



GSA REPORT TO 3GPP PCG #22

Kyoto

April 27, 2009

Scope of report



- ❖ **Market snapshot**
 - ❖ *subscriptions*
 - ❖ *mobile broadband networks*
 - ❖ *devices*

- ❖ **LTE – status, outlook**

- ❖ **Mobile broadband opportunities in spectrum < 1 GHz**



***GSA promotes 3GPP Systems and Standards Worldwide
GSA is a Market Representation Partner of 3GPP***

The continuing global GSM success story:

- status at end 2008



The GSM technology family embraces GPRS, EDGE, WCDMA-HSPA – all open 3GPP standards

GSM Global subs: 3.54 billion

APAC: > 1.494 billion
including > 120 million WCDMA

Western Europe: > 565 million
including > 115 million WCDMA

Western Hemisphere: > 527 million
including > 23 million WCDMA

Latin America: 403 million
including > 3.2 million WCDMA

Africa: 365 million
including > 6.8 million WCDMA

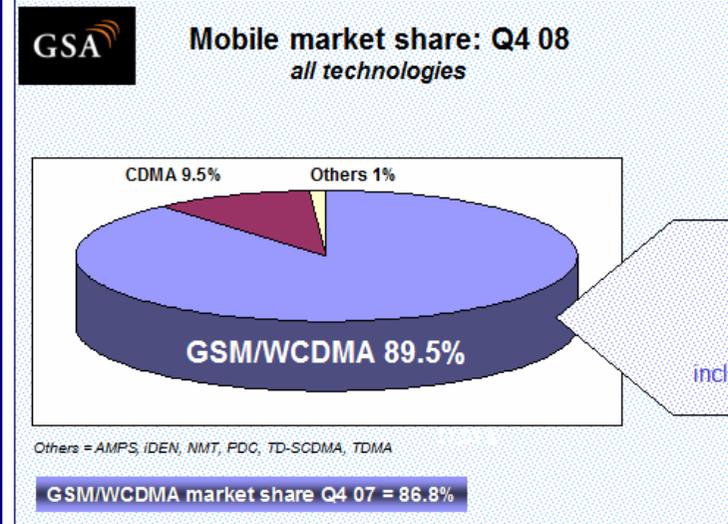
*(subscriptions data source:
Informa Telecoms and Media)*

www.gsacom.com

Mobile subs market share worldwide



www.gsacom.com



Total all mobile technologies (Q4 08) = over 3.95 billion

Data source **informa**
telecoms & media

BRIC countries combined total exceeds 1.168 BILLION GSM subscriptions

Brazil 133.6 million
Russia 189.2 million
India + China 845.8 million

Mobile Broadband Update



GSA calculates that there are over 1.83 billion GSM, WCDMA and HSPA subs in commercial HSPA-enabled networks globally

Commercial WCDMA networks	275	WCDMA networks evolved to HSPA	94.1%
Countries WCDMA launched in	116	HSPA subscriptions Q3 08	82.8 m
WCDMA subs (incl. HSPA) Q4 08	287 m	HSDPA networks 3.6 Mbps or higher	> 71%
WCDMA 3G network market share	72%	HSDPA networks 7.2 Mbps or higher	> 37%
Commercial EDGE networks	413	HSDPA devices launched	1,409
Countries EDGE launched in	177	Commercial HSUPA networks	71
GPRS networks evolved to EDGE	> 80%	HSUPA devices launched	242
Live HSPA networks with EDGE	> 62%	HSPA devices with EDGE support	> 83%
Commercial HSPA networks	259	Commercial HSPA+ networks	4
Countries HSPA launched in	111	HSPA+ network commitments	> 20
		LTE network commitments	31

Source: GSA surveys and reports

WCDMA (including HSPA) has 71.8% market share of global 3G subscriptions



100m+ WCDMA subs growth (incl. HSPA) in 2008

286.9 million WCDMA subs (Q4 08)

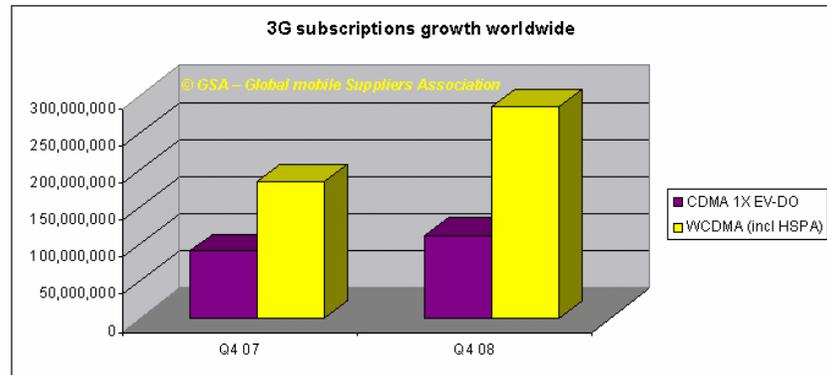
102.3 million growth in 2008 = over 55.4% annual growth

- ❖ APAC gained almost 40 million (49.2%)
- ❖ Western Europe gained > 35.5 m (44.5%)
- ❖ North America gained > 11 m (121%)
- ❖ Eastern Europe gained > 6.7 m (126%)
- ❖ Africa gained > 3.3 m (97.5%)
- ❖ L. America and Caribbean gained > 3.1 m
- ❖ Middle East gained 2.6 m (43.4%)

Over 82.8 million HSPA subscriptions (Q3 08 – this is the latest date we have confirmed/validated information for)

3G subscriptions growth worldwide: Q4 08

WCDMA (incl. HSPA) has over **71.8%** market share of 399.3 million 3G subscriptions globally



