem – which will more complex than in pure GSM scenarios.

#### **Equivalent scenario in other countries**

If you are neither in Europe nor the USA, how does this apply to you?

The principles are the same. Consider China, the leading mobile operator, China Mobile – uses GSM and GPRS. Whereas, China Unicom has a GSM service but has also launched a CDMAOne service. Countries like India, Hong Kong, Singapore have all launched GSM/GPRS services. If there is only one type of technology, the path is relatively smooth.

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