Glossary of M-Commerce Terms

1G: Refers to first generation mobile phones and networks. Available since the 1970s, these mobile phones were bulky devices that used analog radio transmission.

2G: Refers to second generation mobile telecommunications. 2G standards, such as GSM, are digital compared to the older analog 1G standards.

3G: Refers to third generation digital mobile telecommunications, capable of data speeds high enough to support video transmission.

3GPP: third Generation Partnership Project. Established in 1998, 3GPP is a collaboration agreement among major standards-setting bodies active in mobile communications: ETSI (Europe), ARIB/TTC (Japan), CCSA (China), ATIS (North America) and TTA (South Korea). The goal was to develop 3G specifications within the scope of the International Telecommunications Union’s (ITU’s) IMT-2000 project.

4G: Refers to fourth generation digital and multimedia mobile telecommunications. With transmission speeds of up to 20 megabits per second (20 Mbps), 4G communications are expected to support high-definition TV on mobile devices. 4G devices will also have seamless interoperability with other media and devices.
The Japanese and South Koreans have announced the introduction of 4G networks and devices several years ahead of the international target date of 2010 for 4G rollout.

**Adds:** Additions. The number of subscribers a mobile carrier adds within a specified period (monthly, quarterly and/or annually). Typical measurement is in Net Adds (number of adds minus number of churns) or gross adds (total additions for the period).

**Aggregation:** The process of collecting charges for a variety of transactions and combining them into a single bill. Charges are usually aggregated when the processing cost of the individual transactions is more expensive than the profit that could be gained from those transactions (see micropayments).

**AMPS:** Advanced Mobile Phone Service: more commonly known as cellular. It operates within the 800 MHz frequency band. AMPS service is available in North America, Australia and several other countries.

**ARPU:** Average Revenue Per User. ARPU is used to measure average monthly operating revenues of a mobile telecom service on a per user basis. ARPU is calculated by dividing operating revenues from wireless services by the number of active subscribers to the relevant services. Since the late 1990s, as basic voice mobile telecommunications became cheaper, ARPU has been falling for most mobile operators worldwide.

**ASP:** Average Selling Price. Also, in the Internet context, ASP can mean Application Service Provider, referring to a company or server that provides software applications using the network to a user or client.

**Bandwidth:** A measure of the capacity of the communications channel and how much frequency is available to a system. The wider the bandwidth, the greater the data rate for any given protocol.

**Bluetooth:** A short-range radio technology aimed at simplifying communications among devices and between devices and the Internet. It also aims to simplify data synchronization between Internet devices and other computers. Products with Bluetooth technology must be qualified and pass interoperability testing by the Bluetooth Special Interest Group prior to release. Bluetooth
founding members include Ericsson, IBM, Intel, Nokia and Toshiba. Mobile phones and devices that are Bluetooth enabled can not only communicate with the cellular networks but can also be recognized by and communicate with Bluetooth enabled devices, usually within a 10-meter (30-foot) range.

**BREW:** Binary Runtime Environment for Wireless. A proprietary technology developed and launched by Qualcomm in 2001, BREW is software that can download and run small programs for playing games, sending messages, sharing photos, etc. The main advantage of the BREW platform is that the application developers can easily port their applications across all the Qualcomm ASICs (Application-specific Integrated Circuits, i.e., semiconductor chips that are devoted to specific applications). Applications developed for BREW have to be tested and approved by Qualcomm; once approved, these can be made available on mobile networks.

**CDMA:** Code Division Multiple Access. This is a method of multiple access that does not divide up the channel by time (as in **TDMA**), or frequency (as in **FDMA**), but instead encodes data with a certain code associated with a channel and uses the constructive interference properties of the signal medium to perform the multiplexing. Qualcomm has pioneered digital cellular telephony systems making use of this multiple access scheme. In many major mobile telecom markets, CDMA-based mobile networks have emerged as the main competitor to GSM-based networks.

**Cellular Network:** A radio network made up of a number of radio cells (or just cells), each served by a fixed transmitter, normally known as a base station. To cover a wide geographical area, such an area is divided into contiguous and overlapping cells, each with its own radio transmitter (base station, also called “tower”), that — taken together — provide radio coverage over the entire area. Each cell site has coverage of 3 to 15 miles. As the user moves across the geographical area, the radio transmission is “handed over” seamlessly from one cell (base station/transmitter) to another cell. Sometimes the signal is “dropped” during such handovers and the transmission and reception are truncated. Cellular networks are the most common, though not the only, means of providing mobile phone services.