Source of data:
WCDMA-HSPA subscriptions: Informa Telecoms and Media
CDMA 1x EV-DO subscriptions: CDG

WCDMA share gained 4.7% in 2008
(WCDMA market share Q4 07 = 67.1%)

HSPA subscriptions growth worldwide



HSPA subscriptions worldwide

82.8 million: Q3 08



www.gsacom.com



Data source

informa
telecoms & media

**HSPA subscriptions:
> 16.2 million average growth per Quarter in 2008**

Available to download at www.gsacom.com/news/statistics.php4

www.gsacom.com

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HSPA is a market success in all regions



HSPA Mobile Broadband In the Middle East

17 HSPA operators have commercially launched mobile broadband services in the Middle East

HSDPA is commercially available in Bahrain, Israel, Kuwait, Oman, Qatar, Saudi Arabia, Syria, and UAE

6 HSUPA commercial networks are launched: in Israel, Kuwait, Qatar, Saudi Arabia, and UAE

(Source: GSA HSPA Operator Commitments survey March 25, 2009)

www.gsacom.com

HSPA Mobile Broadband In Europe

120 HSDPA operators have commercially launched mobile broadband services across Europe, including in ALL 27 Member States of the European Union

HSDPA is commercially available in Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Guernsey, Hungary, Iceland, Ireland, Isle of Man, Italy, Jersey, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madeira, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Tajikistan, UK, Ukraine, and Uzbekistan

46 HSUPA commercial networks

(Source: GSA HSPA Operator Commitments survey March 25, 2009)

www.gsacom.com

HSPA Mobile Broadband In the Western Hemisphere

48 HSPA operators have commercially launched HSPA mobile broadband services in 24 countries/territories:

Argentina, Aruba, Bolivia, Brazil, Canada, Chile, Colombia, Curaçao, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Martinique, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Uruguay, USA, and Venezuela

4 HSUPA networks are launched: 2 in Brazil, and 2 in USA

(Source: GSA HSPA Operator Commitments survey March 25, 2009)

GSA calculates there are over 441 million GSM, GPRS, EDGE, WCDMA and HSPA subscribers in commercial HSPA-enabled networks in the Western Hemisphere

www.gsacom.com

HSPA Mobile Broadband In Africa

25 HSPA operators have commercially launched mobile broadband services in 14 countries in Africa

HSDPA is commercially available in Angola, Botswana, Egypt, Ghana, Kenya, Lesotho, Morocco, Mozambique, Namibia, Nigeria, Reunion, South Africa, Tanzania and Uganda

HSDPA is at pilot trial/testing stage in Senegal

5 HSUPA commercial networks are launched: 2 in Egypt, and 3 in South Africa

(Source: GSA HSPA Operator Commitments survey March 25, 2009)

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HSPA Mobile Broadband In Asia Pacific

49 HSPA operators have commercially launched mobile broadband services in the Asia Pacific region

HSDPA is commercially available in Australia, Bhutan, Brunei, Cambodia, Fiji, Hong Kong SAR, India, Indonesia, Japan, Macau SAR, Malaysia, Maldives, Nepal, New Zealand, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, and Thailand

HSDPA is being introduced/deployed in China

10 HSUPA commercial networks are launched: 2 in Australia, 1 in Fiji, 1 in Hong Kong, 3 in Singapore, 2 in South Korea, and 1 in Sri Lanka

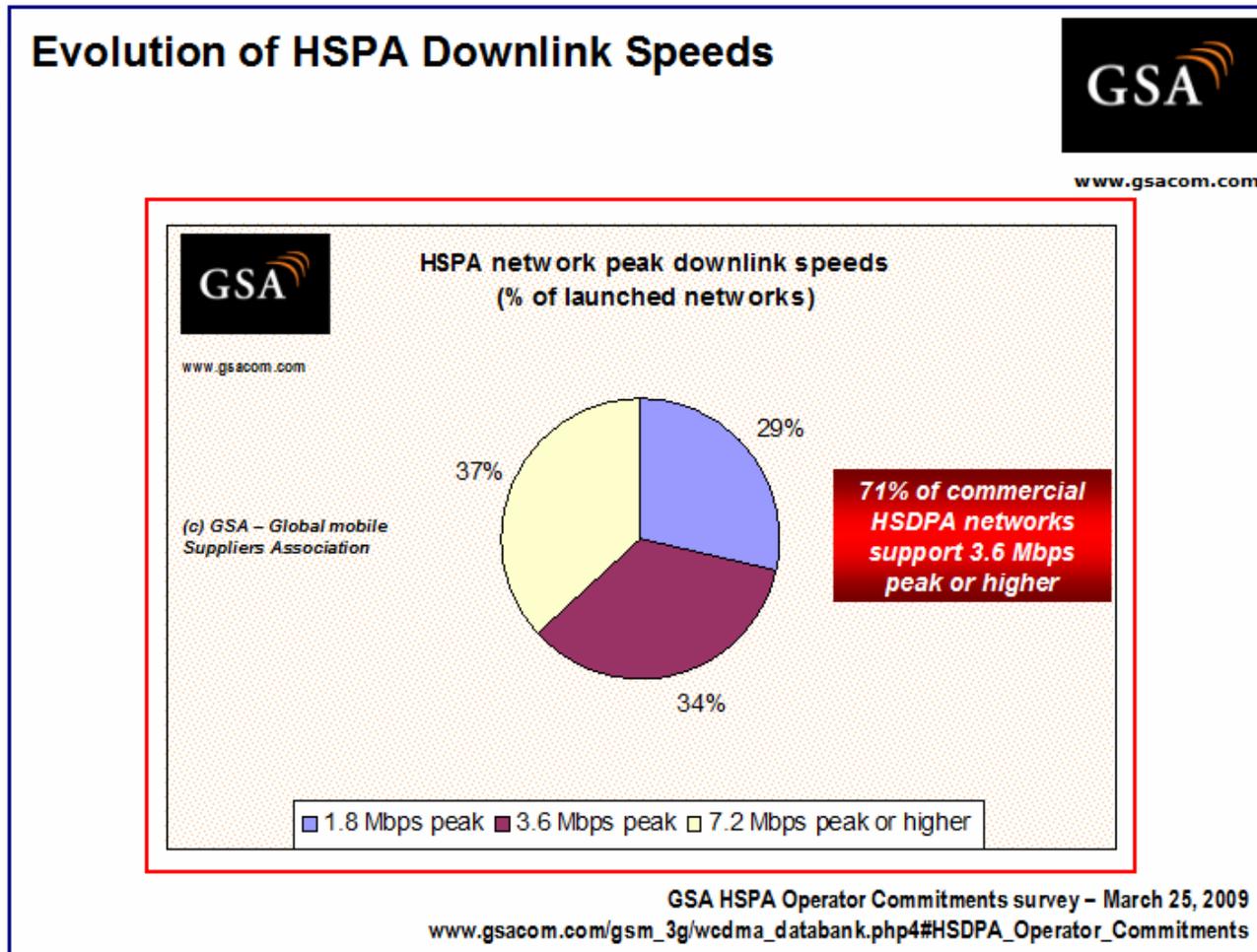
(Source: GSA HSPA Operator Commitments survey March 25, 2009)

