



12/F The Pemberton
22-26 Bonham Strand East
Sheung Wan
Hong Kong
Tel. +852-3960 5070
Fax. +852-3960 5005
Web: www.gsmworld.com

28 October, 2011

Shri Sudha Gupta

THE TELECOM REGULATORY AUTHORITY OF INDIA

Mahanagar Doorsanchar Bhawan,

(next to Zakir Hussain College)

Jawaharlal Nehru Marg (Old Minto Road)

New Delhi 110 002

India

pradvmn@trai.gov.in

GSMA Response to Indian Consultation on IMT Advanced Mobile Wireless Broadband Services

INTRODUCTION

The GSMA thanks the Telecom Regulatory Authority of India (TRAI) for the opportunity to provide comments on its consultation on IMT Advanced Mobile Wireless Broadband Services.

Founded in 1987, the GSM Association (GSMA) is the global trade association of the cellular mobile industry, representing more than 800 operator members deploying GSM/GPRS, 3G, IMT2000, HSPA and more recently LTE based networks, across 219 countries and territories of the world. In addition, more than 180 manufacturers and suppliers support our initiatives as Associate Members.

The primary goals of the GSMA are, to ensure that mobile phones and wireless services work globally and are easily accessible, enhancing their value to individual customers and national economies, whilst creating new business opportunities for operators and their suppliers.

One of our goals is to promote the benefits of mobile broadband, to help foster economic growth, jobs, and social inclusion. A major facilitator towards achieving this goal is the provision of internationally harmonised spectrum in a timely manner.

BACKGROUND

Mobile telephony has delivered a new age of connectivity to more than 6 billion people across the globe. Since the GSMA was founded 24 years ago, GSM technology has progressed through a series of technology evolutions, firstly through GPRS and EDGE, and subsequently through WCDMA, HSPA, HSPA + and onto LTE. These revolutionary technology advances are now being combined to provide a full range of voice and mobile internet services.

The GSM ecosystem currently deploys mobile internet services to 620 million subscribers using High Speed Packet Access (HSPA)¹ technology. LTE was launched commercially in 2009 and is being rolled out in the US, Asia and Europe. In October 2011, Sprint in the US announced that it would be ready to deploy the next generation of technology, LTE-Advanced, in 2013.

The continued development of the GSM family of technologies is designed to ensure that the mobile industry can continue to meet the fast growing demand for secure, ubiquitous, and easy-to-use broadband services. GSM will continue to be used by billions of users for years to come, and massive growth in the use of HSPA and HSPA+ is expected to happen in tandem with the growth of LTE. As a result of this co-existence, consumers will be able to continue using existing services whilst simultaneously moving up the technology path.

The GSM family's IMT Advanced technology, LTE-Advanced, extends the technological principles behind LTE into a further step change in data rates. Incorporating higher order MIMO (4x4 and beyond) antenna technologies and allowing multiple carriers to be bonded together into a single stream. Field test by the manufacturing community have already produced download speeds of 10 times more than LTE.

The section below outlines GSMA's responses to some of the questions raised in the Discussion Paper.

¹ HSPA refers to High Speed Packet Access and encompasses HSDPA, HSUPA and HSPA+ .

Specific Questions raised in the Discussion Paper

- 1. Whether there is a need to define a particular user equipment or architecture to be used by the vendors or this may be left to market forces?**

The GSMA believes that it is important to take a careful approach to technology neutrality. However, successful regulation necessitates spectrum planning by the regulator along harmonised guidelines. Equally, it is important that users are not exposed to poor quality equipment. The TRAI must ensure that any technology used for next-generation services is part of the ITU's IMT family. This is a technology-neutral group which any new technology can join. However, it is also a guarantee of quality in a broad range of requisites including handover efficiency, spectral efficiency and other issues.

In terms of spectrum planning, TRAI should ensure that it closely follows internationally harmonised guidelines rather than simply "letting the market decide". While conceptually a technology neutral approach allows the free market to choose, the wholesale adoption of this concept will hamper spectral efficiency and potentially cause issues with interference, over-use of guard bands and other issues. Internationally adopted bandplans help to increase both spectral efficiency and harmonisation. The benefits of such international harmonisation can be very important for mass market services such as mobile.

The technology neutral concept should be used carefully and adhered to under guidance from the regulator in spectrum planning terms to ensure harmonisation and spectral efficiency.

- 2. Whether there is a minimal set of performance characteristics the UE has to meet before it is permitted to enter a network? These characteristics are over and above the inter-operability, protocol conformance and emission tests which presumably the UE has already passed.**

The GSMA believes that the ITU and 3GPP play a vital role in creating guidelines to ensure that equipment is of the necessary high standard through its work in specifying standards for IMT and IMT Advanced. The GSMA believes that these criteria should be used by TRAI to assess performance characteristics for equipment. The ITU and the 3GPP are the appropriate bodies for deciding on such criteria to allow for global standards to be realised, creating huge economies of scale and lowering the price for the consumer. Where regulators set country-specific standards, this is likely to increase cost to consumers as manufacturers are forced to make country-specific equipment.

5. What spectrum bands should be identified for the IMT-Services in India?

Initial focus on spectrum for the next generation of IMT services in India is likely to be on the 700 MHz and 2.6 GHz bands. Given India's huge population, rapidly developing economy and burgeoning middle class, these will not be sufficient and India should start urgently considering other bands. The 3.4-3.6 GHz band, identified for IMT in India and in much of the world, will provide some vital capacity for urban areas. The 2.3 GHz band will also be useful for rolling out TD-LTE.