**cHTML:** Compact Hypertext Markup Language. A special, abridged version of **HTML** suitable for developing simplified Web pages viewable on the screens of mobile devices. By using cHTML, **NTT DoCoMo**, the Japanese mobile service provider, was able to launch its 2.5G **i-Mode** data service even before the availability of 3G networks in Japan.
**Churn:** The amount of customer turnover. Customers are said to have “churned” when they cancel their mobile service with a mobile wireless service, and may or may not switch to another provider. Churn is usually measured on a monthly basis. To calculate the total churn for any given period (typically quarterly or yearly), the monthly churn percentage is multiplied by the number of months in the period being measured. For example, a carrier with a 2 percent churn per month would have a quarterly churn rate of 6 percent, and an annual churn rate of 24 percent.

**D-AMPS:** Renamed as **TDMA**.

**Dual Band/Dual Mode:** Refers to phones that have the ability of using two different frequencies of the same technologies. For example, a **TDMA** or **CDMA** phone that can use either the 1900 or 800 MHz band. **TDMA** phones in **GSM** markets support 1900, 1800 or 900 MHz. Dual band phones also enable callers to access different frequencies in the same or different geographic regions, which gives their phones wider coverage.

**EDGE:** Enhanced Data for Global Evolution. EDGE is an extended and enhanced version of GPRS. It is backwards compatible with GPRS, which is widely supported by a variety of mobile data devices. EDGE data speeds are two to three times faster than those of GPRS.

**Edy:** Electronic money system used in **NTT DoCoMo’s FOMA** and **FeLiCa** systems. Monies can be added to the handset at designated kiosks. Purchases can be made at infrared-based **POS** where the cost of the goods or service is deducted from the Edy amount.

**EMS:** Enhanced Messaging Service. EMS is an enhanced version of Short Messaging Service (SMS) and usually seen as an evolutionary step toward Multimedia Messaging Service (MMS). An EMS message is comprised of several text messages that are clustered together. EMS provides capabilities for rich messaging features such as sending/receiving ring tones and other melodies/sounds, pictures and animations, and modified (formatted) text. Furthermore, all such items can be sent or received as one integrated message for display on an EMS-compliant mobile device. EMS is designed to work with any network that already offers SMS, using the same store-and-forward infrastructure. One of the operational issues of EMS is how to bill. Many operators may prefer to charge for the combined message rather than charge for each individual message.
message comprising the EMS. It is possible that MMS would gain popularity so rapidly that EMS, the intermediate step between SMS and MMS, would fail to make much headway.

**EV-DO**: Evolution-Data Optimized (EV-DO) is a high-speed wireless data connection on a CDMA network. The technology allows users to access high-speed Internet through portable devices such as mobile phones, laptop computers and handheld PDAs.

**EZ Wallet**: Name for the Japanese system of electronic money (*Edy*) stored on NTT DoCoMo’s FeLiCa handsets.

**FCC**: Federal Communications Commission, the governing body for radio spectrum in the USA.

**FDMA**: Frequency Division Multiple Access. Division of the frequency band allocated for mobile cellular telephone communications into 30 channels. Each of these channels can carry voice conversation. With a digital service network, each channel can also carry digital data. FDMA is a basic technology used in the analog AMPS the most widely installed mobile phone system in the United States in the early years of mobile telephony. With FDMA, each channel can be assigned to only one user at a time. The D-AMPS also uses FDMA but adds TDMA to get three channels for each FDMA channel. With D-AMPS, the number of calls that can be handled on a channel are three times that of AMPS. FDMA technology can also be deployed in fixed-line telephone networks.

**FeLiCa**: A contactless IC (integrated circuit) card technology developed by Sony in conjunction with NTT DoCoMo. As the name stemming from the word “felicity” suggests, the system was born to make daily living easier and more convenient.

The card is difficult to forge/reconstruct, and allows the user to send/receive data at high speed and with high security. The system is also environment-friendly, since the card can be used over-and-over, virtually forever by rewriting the data. It also features ultimate user-ease, as there is no longer any need to retrieve and put away the card for every use.

**FOMA**: Freedom of Multimedia Mobile Access. A 3G telecommunications service developed and launched by NTT DoCoMo in the Japanese market; now being licensed to wireless carriers in other foreign markets.
**Frequency Band:** The portion of the radio spectrum set aside for a particular use. For example, most wireless **LANs** presently use the 2.4 to 2.48 GHz band, although 5 GHz products are under development. A frequency band is typically divided into two channels.