www.gsacom.com

GLOBAL economies of scale today in HSPA-enabled mobile broadband
CHINA will join the HSPA mobile broadband community in 2009

All charts available as JPEG files at www.gsacom.com/news/statistics.php4

HSPA network speed evolution



Over 71% of HSDPA networks support 3.6 Mbps peak or higher

Over 37% of HSDPA networks support 7.2 Mbps peak or higher

Next step for several operators is HSPA+

4 HSPA+ systems launched, delivering 21 Mbps peak

**HSPA Operator Commitments Survey:
GSA – March 25, 2009**

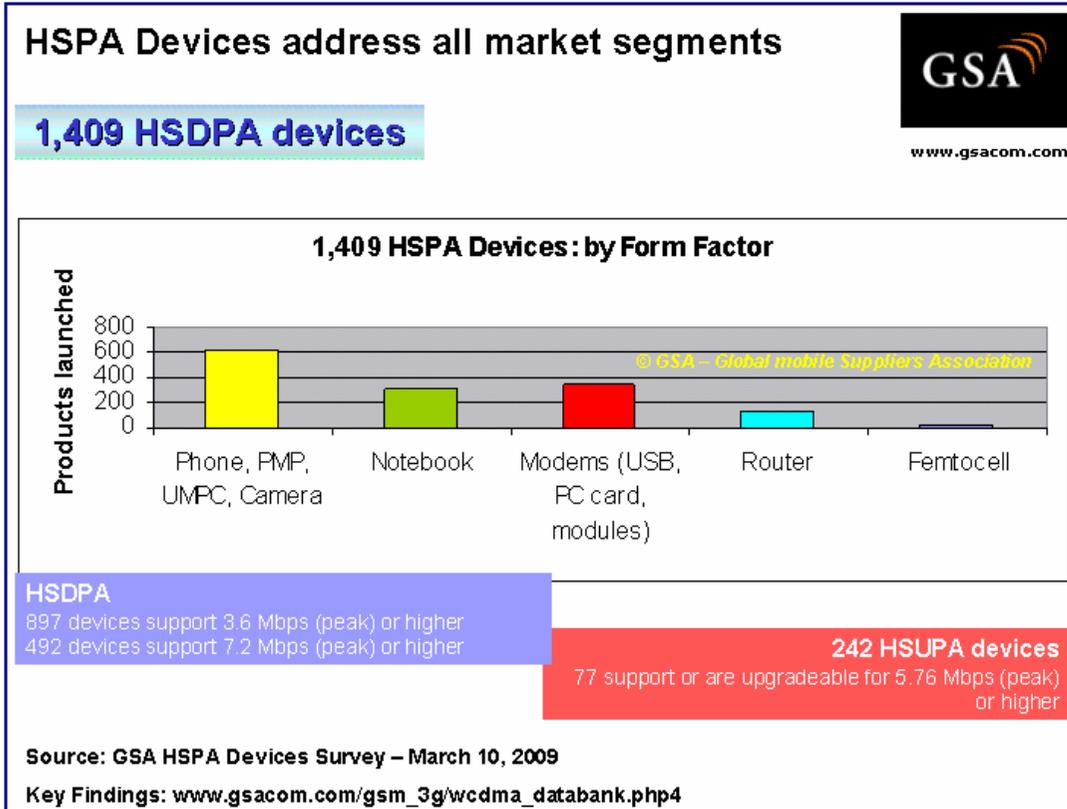
1,409 HSDPA devices

169 suppliers

PRESS RELEASE: New HSPA Devices Survey by GSA Confirms Continuing Product Expansion and Evolution
www.gsacom.com/news/gsa_266.php4



HSPA product launches are broadly equivalent to more than one new device announcement every day since the first HSPA mobile broadband system was launched on October 18, 2005



GSA HSPA Devices Survey: March 10, 2009
 Key Findings: www.gsacom.com/gsm_3g/wcdma_databank.php4

Mobile Broadband Update

February 2009

Celebrating the HSPA Mobile Broadband Devices Success Story

278 HSPA network commitments in 118 countries
 247 commercial HSPA operators in 110 countries/territories
 66 HSPA networks launched in 47 countries/territories

The first HSPA mobile broadband service was commercially launched in October 2005. HSPA has since become the baseline for mobile broadband in the world today.

