

The International Communications Market 2008

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Appendix A: Basic data used in the report

A.1 Financial years

Calendar year for all countries except Japan

A.2 Exchange rates

Source: IMF

Basis: Average during 2007

	Currency	Average 2007 rate (IMF)
UK	GB Pound	1.00
Euro area	Euro	1.462
USA	US Dollar	2.001
Canada	Canadian Dollar	2.149
Japan	Japanese Yen	235.615
Poland	Polish Zloty	5.538
Sweden	Swedish Crown	13.524
Brazil	Brazilian Real	3.896
Russia	Russian Ruble	51.185
India	Indian Rupee	82.735
China	Chinese Yuan	15.222

A.3 Population figures

Source: US Census bureau

Basis: Mid-year figures

A.4 Households

Source: IMF

Basis: Mid-year figures

Note: for households, Multiple Dwelling Units (MDUs) are not explicitly considered. One subscriber or one telco line equates to one person or household, or one SIM card to one person in case of mobiles.

Appendix B: Comparative international pricing

The full methodology is available online at:

www.ofcom.org.uk/research/cm/icmr08

Appendix C: International online survey methodology

This research was conducted in October 2008 by Synovate for Ofcom. The survey was conducted using CAWI (Computer Assisted Web Interviewing) across seven countries: the UK, France, Germany, Italy, US, Canada and Japan. Sample sizes were around 1000 adults in each country, designed to reflect national profiles of internet customers in terms of gender and age.

All respondents were internet users at home and therefore this data is not representative of each country's population, and does not provide data on market take-up. Rather, it provides an illustration of comparative levels of usage across markets amongst internet users. Given that the samples are all internet users at home, countries with low internet take-up will present inflated usage figures overall, as these adults are likely to be high-end users and early adopters.

The table below shows sample size and spread for each country.

	Base	Gender %		Age %		
Country	Respondents	Male	Female	18-24	25-44	45-64
UK	1001	51	49	14	47	39
France	1000	51	49	19	54	27
Germany	1002	56	44	19	52	29
US	1010	51	49	14	50	36
Italy	1003	51	49	19	54	27
Japan	1003	54	46	23	57	20
Canada	1000	51	49	14	50	36

Glossary

1G First Generation Cellular Mobile Wireless. The first generation of cellular wireless was based on analogue technology. The systems were designed only to carry voice services.

2G Second generation of mobile telephony systems. Uses digital transmission to support voice, low-speed data communications, and short messaging services.

2.5G In mobile telephony, 2.5G protocols extend 2G systems to provide additional features such as packet-switched connections (GPRS) and higher-speed data communications.

3G Third generation of mobile systems. Provides high-speed data transmission and supports multimedia applications such as full-motion video, video-conferencing and internet access, alongside conventional voice services.

3.5G Enhanced Third Generation Cellular Mobile Wireless. 3.5G refers to evolutionary upgrades to 3G services starting in 2005-2006 that provide significantly enhanced performance. High Speed Downlink Packet Access is expected to become the most popular 3.5G technology (see HSPA).

3GPP Third Generation Partnership Project. The 3GPP was formed in December 1998 as a collaboration agreement bringing together a number of telecommunication standards bodies, referred to as Organizational Partners. The original aim of the 3GPP was to produce globally applicable technical specifications for third-generation mobile systems based on evolved GSM core networks and the radio access technology UTRA (Universal Terrestrial Radio Access).

LTE LTE A fourth-Generation Cellular Mobile Wireless technology (4G) that will succeed current 3G W-CDMA, HSDPA and HSUPA networks. The technology enables 100 Mbps downlink and 50 Mbps uplink speeds and uses an "all-IP" architecture where everything (including voice) is handled as data.

4G Fourth-Generation Cellular Mobile Wireless. 4G technologies are still in the early research stage and no consistent industry definition exists yet. NTT DoCoMo in Japan is one of the leading companies in driving 4G. Technologies such as VSF (Variable Spreading Factor), OFCDM (Orthogonal Frequency and Code Division Multiplexing) and VSF CDMA (Code Division Multiple Access) are being proposed, along with a target data rate of over 100 Mbit/s for downlink and 20 Mbit/s uplink. It is likely to be well into the next decade before the technology is commercially deployed.

