March 9th. 2006

UMTS Forum views on the Kingdom of Saudi Arabia- CITC's Public Consultation on "Radio Spectrum Issues related to the development of the National Frequency Plan"

The UMTS Forum welcomes the opportunity to comment to the Saudi Arabia's Communications and Information Technology Commission (CITC) public consultation on Radio Spectrum related issues for National Frequency Plan (NFP). This response to the CICC public consultation highlights in a synthetic form UMTS Forum's key messages regarding the Forum spectrum policy for 2G, 3G/UMTS and systems beyond 3G (nowadays known as IMT-Advanced).

The Forum represents a significant group of spectrum users, which are directly involved in the development and operation of public mobile networks, including UMTS/IMT-2000 and therefore have a strong interest in the related spectrum topics. The UMTS Forum gathers many different players involved in third generation mobile systems, including equipment manufacturers, operators, administrations, service providers and software developers.

General Spectrum Policies and Mobile Applications

The use of the radio spectrum is regulated and the assignment procedures are changing. In the expanding marketplace, the old national government administrative procedures of assigning spectrum to users are giving way to competitive regulatory processes involving all parties: government (defence, public service requirements), regulatory agency, operators, manufacturers. A major trend however is related to the harmonisation of the use of the radio spectrum in order to ensure global compatibility. Nowadays, only small amount of the actual used radio spectrum is harmonised among countries. The international availability of the same service depends on the extent to which the use of the radio spectrum is harmonised.

The usage of communication systems that require spectrum is increasing rapidly. Not only does almost everyone in the developed countries seem to have a cellular mobile phone, but such phones are also becoming widespread in developing countries. At the same time, a new generation of mobile phones is expected offering "Internet in the pocket" as a result of the introduction of IMT2000. In addition, radio local loop systems are going to complement the wired networks, thanks to their ease of deployment, high data rates and low cost. Satellite systems are planned using both geostationary and non-geostationary (low earth orbit) systems. The regional and global coverage of these systems will make new data services available to people literally worldwide. Finally, short-range systems are also expected to grow, replacing the need for connection cables but again increasing the need for frequencies.

The challenge for the regulator is how to facilitate all these services to be available in the market.

UMTS Forum

Second Generation Mobile Systems (4.1.1 in the consultation document)

All the spectrum bands (including E-GSM) mentioned in the CITC document are currently used in many countries for GSM900 and GSM1800 networks. Therefore, the Forum agrees with the use of all these bands for 2G systems as proposed in the consultation document. However, it should be mentioned that as far as 2G spectrum is concerned, GSM900 being much more efficient for coverage than GSM1800, the availability of a wide enough bandwidth at 900 MHz is mandatory for a rapid and optimised roll out.

2G Spectrum licences: Renewal and Re-assignment

An impending debate of strategic importance for the mobile industry centres on the regulatory arrangements that might apply when existing second-generation (2G) licences expire.

GSM promises to be an important technology for many years to come if for no other reason than it is already deployed across a substantial area providing services to more than a billion users. Unfortunately, licence durations do not match technology life cycles and this creates a problem of investment. Operators need clarity on their ability to recover investments. As licences approach their expiry date and conditions of renewal remain unknown, clarity is absent. Consequently, capital expenditure will be affected.

A reliance on competitive re-tendering, while possibly attractive to some Governments, brings massive economic uncertainty and risk of stranded assets and inefficient outcomes. Creative ways should be found to ensure that public policy objectives and market needs are adequately met.

Third Generation (4.1.2 in the consultation document)

UMTS Forum encourages and supports the global harmonisation of spectrum usage for UMTS/IMT-2000. Harmonised use of spectrum further consolidates the benefits of global spectrum identification. The harmonisation of frequency arrangements is a key element in order to reduce cost and complexity of IMT-2000 implementation allowing successful worldwide deployment. Global harmonisation of spectrum will enable UMTS/IMT-2000 services to be deployed with significant economies of scale with respect to terminal and infrastructure equipment benefiting not only manufacturers and operators but also the consumer and society as a whole.

After several years of massive increase of the mobile voice services penetration around the world, we are observing now the take-off of mobile data services growth with very successful messaging services, music and video streaming and downloading services and general access to the Internet. In addition, we observe a strong and increasing demand for global roaming which is the first step towards seamless global services.