Network speeds are evolving. A total of 171 commercial HSPA networks (over 69%) support a peak download data rate of at least 3.6 Mbps, and 84 networks (over 34%) support a peak download data rate of at least 7.2 Mbps. Some networks are already capable of 14.4 Mbps peak.

Uplink data rates are also increasing. Initially from around 2 Mbps peak, but now increasingly 5.8 Mbps peak is supported in the networks.

Evolved HSPA networks, which are often referred to as HSPA+, are expected to enter commercial service in early 2009, enabling up to 21 Mbps peak download data rate using 64 QAM modulation. Combining with 2x2 MIMO will mean 42 Mbps peak as a future step, and when devices come to market that support these speeds. Using 16 QAM for the uplink instead of QPSK will increase the peak uplink data rates to 11.5 Mbps peak. Further evolution of HSPA utilizing combinations of multi-carrier and MIMO will be possible. Standardization work is in progress targeting up to 84 Mbps peak download, and 23 Mbps peak uplink data rates.

This phenomenal success would not have been possible without suitable and competitive HSPA user devices being available in the market. The manufacturing industry committed to HSPA from an early stage, and this has ensured that a robust eco-system is in place, offering a wide range and varied choice of user devices from a huge number of suppliers. This commitment, and the breadth and scale of the device portfolio, has allowed HSPA network operators to address all market segments with their respective mobile broadband offers.

1,276 HSPA devices launched in the market
 Regular surveys of the availability of HSPA user devices are undertaken by GSA, and the HSPA Devices Survey in January 2009 confirmed that 1,276 HSPA devices had been launched in the market, in a little over 3 years. The introduction of new user devices for HSPA has been much, much faster than for any other mobile wireless technology.

The figure of 1,276 represents over 100% growth since April 2006, and the number of suppliers increased from 110 to 164 in the same period, i.e. 49% growth. This already-strong HSPA eco-system continues to expand rapidly and is attracting new players and products virtually every week.

HSPA devices in the market
 1,276 HSPA devices launched by 164 suppliers

www.gsacom.com Global Mobile Dialogue™

Celebrating the HSPA Mobile Broadband Devices Success Story
www.gsacom.com/gsm_3g/info_papers.php4

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HSUPA devices growth

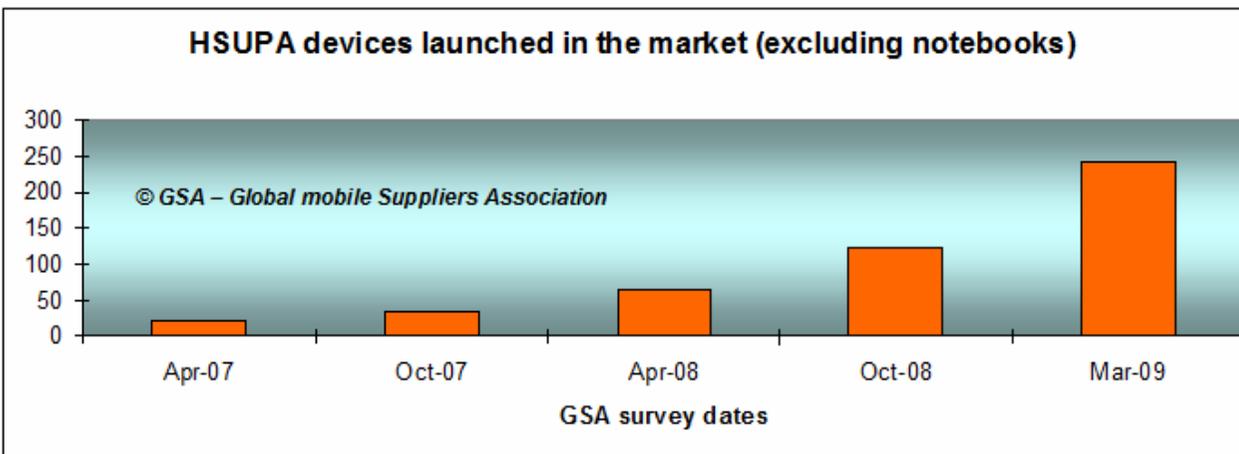


HSUPA Devices in the market

242 HSUPA devices launched
MORE THAN TRIPLED SINCE April 2008



www.gsacom.com



** 77 (over 31%) support or upgradeable to 5.76 Mbps (peak) or higher*

Source: GSA HSPA Devices Survey – March 10, 2009
Key Findings: www.gsacom.com/gsm_3g/wcdma_databank.php4
Detailed product list: www.gsacom.com/gsm_3g/surveys.php4
GAMBoD tool for further analysis: www.gsacom.com/gambod

The number of HSUPA-capable devices more than tripled to 242 devices (66 by April 2008)

77 HSUPA products (over 31%) support or are upgradeable for 5.76 Mbps (peak) or higher

Download chart www.gsacom.com/news/statistics.php4

GSA HSPA Devices Survey: March 10, 2009

Key Findings: www.gsacom.com/gsm_3g/wcdma_databank.php4

Clear trend of combining EDGE and WCDMA-HSPA for 3G services delivery



- ▶ **The majority of WCDMA-HSPA networks are complemented with GSM/EDGE for service continuity in areas where WCDMA-HSPA coverage is not available, to ensure that users will receive a good experience of most 3G services**
- ▶ **EDGE can today deliver user data speeds up to 300 kbps peak**
- ▶ **161 of 259 commercially launched HSDPA operators (over 62%) also launched EDGE**
- ▶ **Over 83% of HSDPA user devices also support GSM/EDGE**