**GIF:** Graphics Interchange Format. Along with JPEG, GIF is a very popular format for graphics images on the World Wide Web. Unisys owns the compression algorithm for GIF, and commercial usage of GIF requires a license from Unisys. An Internet committee has developed a patent-free replacement for the GIF, the Portable Network Graphics (PNG) format, and major browsers support it or soon will. Many models of mobile handsets are able to receive still and animated GIF files.

**GPRS:** General Packet Radio Service. A non-voice value added service that allows information to be sent and received across a mobile telephone network. Data speeds of up to 171.2 kilobits per second (kbps) are achievable in a GPRS network. A GPRS-capable network is usually regarded as a 2.5G network — more advanced than a 2G voice-based network but not quite as advanced as a fully data-capable 3G network.

**GPS:** Global Positioning System. Developed by the United States Department of Defense, GPS is a satellite navigation system used for determining one’s precise location and providing a highly accurate time reference almost anywhere on Earth. It uses a constellation of at least 24 satellites. It can be used by anyone, free of charge. A GPS receiver decodes time signal transmissions from multiple satellites and calculates its position by trilateration. GPS-enabled phones are available from operators such as Nextel. Palm-held devices such as HP iPAQ hw6515 Mobile Messenger combine GPS navigation, Bluetooth short-range wireless, infrared and quad-band GSM/GPRS/EDGE for voice and data.

**GSM:** Global System for Mobile Communications. GSM was developed jointly by European telecom service providers to succeed the previous analog mobile telecom standards. It was launched in 1991. Deployed in over 200 countries, GSM is the most popular standard for mobile phones in the world. In GSM countries, international roaming is easy via “roaming agreements” among operators. GSM is a 2G digital network: Signaling as well as speech channels are digital, resulting in higher voice quality and also allowing low-cost text messaging.
**HDML:** Handheld Device Markup Language. A proprietary language developed by Openwave, HDML is used to format content for Web-enabled mobile phones. HDML preceded the open, global standards of **WAP** and **WML**.

**Hotspot:** A specific geographic location in which an access point provides public wireless broadband network services to mobile visitors through a **WLAN**. Hotspots are often located in places with heavy traffic, and where people either have to, or prefer to, wait. Locations include airports, train stations, libraries, marinas, conventions centers and hotels. Hotspots typically have a short range of access. Hotspots accessible by laptop computers and PDAs usually allow free usage of the wireless Internet connections. Hotspots that link to specific mobile phone services often charge for usage.

**HTML:** HyperText Markup Language. Similar to **SGML**, this authoring language is used to create documents on the World Wide Web. HTML defines the structure and layout of a Web document by using a variety of tags (format-specification commands) and attributes (characteristics or properties associated with a part of a document or data field). Mobile handsets and devices that are data-enabled are usually able to view special HTML Web pages developed for wireless transmission.

**HTTP:** HyperText Transfer Protocol. This is the underlying protocol used by the World Wide Web. HTTP defines how messages are formatted and transmitted, and what actions Web servers and browsers should take in response to various commands. When a Web site address is typed in a browser window, this actually sends an HTTP command to the Web server directing it to fetch and transmit the requested Web page. The secure, encrypted version of this protocol is identified by “https://.”

**ICT:** Information and Communication Technologies. In many international documents, such as those from the United Nations, the ICT abbreviation is used rather than the IT abbreviation popular in the U.S. and some other countries.

**IEEE:** Institute of Electronic and Electrical Engineers. The IEEE is a nonprofit, technical professional association that promotes electronic ideas and standards, including standards for wireless communications, both in the United States and worldwide.

**IEEE 802.11:** See Wi-Fi.
i-Mode: Internet Mode. The mobile Internet system developed by the Japanese firm NTT DoCoMo. Uses a cascading menus interface to access cHTML-based customized Web sites. The “i” sound is also a pun on the Japanese word “ai” or love.

IMS: IMS stands for the IP (or Internet) Multimedia Subsystem. IMS standards enable the creation of an operator-friendly environment for real-time, packet-based mobile calls and services. Such services not only preserve traditional carrier (i.e., mobile operator) controls over user signaling and usage-based billing, but also generate new revenue via deep-packet inspection of protocols and content. In other words, IMS-equipped mobile services can “peep inside” data packets, determine the nature and value of the packet content, and charge the user accordingly.

IP: Internet Protocol. The four numbers in an IP address are used in different ways to identify a particular network and a host computer or device on that network. With explosive growth in the Internet, there is a need for billions of additional IP addresses, and a gradual transfer to a six-number IP address system (termed IPv6) is under way.