Access network Electronic Communications Network which connects end-users to a service provider; running from the end-user's premise to a Local Access Node and supporting the provision of access based services. It is sometimes referred to as the local loop or last mile.

ADSL Asymmetric Digital Subscriber Line. A digital technology that allows the use of a standard telephone line to provide high speed data communications. Allows higher speeds in one direction (towards the customer) than the other.

ADSL1 The first generation of ADSL, capable of data speeds of up to 8Mbit/s towards the customer and up to 640kbit/s from the customer.

ADSL2/ADSL2+ Improved versions of ADSL, offering high speeds, especially on shorter telephone lines. In the case of ADSL2+, up to 24Mbit/s can be delivered towards the customer.

AM Amplitude Modulation. Type of modulation produced by varying the strength of a radio signal. This type of modulation is used by broadcasters in three frequency bands: medium frequency (MF, also known as medium wave: MW); low frequency (LF, also known as long wave: LW), and high frequency (HF, also known as short wave: SW). The term AM is often used to refer to the medium frequency band.

ARPU Average Revenue Per User

AVMS Audiovisual Media Services. A range of provisions designed to achieve coordination of the legal, regulatory and administrative frameworks of European Union member states with respect to television broadcasting, replaces the TV Without Frontiers Directive (TVWF)

ATT Analogue Terrestrial Television. The television broadcast standard that all television industries launched with. Most countries in this study are planning to phase out ATT in the next ten years.

AV Audiovisual

Bit-rate The rate at which digital information is carried within a specified communication channel.

Bitstream A wholesale service providing conveyance of data traffic from an end user's premise to a point of interconnection made available by the incumbent to a competitive provider.

Bluetooth Wireless standard for short-range radio communications between a variety of devices such as PCs, headsets, printers, mobile phones, and PDAs.

Broadband a service or connection which capable of supporting always-on services which provide the end-user with high data transfer speeds. Large-capacity service or connection allowing a considerable amount of information to be conveyed often used for transmitting bulk data or video or for rapid Internet access.

CAGR Compound Annual Growth Rate. The average annual growth rate over a specified period of time. It is used to indicate the investment yield at the end of a specified period of time. The mathematical formula used to calculate $CAGR = (\text{present value}/\text{base value})^{(1/\#\text{of years})} - 1$

CDMA Code Division Multiple Access. The basis for the primary 2G technology; and the later evolution of mobile technology in the US and related markets. A technology that allows a band of spectrum to be shared by multiple concurrent users. Rather than subdividing the spectrum (FDMA) or determining use on a round-robin basis (TDMA), unique codes are used to differentiate subscribers so they can simultaneously use the same spectrum.

CDMA 2000 EV-DO

CMMB (Chinese Multimedia Mobile Broadcasting) A Chinese broadcasting standard with many similarities to DVB-SH (see DVB-SH). It is intended for use in S-band spectrum at around 2.6 GHz and uses a transmission technology called STiMi.

Contention ratio An indication of the number of customers who share the capacity available in an ISP's broadband network. Figures of 50:1 for residential broadband connections and 20:1 for business are typical).

Co-regulation The sharing of regulation between a statutory body (e.g. Ofcom) and its licensees.

CPS Carrier Pre-selection. The facility offered to customers which allows them to opt for certain defined classes of call to be carried by an operator selected in advance (and having a contract with the customer) without having to dial a routing prefix, use a dialler box, or follow any other different procedure to invoke such routing.

DAB Digital Audio Broadcasting. A set of internationally accepted standards for the technology by which terrestrial Digital Radio multiplex services are broadcast in the UK.

DAB+ Building on the success of DAB, DAB+ provides the capacity to use the more efficient AAC audio codec.

Data packet In networking, the smallest unit of information transmitted as a discrete entity from one node on the network to another.

Digital dividend The spectrum that will be released by the switch to all-digital television.

Digital switchover (DSO) The process of switching over the current analogue television broadcasting system to digital, as well as ensuring that people have adapted or upgraded their televisions and recording equipment to receive digital TV.

DMB Digital Mobile Broadcasting. A variant of the DAB digital radio standard for mobile TV services, and an alternative to DVB-H (see DVB, below).