EDGE networks expansion

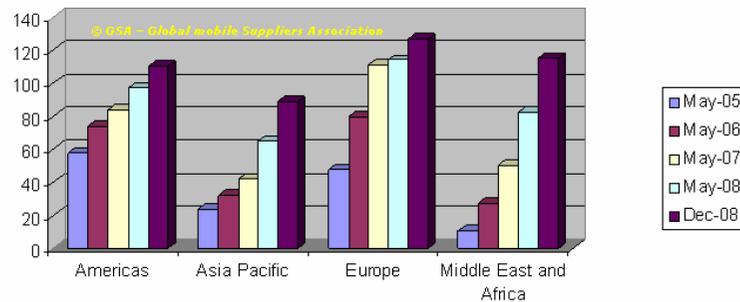


EDGE network commitments growth

441 EDGE Network commitments



EDGE network commitments by region



Source: EDGE Fact Sheet (GSA)

Latest issue: December 23, 2008

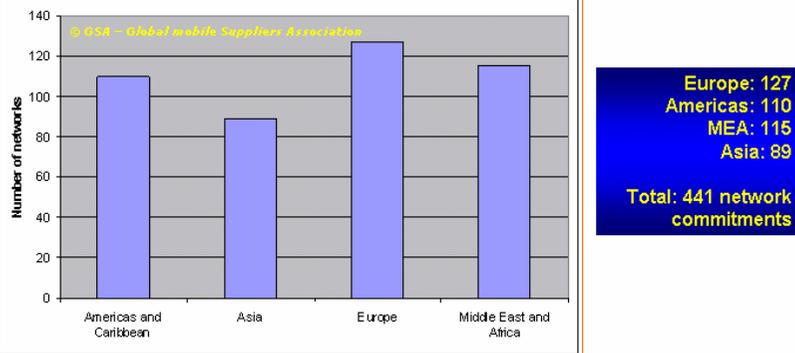
www.gsacom.com/gsm_3g/edge_databank.php4#EDGE_Fact_Sheet

EDGE network commitments

441 EDGE Network commitments



EDGE network deployments by region



Source: EDGE Fact Sheet (GSA)

Latest issue: December 23, 2008

www.gsacom.com/gsm_3g/edge_databank.php4#EDGE_Fact_Sheet

GSA EDGE Fact Sheet December 23, 2008

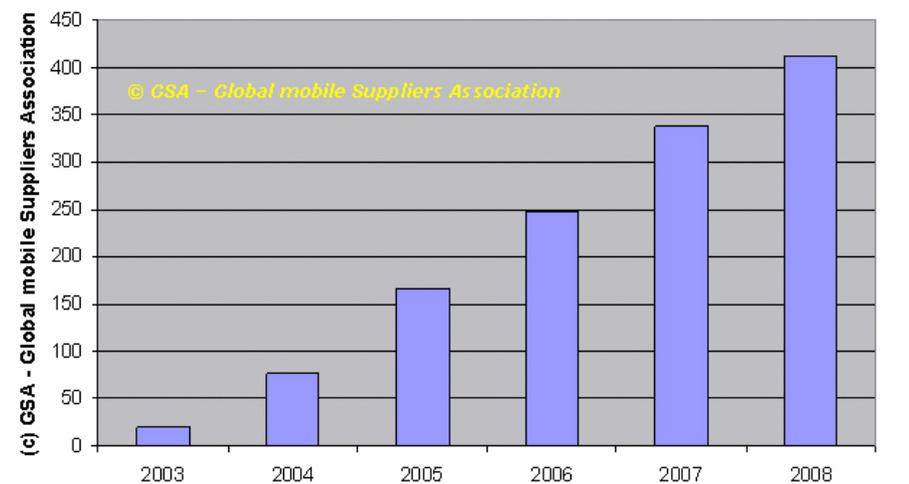
www.gsacom.com/gsm_3g/edge_databank.php4#EDGE_Fact_Sheet