The key conditions necessary to achieve seamless services and the availability of low cost terminal attractive to a mass market, is a continuous effort to ensure the world-wide co-ordination of standards and the harmonisation of frequency bands. This allows true competition between suppliers and potentially a much wider choice for network operators and service providers, to the benefit of the end users and the wider community.

The WARC-92 identified so-called IMT-2000 "**core bands"** at 1885-2025 MHz and 2110-2200 MHz. This core band is split into paired FDD and TDD spectrum, also in line with ITU-R recommendations. FDD is for paired bands of 2x60 MHz (1920-1980 MHz and 2110-2170 MHz) and TDD is for unpaired bands of 1900-1920 MHz and 2010-2025 MHz. In many countries in Region 2 and Region 3, most of these bands are reserved for IMT-2000 or 3G terrestrial applications, hence, these countries are in a comfortable situation as regards allocation, and with this approach they are completely aligned with the countries of Region 1 including Saudi Arabia.

CITC should also take into account that a common frequency band greatly simplifies global roaming, since it avoids more costly multi-band 3G terminals. If 3G frequency bands and standards are selected which are different from the major global allocation and use, many combinations of standards and frequencies might not reach the necessary volume and come late into the market or never (for example the GSM/ANSI 95). Therefore, a common frequency band is the best enabler of global roaming and a 3G mass market. The use of the WARC-92 FDD band in the Kingdom ensures the country's participation in a mass market for terminals and infrastructure to the benefit of the consumers in the Kingdom.

Nowadays, the UMTS/IMT-2000 networks after obtaining more than 170 licenses have started operation in the WARC-92 identified bands (core bands) since 2002 in Europe and Asia. Extension bands at 2.6 GHz are expected to be operational for IMT-2000 starting from 2008 at least in Europe.

The UMTS Forum recommends licensing at least 2x15 MHz of IMT-2000 FDD-spectrum per operator. This approach ideally fills all the available IMT-2000 bands (60 MHz for both uplink and for downlink) with four operators in any country at an equal basis. Furthermore, it gives a balanced opportunity to each operator as far as the allocations of bands are concerned.

It should be mentioned that, although in a limited number of countries, 2x10 MHz bands have been assigned, for the sake of broadband service delivery and adequate traffic rate capacities, the best solution should be considered as blocks of 2x15 MHz in line with many international recommendations like UMTS Forum and others. Any alternative solution could harm 3G system performances and certainly reduce service capacity.

Despite the fact that some European countries opted for auctions for 3G licences, the UMTS Forum does not support auctions because they draw financial resources out of the information society sector and decreases the capability for investments that are necessary to foster good communications services to the society.

Considering the fact that increased harmonisation of spectrum usage is strongly supported and advocated by the UMTS Forum, for the unpaired bands of 1900-1920 MHz and 2010-2025 MHz, the Forum supports flexible usage for either TDD or FDD UL[1].

In summary, most European operators have been deploying UMTS in 2GHz band in large and medium cities, and the next step is to extend UMTS coverage to small towns and rural areas. The 1st step to extend the UMTS coverage outside the big cities would be to use part of the GSM900 band for UMTS 900. This decision was initiated by the operators based on their specific requirements by taking into account that the 900 MHz band is today extensively used for GSM/GPRS. A preliminary study by comparing the GSM and UMTS link budgets in 900 MHz band has indicated that the cell range of GSM speech service is similar to that of UMTS CS64 (circuit switched 64 kbps). This means for a GSM900 operator, by re-using the GSM900 sites without adding any new sites, UMTS CS64 video-telephony service can be offered by co-locating GSM and UMTS sites.

In Europe, GSM900 has been deployed for full coverage with macro-cellular approach. In many European cities, GSM900 micro-cells have been deployed for offering high capacity with tighter frequency reuse and for deep indoor coverage. In many important buildings, pico-cells or distributed antenna systems are also deployed in 900 MHz band for ensuring good indoor coverage.

Deployment of UMTS in 900 MHz does not mean replacing GSM by UMTS; GSM and UMTS will co-exist in the near future. For the practical deployment of both GSM and UMTS in the 900 MHz band a minimum of 2x10 MHz per operator is needed. The good co-existence between UMTS and GSM in 900 MHz band is the guarantee for the future success of UMTS deployment in 900 MHz band.

Beyond 3G (4.1.3 in the consultation document)

The challenge facing the mobile telecommunications industry today is how to continually improve the end-user experience and, offer appealing services through a delivery mechanism which offers improved speed, service attractiveness and service interaction. The next important improvement is the deployment of a new series of technologies referred to as High Speed Packet Access (HSPA). These technologies will be available as a relatively straightforward evolution to existing UMTS networks and will offer improved bandwidth to the end-user, improved network capacity to the operator, and improved activity for data applications.