ISP: Internet Service Provider. A company that provides access to the Internet. For a monthly fee, the service provider gives the users a software package for Internet access, a username, a password and access to the Internet via a phone line, a cable TV line or a wireless link.

JPEG: Joint Photographic Experts Group. JPEG (pronounced jay-peg) is a commonly used standard method of “lossy” compression for photographic images. The file format which employs this compression is commonly also called JPEG; the most common file extensions for this format being .jpeg, .jfif, .jpg, .JPG, or .JPE. Many multimedia 3G mobile devices are able to send and receive JPEG photo files.

KDDI/au: 3G mobile service offered in Japan by mobile company KDDI.

LAN: Local Area Network. A network that covers short distances, such as within a building.

LBS: Location-based services (LBS) are services that exploit knowledge about where an information/communication device user is located. For example, the
user of a wireless-connected smartphone could be shown ads specific to the region that the user is traveling in. Location-based services rely on technologies such as Global Positioning Systems (GPS), or the location-identification properties of wireless networks. Either network-based or handset-based location-fixing technologies can be employed. Adoption of LBS could raise concerns about individual privacy and wireless “spam” messages.

**Location-based Commerce:** Location mobile commerce refers to commercial transactions that are in some way dependent upon the physical location of the consumer or the physical location of a business.

**Micropayments:** Small payments (from US$.01 to $2) that are usually aggregated by an m-wallet or other payment processor.

**MIDI:** Musical Instrument Digital Interface. An industry-standard protocol that defines each note precisely and concisely, allowing electronic musical instruments and computers or digital phones to exchange data: “talk” to each other. The MIDI standard was first proposed by Dave Smith in 1981 and published in August 1983. MIDI is employed as a format for mobile ring tones as well as for music files sent via mobile telecom devices. By the mid-2000s, some tunes developed specifically for ring tones had become popular enough to hit the top positions in music charts.

**MMS:** Multimedia Messaging Service. A method for sending and receiving, using mobile communications devices, short “presentations,” such as animated postcards, pictures, screen savers, greeting cards, maps, cartoons and business cards. Messages can include text, images, and sound. MMS transmissions require higher data speeds than available in plain 2G GSM networks. GPRS or 3G/UMTS networks are needed for MMS.

**MP3:** Short for “MPEG-1 Audio Layer 3,” MP3 is a popular digital audio encoding and “lossy” compression format invented in 1987 by the Fraunhofer Institute for Integrated Circuits in Germany. It was designed to greatly reduce the amount of data required to represent audio, yet still sound like a faithful reproduction of the original uncompressed audio to most listeners. Some mobile phones are designed to play MP3 music.

**MPEG:** Moving Picture Experts Group (MPEG). A working group of ISO/IEC with over 350 members from companies and universities. MPEG (pronounced
em-PEG) develops video and audio encoding standards. MPEG has standardized many different formats for audio and video compression, transmission, recording and content categorization and labeling. In 2005, the latest MPEG-4 standard, with its Digital Rights Management (DRM) system, was of interest to 3G mobile operators for delivering video content over mobile handsets, but the license fees demanded by the MPEG licensing body were seen as too high.

**MSP:** Mobile Service Provider. Another term for Wireless Service Provider (see WSP) or mobile operator.

**M-Wallet:** Mobile wallets that are software applications holding a user’s sensitive financial and personal information, such as credit card numbers, bank account information, passwords and Personal Identification Numbers (PINs). Most m-wallets are server based. This is theoretically a more secure method than placing data onto mobile devices, where there is possible memory and processor constraints and also the likelihood of the data being stolen and misused.

**NTT DoCoMo:** Originally the mobile telephone subsidiary of Japanese telephone carrier NTT (Nippon Telephone & Telegraph). Now an independent company, NTT DoCoMo was the developer of i-Mode, FeLiCa and FOMA. “DoCoMo” is the Japanese word for “anywhere” and the acronym for the English “Do Communications Over the Mobile Network.”

**Number Portability:** Refers to the ability by consumers to retain their phone numbers when switching wireless carriers.

**Packet:** A unit of transmission over a network. The data to be sent are split into packets, which are then transmitted individually over the network.

**PCS:** Personal communication service (PCS) is a second-generation or 2G mobile communications technology. It is also referred to as digital cellular. This digital service works over CDMA, GSM and TDMA interfaces. It operates at the 1900 MHz frequency range and can be used internationally.