EDGE commercial network launches worldwide

413 commercial networks in 177 countries
December 23, 2008



Commercial EDGE network launches - cumulative



Download charts www.gsacom.com/news/statistics.php4

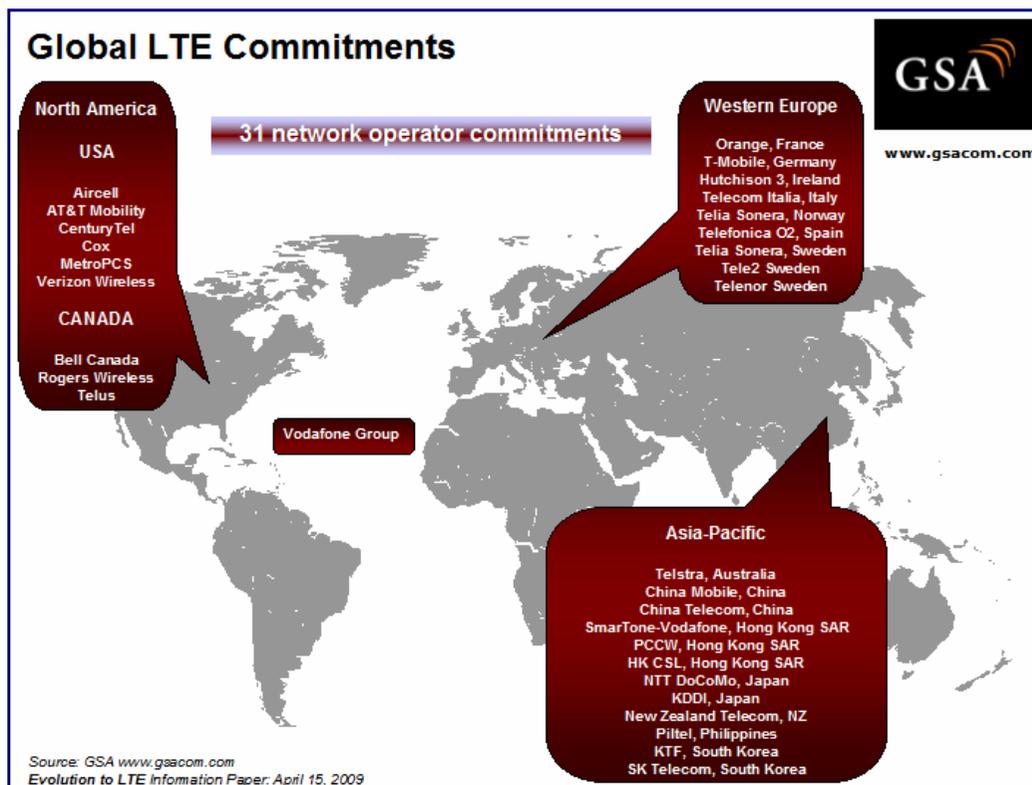
LTE industry commitment globally



□ LTE is the natural migration choice for GSM/HSPA operators. LTE is also the next generation mobile broadband system of choice of leading CDMA operators, who are expected to be in the forefront of service introduction

□ LTE is on track, attracting global industry support. 31 network operators have committed to deploy 3GPP LTE systems (Source: GSA “Evolution to LTE” information paper, April 15, 2009 – www.gsacom.com)

□ 10+ LTE networks are expected to launch commercial services in 2010



Evolution to LTE: GSA Information Paper
www.gsacom.com/gsm_3g/info_papers.php4

LTE eco-system is building



- ❑ Several LTE device platforms are already announced by leading vendors, including Ericsson, Qualcomm, Infineon, LG, Samsung, ST-Ericsson
- ❑ Test instruments/systems are available from several vendors
- ❑ Verizon Wireless LTE Device Requirements Specification - April 2009 (700 MHz)
- ❑ GSA expects many of today's 169 HSPA device manufacturers to participate in the LTE market, with others also coming in

INFORMATION PAPER

GSM/3G MARKET/TECHNOLOGY UPDATE

April 15, 2009

Evolution to LTE

lte

3GPP is developing the evolution of mobile communications systems beyond GSM/EDGE and WCDMA-HSPA systems. 3G Mobile System Long Term Evolution (LTE), targets capacity and data rate speed and throughput enhancements and reduced latency to support new services and features requiring higher levels of capability and performance.

Business users and consumers can today browse the Internet or send and receive e-mails using HSPA-enabled notebooks, or using HSPA modems, including USB dongles, as well as send and receive video or music using their 3G/HSPA phones. LTE is the next step in user experience and it will further enhance more demanding applications such as interactive TV, mobile video blogging, advanced games or professional services. Data rates will be significantly higher for both the downlink and uplink paths, supported by the necessary network architecture and technology enhancements.

LTE reduces the cost per Gigabyte delivered, which is essential for addressing the mass market. The new system includes support of a full IP-based network and harmonization with other radio access technologies.

LTE targets a smooth evolution from current 3GPP and 3GPP2 systems, and is a major step towards IMT-Advanced (often referred to as 4G). LTE includes many features originally considered for a future 4G system.

3GPP has announced approval of the functional freeze of LTE Terrestrial Radio Access Network technology specifications for inclusion in Release 8. Specifications for LTE and the associated system architecture (SAE - see below) are almost completed, and sufficiently stable for commercial implementation. LTE supports both FDD and TDD modes with the same specification and hardware components. The NGMN Alliance has approved LTE/SAE as its first NGMN compliant technology.

LTE can be deployed in existing 2G and 3G system spectrum, as well as utilize new spectrum such as 2.6 GHz currently being auctioned in many parts of the world, and the 700 MHz band which was auctioned as part of the Digital Dividend, beginning in the United States of America. There is strong interest in the opportunities arising as part of the Digital Dividend for additional UHF spectrum, including 790-862 MHz band in Region 1 (Europe, Africa and Middle East), 698-806 MHz in Region 2 (America) and in Asia, which would enable LTE to be globally deployed efficiently over large geographical areas, and improve in-building coverage.

LTE is on track, attracting global industry support. With the HSPA mobile broadband eco-system in place, LTE is the natural migration choice for GSM/HSPA network operators. LTE is also the next generation mobile broadband system of choice of many CDMA operators, particularly the leading players. Infrastructure vendors are now shipping LTE-compatible solutions - including to customers in Europe, Asia and North America.

GSA's research confirms 31 network operators have committed to LTE deployments, as detailed later in this paper. The first LTE systems are expected to enter service in 2010, possibly earlier.

ABI Research forecasts by 2013 operators will spend over \$8.6 billion on LTE base stations infrastructure. For operators that have already deployed 3G networks, LTE will be a key CAPEX driver over the next five years.

LTE: High-level requirements

- Reduced cost per bit
- Increased service provisioning – more services at lower cost with better user experience
- Flexibility of use of existing/new frequency bands
- Simplified architecture, open interfaces
- Allow for reasonable terminal power consumption

LTE utilizes a new radio air interface technology known as Orthogonal Frequency Division Multiple Access (OFDMA) to provide several key benefits, including significantly increased peak data rates, increased cell edge performance, reduced latency, scalable bandwidth, co-existence with GSM/EDGE/UMTS systems, & reduced CAPEX/OPEX.