Dongle A physical device, attached to a PC's USB port, which adds hardware capabilities. A mobile broadband dongle enable access to the internet via a mobile network.

Double-play Supply of two communications services from a single supplier for a single subscription fee, usually broadband and fixed voice telephony.

Downlink speed Also downlink or download. Rate of data transmission from a network operator's access node to a customer, typically measured in Megabits per second (Mbit/s).

DRM (1) DRM is a development of Digital Radio Mondiale, a broadcasting standard designed for use in the lower frequency Long, Medium and Short Wave bands. Standard channels are considerably wider at VHF so there is more scope for high audio quality and multiple services.

DRM (2) Digital Rights Management. Provisions for managing rights of material within a digital environment. DRM processes include protecting material from unauthorized use and managing financial transactions associated with using the material. It includes some form of encryption or digital watermarking for protection.

DSL Digital Subscriber Line. A family of technologies generally referred to as DSL, or xDSL, capable of transforming ordinary phone lines (also known as 'twisted copper pairs') into high-

speed digital lines, capable of supporting advanced services such as fast Internet access and video-on-demand. ADSL, HDSL (High data rate Digital Subscriber Line) and VDSL (Very high data rate Digital Subscriber Line) are all variants of xDSL).

DTR See DVR

DTT Digital Terrestrial Television, currently most commonly delivered through the Freeview service.

DVB Digital Video Broadcasting. A set of internationally accepted open standards for digital broadcasting, including standards for distribution by satellite, cable, radio and handheld devices (the latter known as DVB-H).

DVB-SH (Digital Video Broadcasting - Satellite Handheld) DVB-SH is a version of DVB-H optimised for satellite transmission in S-band (around 2.2GHz) which is close to 3G spectrum and thus convenient for mobile phone integration. Services are generally expected to also have to make use of an extensive network of terrestrial relay transmitters.

DVD Digital Versatile Disc. A high capacity CD-size disc for carrying audio-visual content. Initially available read-only, but recordable formats are now available.

DVR Digital Video Recorder (also known as Personal Video Recorder and Digital Television Recorder). A digital TV set-top box including a hard disc drive which allows the user to record, pause and rewind live TV.

EDGE Enhanced Data Rates for Global Evolution. EDGE is a 2.5G technology being promoted by the TDMA and GSM communities that is capable of both voice and 3G data rates. It extends the GPRS 10-50 Kbps service to 100 Kbps or more. Cingular promised a full deployment by around mid-2004, and AT&T is expected to install EDGE technology in 6500 U.S. cities in 2004. Regarding EDGE Release specifications, see 3GPP.

Ex ante regulation Regulation to address behaviour before it happens.

Fibre-to-the-cabinet (FTTC) Access network consisting of optical fibre extending from the access node to the street cabinet. The street cabinet is usually located only a few hundred metres from the subscriber premises. The remaining segment of the access network from the cabinet to the customer is usually a copper pair but could use another technology, such as wireless.

Fibre-to-the-home (FTTH) A form of fibre optic communication delivery in which the optical signal reaches the end user's living or office space.

Fibre-to-the-building (FTTB) A form of fibre-optic communication delivery in which an optical fibre is run directly onto the customers' premises.

FM Frequency Modulation. Type of modulation produced by varying the frequency of a radio carrier in response to the signal to be transmitted. This is the type of modulation used by broadcasters in part of the VHF (Very High Frequency) band, known as VHF Band 2.

GDP Gross Domestic Product.

GPS The GPS (Global Positioning System) is a 'constellation' of 24 well-spaced satellites that orbit the Earth and make it possible for people with ground receivers to pinpoint their geographic location.

GSM Global Standard for Mobile Telephony, the standard used for 2G mobile systems.

HD Radio Hybrid Digital Radio. A radio standard developed in the US for terrestrial broadcasters, offering high-quality audio.

HDTV High-Definition Television. A technology that provides viewers with better quality, high-resolution pictures.

Headline connection speed The theoretical maximum data speed that can be achieved by a given broadband. A number of factors, such as the quality and length of the physical line from the exchange to the customer, mean that a given customer may not experience this headline speed in practice.

HSDPA High-Speed Downlink Packet Access: an add-on access component used to enhance the data speed to the end user on 3G/UMTS networks. Sometimes known as 3.5G.