**PDA:** Personal Digital Assistant. A handheld device that combines computing, telephone/fax, Internet and networking features. A typical PDA can function as a mobile phone, fax sender, Web browser and personal organizer. Most PDAs began as pen-based devices, using a stylus (pen-like tool) rather than a keyboard.
for input. Many have handwriting recognition features, and some PDAs have voice recognition technologies. Later models have keyboards as well.

**POS:** Point of Sale. POS terminals could be anything from cash registers to retail-location devices capable of communicating with handsets via infrared signals, Bluetooth transmissions or other means.

**Ringback tone:** A customized audio clip that callers hear when they dial a mobile phone number, instead of the usual ringing sound. Offered by most mobile operators in some markets, such as India.

**Ringtone:** The sound that a mobile phone or device makes when receiving an incoming call.

**Roaming:** Roaming refers to the ability to move between cells of the same network. For the subscribers of mobile communications services, roaming is the ability to use a cellular phone outside the home service area of one’s provider. Typically, providers setup Roaming Agreements with other providers in different geographic locations. A roaming agreement enables a caller to seamlessly make calls in a wide geographic area. Originally incurring extra charges, US cell plans typically no longer charge additional fees for roaming.

**SGML:** Standard Generalized Markup Language. Developed by the International Standards Organization (ISO) in 1986, SGML was used widely to manage large documents that are subject to frequent revisions and need to be printed in different formats. The emergence and growth of the World Wide Web rekindled interest in SGML because HTML, the popular authoring language for Web pages, defines and interprets tags (format-specification commands) according to SGML rules. The rise of mobile communications and commerce is also increasing interest in SGML because XML and XHTML, languages for authoring content for wireless devices, also rely on the structure and methods of SGML.

**SIM Card:** Subscriber Identity Module card. This removable card is the chip inside a GSM mobile phone with information such as the user’s phone number, phone book as well as other information related to the subscriber. SIM cards are particularly useful in “prepaid” mobile phones — subscribers can simply “load money” into their SIM cards and use the phone until the money runs out.
**Singtone:** A ringtone in the form of a song clip, typically of 15-30 seconds duration. While most of the songs are licensed from popular music charts, some songs — such as some of the tunes developed by JAMBA — are specifically composed for mobile phones, and then perhaps hit the popular music charts.

**SIP:** Session Initiation Protocol. A signaling protocol used for establishing, managing and terminating interactive communication sessions between users in IP networks (Internet, Intranets and mobile data networks). Such sessions include voice phone calls, multimedia conference sessions, instant messaging chats, interactive games, click-to-dial Web page links and voice-enriched e-commerce. SIP is similar in structure to two other data communications protocols: HTTP and SMTP.

**SMAF:** SMAF stands for “Synthetic music Mobile Application Format,” and is a data format developed by Yamaha for multimedia content to be used on handheld portable devices, such as mobile phones and PDAs. The most common application of SMAF is the creation of ringtones for mobile phones; however, the full SMAF specification defines support for graphics also.

**SMIL:** Synchronized Multimedia Integration Language, pronounced “smile.” An XML-based protocol, SMIL permits the creation and transmission of PowerPoint-style presentations with mobile devices. With SMIL, the user can control the timing, order, animation, text directions and the display qualities of images. This makes the experience of viewing MMS messages a lot more TV-like, rather than viewing a series of images that the user has to scroll through.

**SMS:** Short Messaging Service. The method of sending text messages from and receiving text messages in a mobile communications device. With appropriate adaptations, landline phones, as well as computers, can send and receive SMS messages. In most countries, SMS rates are substantially lower than the rates for voice phone calls and for multimedia and data services.

**Speech Recognition:** A type of software that can understand human voice, be it for content or software commands.

**TDMA:** Time Division Multiple Access. TDMA enables the sharing of a medium, such as airwaves in radio networks. It allows several users to share the same frequency by dividing it into different time slices. Users transmit in rapid
succession, one after the other, each using their own time slice. This allows multiple users to share the same transmission medium (frequency) and consume only a part of the available bandwidth. TDMA is used in GSM, PDC and iDEN digital cellular standards, among others.

**UMTS:** Universal Mobile Telecommunications System. Also referred to as 3GSM, UMTS is a third-generation (3G) mobile telecommunications technology designed to achieve data speeds of up to 2 Megabits per second (2 Mbps). UMTS is being developed by the 3GPP international partnership. This 3G successor to GSM utilizes the W-CDMA air interface and GSM infrastructures. In the mid-2000s, data speeds were in the 384 Kbps range, although in some experiments in Japan, speeds of nearly 3 Mbps were reported.