Basic drivers for LTE

- Demand for higher data rates
- New spectrum allocations (e.g. 2.6 GHz)
- Greater flexibility in frequency allocations
- Continued cost reduction; future competitiveness

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Country	Operator	Service launch
Philippines	Pitit	Not known
Italy	Telecom Italia	Not known
Hong Kong	SmarTone-Vodafone	Not known
Hong Kong	HK CSL Ltd	Not known
Hong Kong	PCCW	Not known
Australia	Telstra	Not known
Various	Vodafone	Not known

LTE operator commitments – April 15, 2009
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Evolution to LTE: GSA Information Paper
www.gsacom.com/gsm_3g/info_papers.php4

Mobile broadband frequency bands



- ▶ **WCDMA systems incl. HSPA are deployed in 850, 900, 1700, 1800, 1900, 2100 MHz**

- ▶ Most operate in IMT-2000 core band 1920-1980/2110–2170 MHz (referred to as 2100 MHz)

- ▶ **850, 900 MHz** deliver coverage and cost efficiencies and are increasing in importance. The eco-system in these bands is rapidly strengthening

- ▶ **700 MHz**; 62 MHz of Digital Dividend spectrum auctioned in US; will be auctioned later in other countries in the Americas

- ▶ **New UHF Digital Dividend spectrum 698-862 MHz is becoming available**

- ▶ At the World Radio Conference in 2007 it was agreed to increase the allocation of spectrum to the Mobile Service, arising from the UHF Digital Dividend:

- ▶ Region 1 (Europe, Middle East and Africa) identified 790-862 MHz for mobile services

- ▶ Region 2 (Americas) & some countries in Asia (e.g. China, India, Japan) identified 698-806 MHz

- ▶ Region 3 (Asia) parts of Asia identified 790-862 MHz

- ▶ **New spectrum at 2.6 GHz is becoming available**

- ▶ Norway, Sweden, Hong Kong (auctions completed). Forthcoming allocations:

- ▶ 2009/10: Finland (Nov 2009), UK, Germany, Austria, Netherlands, France

UMTS/WCDMA-HSPA below 1 GHz

900/850 MHz



- ▶ Growing awareness of benefits of deploying 3G/HSPA in 900 MHz band: systems typically referred to as **UMTS900** (or WCDMA-HSPA900)
- ▶ UMTS900 **gaining traction** amongst operators and regulators across Europe, Asia, Oceania, Middle East, Africa
- ▶ UMTS900 and UMTS2100 deployments are **complementary**
- ▶ **Similar benefits** are obtained with **HSPA deployments in 850 MHz band**, e.g. commercial systems in Australia (Telstra Next G™ network), and across the Americas

UMTS900 regulation

- positive movement in Europe



- ▶ Use of 900 MHz in Europe and beyond in some other countries is covered by the GSM Directive; approval is therefore required to permit 3G/WCDMA-HSPA 900 deployment in the 900 MHz band
- ▶ In 2007 the European Commission proposed to EU Council and Parliament to repeal the GSM Directive, and drafted a Decision for more flexible approach which would permit use for 3G/UMTS in this band. EU Council reacted positively, but Parliament was initially reluctant to repeal GSM Directive
- ▶ Meanwhile several countries in Europe are pressing ahead by allowing UMTS900 deployments

UPDATE – Prepare for New Wave of UMTS900 Deployments as Brussels Gives the Green Light, says GSA (www.gsacom.com/news/gsa_267.php4)

March 27, 2009: **The decision by the European Parliament to accept the amendment of the GSM Directive to allow UMTS (WCDMA-HSPA) technology to be deployed in the 900 MHz band is welcomed by the Global mobile Suppliers Association (GSA).** Political agreement on a first reading agreement on the Amending GSM Directive was reached at the triologue on 24 March 2009.

Alan Hadden, President, GSA said: “This groundbreaking spectrum agreement in Brussels enables more Europeans to benefit from mobile broadband services. It is a clear signal to all regulators (NRAs) to prepare the path in their respective markets for a new wave of HSPA deployments in the 900 MHz band.”

So now there is no reason for delay, and GSA expects more UMTS900 deployments as a result

UMTS900 commercialization

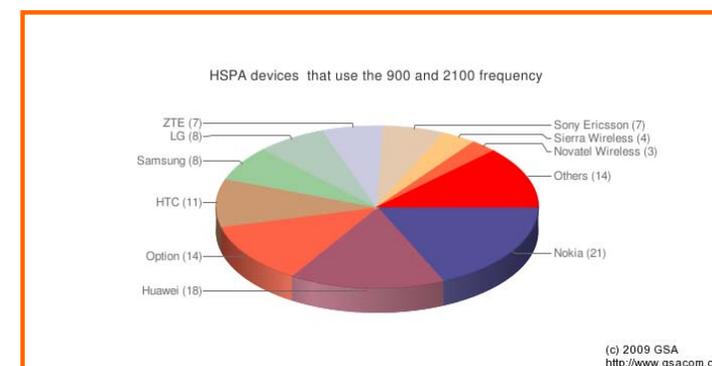
8 UMTS900 networks launched



Country	Re-farming status
Australia	UMTS900 is allowed
Belgium	UMTS900 is allowed
Estonia	UMTS900 is allowed
Finland	UMTS900 is allowed
France	UMTS900 is allowed
Germany	Under consideration
Greece	Under consideration
Iceland	UMTS900 is allowed
Indonesia	UMTS900 is allowed
Ireland	Under consideration
Italy	UMTS900 is allowed
New Zealand	UMTS900 is allowed
Norway	Under consideration
Portugal	Under consideration
Romania	Under consideration
Saudi Arabia	UMTS900 is allowed
Singapore	UMTS900 is allowed
Spain	Under consideration
South Africa	Under consideration
Sweden	UMTS900 is allowed
Switzerland	Under consideration
Thailand	UMTS900 is allowed
UAE	UMTS900 is allowed
UK	Under consideration
Venezuela	UMTS900 is allowed