HSPA Jointly, downlink and uplink mobile broadband technologies are referred to as HSPA (High Speed Packet Access) services.

HSUPA High Speed Uplink Packet Access – an upgrade to 3G mobile technology that allows data to be sent from customer's devices more quickly.

Interconnection The linking of one Public Electronic Communications Network to another for the purpose of enabling the persons using one of them to be able (a) to communicate with users of the other one; (b) to make use of services provided by means of the other one (whether by the provider of that network or by another person).

International roaming A service offered by mobile operators that allows customers to use their phone abroad. The home operator has agreements with foreign operators that allows customers to make and receive calls, send and pick up text messages, and use some of the other mobile services (such as access to voicemail or topping-up credit on pre-pay phones). The exact services available and the charges for their use vary between operators.

Internet A global network of networks, using a common set of standards (e.g. the Internet Protocol), accessed by users with a computer via a service provider.

IP (Internet Protocol) The packet data protocol used for routing and carriage of messages across the Internet and similar networks.

IPTV Internet Protocol Television. Television and/or video signals that are delivered to subscribers or viewers using Internet Protocol (IP), the technology that is also used to access the Internet. We use the term to mean delivery over a 'closed intranet', typically operated by ISPs and local-loop unbundlers, rather than over the public internet. IPTV services are hosted on servers placed in the exchange, which means they can be delivered with assured QoS since the ISP has more control over the network.

ISDB Integrated Services Digital Broadcasting. A separate broadcasting standard developed in Japan during the early 1980s, which led to the development of the ISDB standard. Japan started terrestrial digital broadcasting using the ISDB-T standard through NHK and commercial broadcasting stations on 1 December 2003.

ISDN Integrated Services Digital Networks. A standard developed to cover a range of voice, data, and image services intended to provide end-to-end, simultaneous handling of voice and data on a single link and network.

ISP Internet Service Provider. A company that provides access to the internet.

ITU International Telecommunication Union.

LLU (Local Loop Unbundling) LLU is the process whereby incumbent operators (in the UK this means BT and Kingston Communications) make their local network (the lines that run from customer's premises to the telephone exchange) available to other communications providers. The process requires the competitor to deploy its own equipment in the incumbent's local exchange and to establish a backhaul connection between this equipment and its core network.

Local Loop The access network connection between the customer's premises and the local PSTN exchange, usually a loop comprised of two copper wires.

MediaFLO Mobile data broadcasting technology developed by Qualcomm

MMS Multimedia Messaging Service. The next generation of mobile messaging services, adding photos, pictures and audio to text messages.

Mobile termination rate The 'per minute' fees that mobile phone companies charge other carriers to deliver incoming calls to users on their networks.

Multichannel In the UK, this refers to the provision or receipt of television services other than the main five channels (BBC ONE & TWO, ITV1, Channel 4/S4C, Five) plus local analogue services. 'Multichannel homes' comprise all those with digital terrestrial TV, satellite TV, digital cable or analogue cable, or TV over broadband. Also used as a noun to refer to a channel only available on digital platforms (or analogue cable).

Multiplex A device that sends multiple signals or streams of information on a carrier at the same time in the form of a single, complex signal. The separate signals are then recovered at the receiving end.

MVNO An organisation which provides mobile telephony services to its customers, but does not have allocation of spectrum or its own wireless network.

Narrowband A service or connection providing data speeds up to 128kbit/s, such as via an analogue telephone line, or via ISDN.

Next-generation core networks (NGN) Internet Protocol based core networks which can support a variety of existing and new services, typically replacing multiple, single service legacy networks

Next-generation access networks (NGA) Broadband access networks that connect the end-user to the core network capable of a bandwidth quantity and quality significantly in excess of current levels (a benchmark of 20Mbit/s or more is often used).

OECD Organisation for Economic Cooperation and Development.

PAYG Pay-as-you-go.

Pay-per-view A service offering single viewings of a specific film, programme or event, provided to consumers for a one-off fee.

PDA Personal Digital Assistant.

Peaktime In the UK, the period during which: a radio station broadcasts its breakfast show and, on weekdays only, also its afternoon drive-time show; a television station broadcasts its early- and mid-evening schedule. Typically used by Ofcom to refer to the period between 18:00 and 22:30 each day (including weekends).