**Videotone:** A video clip that plays when a mobile device is receiving an incoming call. These types of video-enabled ringtones were in the process of being launched by some global mobile operators in 2005.

**VoIP:** Voice over IP. Also called Internet Telephony or IP Telephony. These terms refer to devices, software and services that use the Internet as the transmission medium for telephone calls. For users who have free or fixed-price Internet access, Internet telephony software essentially provides free telephone calls anywhere in the world. Fixed and mobile telecom operators also use VoIP systems to route voice traffic over the Internet.

**WAP:** Wireless Application Protocol. An open international standard, developed mainly by European telecom firms, for applications such as Internet access from a mobile phone. WAP was designed to provide services equivalent to a Web browser with some mobile-specific additions, being specifically designed to address the limitations of very small portable devices. During the initial years of its launch, WAP had many limitations, was criticized by media and shunned by mobile telecom companies. Later versions of WAP overcame such limitations.

**WCDMA:** Wideband Code Division Multiple Access. Also abbreviated as W-CDMA. This is the main technology behind third-generation (3G) mobile networks that are UMTS (3GSM) networks. W-CDMA was developed by NTT DoCoMo as an air interface for their 3G network called FOMA. Later NTT DoCoMo submitted this specification to the International Telecommunications Union (ITU) as a candidate for the international 3G standard known as IMT-2000. ITU eventually accepted W-CDMA as part of the IMT-2000 family of 3G
standards. Later, W-CDMA was selected as the air interface for UMTS, the 3G standard that was launched as successor to the 2G GSM standard. In a technical sense, W-CDMA uses the CDMA multiplexing technique. Earlier, in 2G communications, Qualcomm employed the CDMA multiplexing technique in its proprietary CDMA2000 and cdmaOne standards. W-CDMA, however, is not a property of Qualcomm. It is a global standard of ITU for 3G telecommunications, and is not compatible with Qualcomm’s proprietary CDMA-based standards for 2G communications.

**Wi-Fi:** Short for wireless fidelity, Wi-Fi refers to a class of IEEE standards for 802.11 wireless local area networks (WLANs). These include 802.11b, 802.11a, 802.11g, etc. The term is promulgated by the Wi-Fi Alliance. Products tested and approved as “Wi-Fi Certified” by the Wi-Fi Alliance are interoperable, even if they are from different manufacturers. A user with a “Wi-Fi Certified” product can use any brand of access point with any other brand of client hardware that also is Wi-Fi certified. Mobile devices such as Wi-Fi enabled PDAs can access the Internet when near a Wi-Fi access point (also called hotpoint). Future mobile devices are expected to switch seamlessly between available mobile cellular networks and Wi-Fi or wireless local area networks.

**WiMAX:** A popular way of referring to the IEEE 802.16 standard, also sometimes referred to as the WirelessMAN or the Air Interface Standard. This is a fixed wireless standard that permits very high bandwidth communications in a metropolitan area network that can stretch up to 30 miles.

**WLAN:** Wireless Local Area Network. WLAN uses radio waves to provide a wireless last link with the users in the coverage area. Coverage areas may range from a single room to an entire campus. The backbone network usually employs cables, and one or more wireless access points (“hotpoints”) are provided to connect the wireless users — using laptop or mobile palm-top devices — to the wired network.

**WML:** Wireless Markup Language. An XML language used to specify content and user interface for WAP devices. Almost every mobile phone browser around the world supports WML. WML pages are requested and served in the same way as HDML pages.

**WSP:** Wireless Service Provider. Terms such as mobile operators or cellular service providers are synonymous with this term.
**XHTML:** Extensible HyperText Markup Language. XHTML is a hybrid of XML and HTML. The use of standardized “modules” enables XHTML pages to be read by many different platforms. A device designer, using these standard building blocks or modules, will specify which elements are supported. Content creators will then target these building blocks — or modules. Because of standardization of modules, XHTML layout and presentations stay true-to-form over any compatible platform. XHTML-enabled pages can be viewed easily over many multimedia-capable mobile handsets.

**XML:** Extensible Markup Language. XML allows software designers to create their own customized tags (format-specification commands), enabling the definition, transmission, validation and interpretation of data across applications and organizations. Because the tags are customizable, XML applications can be a lot more creative and context-sensitive than HTML applications. Many of the MMS applications, as well as an increasing numbers of m-commerce applications, are written in XML.