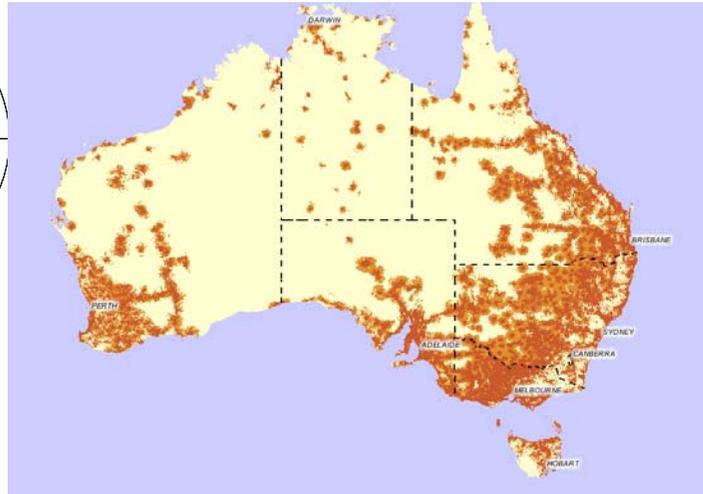
Country	Operator	Status
Australia	Optus	Launched
Australia	Vodafone	In deployment
Belgium	Proximus	In deployment
Bulgaria	Globul	Testing
Estonia	Elisa	Launched
Finland	Elisa	Launched
Finland	DNA	Launched
France	SFR	Pilot network
Greece	Cosmote	Testing
Iceland	Siminn	Launched
New Zealand	Vodafone	Launched
Spain	Telefonica	Testing
Thailand	AIS	Launched
Thailand	DTAC	In deployment
Venezuela	Digitel	Launched

Source: GSA UMTS900 Global Status information paper
www.gsacom.com



- ▶ **115 UMTS900-HSPA devices announced by 21 suppliers**
- ▶ **UMTS900 is becoming a standard feature in virtually every new 3G phone and data modem destined for European and Asian markets**
- ▶ **The 900/2100MHz combination for WCDMA-HSPA is expected to become commonplace**

UMTS850 networks in commercial service (WCDMA-HSPA)



UMTS850 commercial launch: October 06

World's largest UMS 850 network. Telstra's Next G™ network covers more than 1.9 million square kilometres. The Next G™ network provides mobile broadband access to 99 per cent of Australians, spanning city to country including many remote coastal and rural communities (www.telstra.com.au)



48 commercial UMS-HSPA networks throughout the Americas; several operating in the 850 MHz band

Strong UMS850 ecosystem exists today including 483 HSPA devices (excl. notebooks) in the market which operate in the 850 MHz band

(Source: GSA HSPA Devices survey – March 10, 2009)

UMTS/WCDMA-HSPA below 1 GHz

Digital Dividend

- Europe



24 September 2008: The **European Parliament** adopted a Resolution regarding European Commission Communication of 13 November 2007 on "reaping the full benefits of the digital dividend in Europe: a common approach to the use of the spectrum released by the digital switchover". In the Resolution, the Parliament supports a common and balanced approach to the use of the digital dividend, which should "serve the general interest by ensuring the best social, cultural and economic value in terms of an enhanced and geographically wider offer of services and digital content to citizens".

The European Parliament therefore urges Member States to release their digital dividends as quickly as possible, calling on them to develop national digital dividend strategies by the end of 2009 while following a common methodology.

The European Parliament also affirms that a "coordinated approach at Community level greatly enhances the value of the dividend and is the most efficient way to avoid harmful interference between Member States and between Member States and third countries", whereby the EC needs to cooperate with countries neighbouring the European Union with a view to similar plans being adopted or to co-ordinate frequency allocation.

www.anacom.pt/text/render.jsp?contentId=672184

Europe: Digital TV transition timetable



Examples of the digital switchover timetable:

- Finland, The Netherlands, Sweden, Switzerland: already switched over
- Norway 2009
- Germany 2010
- France 2011
- Ireland 2012
- Portugal 2012
- UK 2012

Europe: 790-862 MHz status



Finland, France, Germany, Sweden and Switzerland have all confirmed that they will allocate 790–862 MHz for mobile broadband services

In **Germany**, E-Plus and Ericsson are partnering with the local authorities in the state of Mecklenburg-Vorpommern to use digital dividend frequencies to provide HSPA broadband services to communities without broadband possibilities. The pilot uses channels in the 790-862 MHz band. Results will be used as input to discussions about the future of the digital dividend. Vodafone Germany is engaged in a similar pilot from May 2009 in Bopfingen and Unterschneidheim. An auction of 790-862 MHz spectrum may be held in 2009

In **Italy**, Communications Undersecretary, Paolo Romani, has announced that frequencies vacated during the analogue switch off will be auctioned

Belgium is undertaking a consultation on the Digital Dividend

Czech Republic regulator CTU has undertaken a 2nd round of consultation on the 470-862 MHz band. A 3rd round of consultation is likely in the Autumn

In **Ireland**, Comreg began a Digital Dividend review at its annual conference in October 2008

In **Portugal**, public consultations on the Digital Dividend close on May 13, 2009

Serbia recently completed a consultation on the Digital Dividend

In **UK**, Ofcom launched a consultation (Digital Dividend: Clearing the 800 MHz Band); closed April 20, 2009

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