Peer-to-peer distribution The process of directly transferring information, services or products between users or devices that operate on the same hierarchical level.

Podcasting Away for digital audio files to be published on the internet, which can then be downloaded onto computers and transferred to portable digital audio players.

PP Percentage point.

PSB Public Service Broadcasting, or Public Service Broadcaster. The Communications Act in the UK defines the PSBs to include the BBC, ITV1, Channel 4, Five and S4C.

PSTN Public Switched Telephony Network.

PVR See DVR.

Quad-play Supply of TV, broadband, landline and mobile from a single supplier for a single subscription fee.

Radio Authority The statutory body responsible for the licensing and regulation of non-BBC radio services between 1990 and 2003. It was one of the bodies replaced by Ofcom.

RAJAR Radio Joint Audience Research The pan-industry body which measures radio listening.

Regulatory holiday A commitment by a regulator not to impose regulatory measures on a given product or service for a specified period of time.

ROI Republic of Ireland or Return on Investment

Service bundling (or multi-play) A marketing term describing the packaging together of different communications services by organisations that traditionally only offered one or two of those services.

Service provider A provider of electronic communications services to third parties whether over its own network or otherwise.

Share (Radio) Proportion of total listener hours, expressed as a percentage, attributable to one station within that a defined area.

Share (TV) Proportion of total TV viewing to a particular channel over a specified time, expressed as a percentage of total hours of viewing.

SIM card (Subscriber Identity Module) A removable smart card used in mobile phones to authenticate the mobile subscriber and store data. Each card has a unique number known as International Mobile Subscriber Identity (IMSI).

Simulcasting The broadcasting of a television or radio programme service on more than one transmission technology (e.g. FM and MW, DAB and FM, analogue and digital terrestrial television, digital terrestrial and satellite).

Streaming content Audio or video files sent in compressed form over the internet and consumed by the user as they arrive. Streaming is different to downloading, where content is saved on the user's hard disk before the user accesses it.

Sub-loop unbundling A variant of LLU where a competitive operator takes control of only a portion of a customer's local loop, allowing them to install their equipment closer to the customer and potentially offer higher-speed services. In Sub-loop unbundling, the point of handover is commonly the Primary Connection Point (PCP) or street cabinet.

TD-CDMA Time Division Code Division Multiple Access. One of the family of 3G mobile technology standards.

Telecommunications, or 'Telecoms' Conveyance over distance of speech, music and other sounds, visual images or signals by electric, magnetic or electro-magnetic means.

Triple-play Supply of TV, broadband and landline from a single supplier for a single subscription fee.

TVWF Television Without Frontiers. A range of provisions designed to achieve coordination of the legal, regulatory and administrative frameworks of European Union member states with respect to television broadcasting, adopted by the European Council in 1989 and amended in 1997.

UGC User-generated content.

VDSL Very high bit rate DSL. This is currently the fastest version of DSL and can transmit very high data rates on short reaches of the local loop.

VoD Video on Demand A service or technology that enables TV viewers to watch programmes or films whenever they choose to, not restricted by a linear schedule. Also Near Video on Demand (NVoD), a service based on a linear schedule that is regularly repeated on multiple channels, usually at 15-minute intervals, so that viewers are never more than 15 minutes away from the start of the next transmission.

VoIP Voice over Internet Protocol. A technology that allows users to send calls using Internet Protocol, using either the public Internet or private IP networks.

WCDMA Wideband Code Division Multiple Access. One of the family of 3G mobile technology standards.

Web 2.0 A perceived second generation of web-based communities and hosted services - such as social-networking sites and wikis, which facilitate collaboration and sharing between users.

WiFi hotspot A public location which provides access to the internet using WiFi technology.

WiMAX A wireless MAN (metropolitan area network) technology, based on the 802.16 standard. Available for both fixed and mobile data applications.

Wireless LAN or WiFi (Wireless Fidelity) Short range wireless technologies using any type of 802.11 standard such as 802.11b or 802.11a. These technologies allow an over-the-air connection between a wireless client and a base station, or between two wireless clients.

WLR Wholesale Line Rental A regulatory instrument requiring the operator of local access lines to make this service available to competing providers at a wholesale price.

YOY Year-on-year.

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