However, these bands may prove insufficient even for just the initial phase of LTE. Finding other spectrum will be imperative for the future growth of LTE-Advanced. Further spectrum

for IMT will be discussed at the forthcoming World Radiocommunication Conference (WRC-12), where it is expected than an agenda item for WRC-15 will be placed. It is not currently known what bands will be allocated for IMT, but the need for extra capacity has been very widely accepted. India's support of this process through WRC-12, the ITU-R Working Party process, and then WRC-15 will be central to its ability to compete in terms of ICT productivity both in Asia and the world.

7. What is the minimum spectrum block size for effective use of 4G technologies?

LTE is optimised for 20 MHz channels (2x 20 MHz FDD) to produce the highest data rates and the best customer experience.

Therefore, we recommend that this band is auctioned as 2x5MHz FDD spectrum blocks, so that Operators, should they wish, are then able to acquire multiple blocks in an auction to support 2x10MHz or 2x20MHz channels in order to maximise efficiency and offer the highest possible data rates to customers.

9. Whether there is a need to specify the use of a particular duplexing scheme based on the band in which spectrum allocation is done?

The GSMA believes there is a need to clearly define spectrum planning along internationally harmonised guidelines. TRAI should act to ensure that minimal technical guidelines are put in place when it is planning spectrum. Doing so enhances spectral efficiency by minimising interference and decreasing the use of guard bands.

For the **700 MHz Digital Dividend band**, the most favoured mobile broadband technology internationally as well as within the region is FDD-LTE technology. The Asia-Pacific Telecommunity (APT) has recommended to the ITU an **APT harmonised FDD band plan** for the 700 MHz Digital Dividend, that consists of **2 x 45 MHz**, with a 10 MHz centre gap. This band plan offers the largest amount of useable spectrum and has great potential for large-scale regional and inter-regional adoption. There is also very strong technical support for it internationally. It is envisaged that this plan will help drive significant economic growth in the region if widely adopted, which would enable benefit from economies of scale in both radio equipment and handset production. The GSMA strongly urges India to allocate the full 700 MHz band (698 – 806 MHz) for IMT in line with the APT 2 x 45 MHz band plan.

For the **2.6 GHz band**, it is necessary to decide which parts of the band are FDD and which parts are TDD. The preferred **ITU Option 1** allows for 2 x 70 MHz of FDD spectrum, while having a 50 MHz TDD portion in the middle. This spectrum plan means that in the 190 MHz of spectrum, only 10 MHz are used as guard bands. Where less efficient band plans are used, less spectrum will be made available to operators, lowering either competition, capacity or both. This will lower the quality of service offering to the consumer while raising the price of service.

16. What regulatory mechanisms are to be provided for the delivery of voice services over IMT-A systems?

The GSM family provides service to 5 billion connections based on a single family of technologies being used across all networks and all phones and devices. This has led to a diverse range of GSM-enabled devices providing massive choice for the end-user. Similar principles have driven the movement of HSPA from phones to dongles, and embedded laptops and tablets.

For a Voice over LTE implementation to continue this model, it must be applicable to the entire LTE industry, and not subject to fragmentation or undue diversity. It is better to have a single implementation that is adhered to by all so that messages and media flow smoothly from one customer to another using a single common standard and taking an internationally harmonised approach.

GSMA is working closely together with a large number of its operator members, the manufacturing community, 3GPP and other bodies towards a unified Voice over LTE (VoLTE) standard. Where it is taken up, this global, single implementation standard will promote scale, reduce complexity and enable roaming.

It is thus important that any regulatory mechanisms in India fully support the harmonised implementation of a common standard for voice services in IMT Advanced such as VoLTE. India should not adopt a country-specific approach to regulating voice services in IMT Advanced.

17. Should the interoperability of services to legacy 2G/3G systems be left to market forces?

Generational interoperability has been central to the success of the GSMA family. A clear technology progression has allowed GSM, WCDMA and HSPA users to move seamlessly from one to the next. Base stations and handsets which support all these technologies are commonplace. LTE is the natural progression from previous members of the GSM family. However, LTE is not expected to be the next generation technology for just the GSM family, but for other technologies as well. CDMA-2000 networks are expected to migrate towards FD-LTE, while TD-LTE has in many cases been chosen by existing WiMAX operators as the clearest technology migration path.

However, all this success has clearly been defined by consumer power and not regulatory intervention. The ability of network operators to slowly expand the footprint of new technologies on their network allowed consumers to continue using previous technologies as the next generation of services became more and more widely available. The consumer satisfaction that this interoperability has given has made it vital for operators to continue offering a seamless, interoperable service.

No government intervention is thus required.

Q3, Q4, Q6, Q8, Q10 – Q15, Q18, Q19

The GSMA considers that the Indian Cellular Mobile Network Operators would be best placed to respond to the above Questions.

CONCLUSION

The GSMA congratulates TRAI on its far-sighted examination of the need for further spectrum for IMT Advanced systems, including the recommendation of earmarking the 700 MHz band (698 -806 MHz) only for IMT applications.

It is vital that spectrum is allocated along internationally harmonised guidelines and using harmonised band plans (APT harmonised 2x 45 MHz band plan for 700 MHz and the ITU Option 1 for 2.6 GHz) to facilitate international roaming, control radio interference and allow for economies of scale to be realised by the industry and consumers.

The GSMA believes that clear and timely allocation of spectrum on a planned, harmonised, technologically neutral basis allows operators to invest with confidence and consumers to connect quickly and efficiently. This results in productive and economic gains benefitting Indian society as a whole. Equally, adoption of internationally harmonised technology standards will benefit Indian consumers: country-specific regulation should always be avoided.

If the success of mobile broadband is allowed to continue, it can offer huge benefits to the well-being and employment of Indian citizens and provide an important spur to economic development.

Chris Perera
Director - Spectrum Policy & Regulatory Affairs Asia Pacific
GSM Association
Mobile: +852 9255 0799
cperera@gsm.org