High Speed Packet Access (HSPA) is a generic term adopted by the UMTS Forum and UMTS community to refer to improvements in the UMTS Radio Interface in the Releases 5 and 6 of the 3rd Generation Partnership Project (3GPP) standards. HSPA refers to both the improvements made in the UMTS downlink, often referred to as High Speed Downlink

[1] The band 1900-1920 MHz has a good potential for FDD UL band, as it is located just below existing core band FDD UL. The 1900-1920 MHz band could be paired with part of the 2570-2620 MHz band that have been designated for FDD external downlink (middle gap of the UMTS/IMT-2000 2.6 GHz extension band).

Packet Access (HSDPA) and the improvements made in the uplink, often referred to as High Speed Uplink Packet Access (HSUPA) but also referred to as Enhanced Dedicated Channel (E-DCH).

HSDPA enables data transmission speeds of up to 14.4Mbit/s per user. Both HSDPA and HSUPA can be implemented in the standard 5MHz carrier of UMTS networks and can co-exist with the first generation of UMTS networks based on the 3GPP Release 99 (R99) standard. As HSPA standards refer uniquely to the access network, there is no change required of the core network outside of the capacity increases that will be required to handle the expected increase in traffic generated by HSPA.

The next enhancement step after HSPA is LTE (Long Tem Evolution) that suggests that there will be a firm need to allocate larger spectrum blocks than 2 x 10 MHz (e.g. 20 MHz blocks) per operator to achieve the highest transmission rates, particularly, in the downlink direction. Indeed, important milestones were achieved in 3GPP Release 6 with IMS, HSDPA enhancements, HSUPA, WLAN integration and IP Transport. The Preliminary activities started in March 2005 and the completion of the standards is expected for mid 2007.

In conclusion, HSPA defines a series of relatively straightforward upgrades to UMTS R99 networks which will offer improvement of a factor of ten in the speed of service delivery, improvements of a factor of five in network capacity and a significant improvement in service latency. HSPA refers to improvements in both the downlink and uplink of the radio access network, known as HSDPA and HSUPA respectively. New terminals are required to support these capabilities and the first terminals for HSDPA were available at the end of 2005 and are expected to be so called category 6 terminals, capable of supporting up to 3.6Mbps.

HSPA, and LTE after that, will thus offer cost effective wide-area broadband mobility and play a significant role in stimulating the demand for data services, whether they be consumer multimedia and gaming or corporate email and mobile access.

As far as spectrum issues are concerned, HSDPA shares the FDD spectrum with R99 (WCDMA), so,dedicated spectrum is not required.

Systems beyond IMT-2000/IMT-Advanced within the scope of WRC-07 Agenda item 1.4

UMTS Forum has participated in the preparation of WRC-07 Agenda Item 1.4 by preparing a market study 'Magic Mobile Future' (UMTS Forum Report #37) and a spectrum demand estimation for IMT-Advanced[2]. The Forum believes that about 1 GHz new spectrum is needed for the high bit rate high mobility services around 2015.

Regarding the coverage part of Agenda Item 1.4, the 500 MHz band, which has been studied in UMTS Forum Report #38, "Coverage Extension Bands for UMTS/IMT-2000 in the bands between 470-600 MHz", is the best candidate band to extend UMTS coverage in the cost efficient manner in sparsely populated areas (typically Saudi Arabia).

[2] Report prepared on behalf of UMTS Forum by Analysys Consulting Ltd: Development of spectrum requirement forecasts for IMT-2000 and systems beyond IMT-2000 (IMT-Advanced)

UMTS Forum

General Recommendations

- The IMT-2000 core band (1920-1980 /2110-2170) should be used for UMTS/IMT-2000.
- A suitable amount of spectrum per UMTS operator is 2x15 MHz.
- The 2500 – 2690 MHz band should be make available for UMTS/IMT-2000 around 2008 based on market demand.
- Operators should have 2x10 MHz band from GSM900 band to be able to evolve to UMTS900 fluently.

Contact:

The UMTS Forum Secretariat
Russell Square House
10-12 Russell Square
London WC1B 5EE
UK
Tel: +44 (0)20 7331 2020
Fax: +44 (0)1920 469 859
Email: info@umts-forum.org