Response from the GSM Association to the Consultation Document of the Office of the Telecommunications Authority (OFTA), Hong Kong

Licensing Framework for Third Generation Mobile Services – Industry Consultation Paper, 21 March 2000

1. Introduction

1.1 The GSM Association welcomes the opportunity to comment on the consultative document published by OFTA, however as an international organisation with a limitation of two plenary meetings per annum, the formation of a detailed response to the individual issues raised in the document has not been possible. Instead, the issues are addressed in a more general form, which nevertheless should permit an appreciation of the considerations and assessments of the GSM Association.

1.2 The GSM Association believes that evolution is the key to a successful transition towards the global mobile communications systems of the next millennia including multimedia but also embracing the more traditional forms of mobile communications such as voice and data. With almost 500 million (and steadily growing number of) GSM customers world-wide, care must be taken to permit operators currently utilising the GSM platform to continue to build on the successes and investments in this global technology, not least in order to ensure that GSM's users may enjoy the fruits of third generation advances. Latter sections of this response will address some of the key issues in more detail.

2. The GSM Association

2.1 The GSM Association has its seat in Geneva, Switzerland and is a non-profit making organisation as defined within Articles 60 to 79 of the Swiss Civil Code. The Association also has a permanent Headquarters in Dublin, Ireland. As of 1 May 2000 there were some 445 members of the Association from 148 territories throughout the world. In addition to the current members every GSM 400, GSM 900, GSM 1800 (also known as DCS 1800), GSM 1900 (also known as PCS 1900) network operator, GSM satellite, UMTS operator and telecommunications administration can become a member of the Association. In addition, to ensure openness and to embrace industry wisdom, the Association has adopted an Associate Membership category for *inter alia* infrastructure, handset and support system suppliers.

2.2 All the GSM network operators in Hong Kong are members of the GSM Association.

2.3 The GSM Association endorses UMTS as the key IMT-2000 Third Generation system. It is furthermore believed vital for GSM operators, manufacturers worldwide, the global economy and the persons employed in the industry that the introduction of Third Generation systems results from an evolutionary scenario. This should embrace the advantages of an evolved GSM platform coupled with the UTRA or EDGE air interfaces developed by ETSI and currently being specified in the Third Generation Partnership Project (3GPP).

2.4 The GSM Association therefore urges regulatory authorities to ensure that an evolutionary approach to the introduction of Third Generation systems is sustainable, including not only the technology but also the assurance that existing and future GSM operators are given the possibility to enhance their operation and service with the capabilities and features of Third Generation systems, to the millions of existing GSM users.

3. Third Generation work within the Association

3.1 The GSM Association started to analyse the possible evolutionary scenarios for the Third Generation concept in 1994.

3.2 The Association established a specialist body in order to:

- Secure the development of a Third Generation system, to ensure that in the longer term mobile operators can offer customers the same range of services as the fixed network operators, including broadband, high bit rate communications,
- Ensure a smooth evolutionary/migratory path for systems based on the GSM platform and its planned enhancements through to the eventual deployment of a Third Generation system,
- Liaise with all third generation standards bodies & forums, e.g. the UMTS Forum, ETSI, and the ITU.

3.3 The Association documented operator Third Generation requirements as they were identified, which included the possibilities of the advanced business environment, the home environment, the use of radio software, and the need for system modularity. Some 30 Permanent Reference Documents have been prepared for GSM Association members - all comprehensively reporting and recording development of such issues as:

- Policy,
- Commercial considerations,
- Market expectations,
- Service requirements,
- System requirements (Terminal equipment, radio, core network, management systems etc.),
- Security,
- Evolution,
- Testing & Validation.

These have to a large extent formed a basis for what is now being developed under the 3GPP enterprise.

4. Additional Third Generation Issues

4.1 The following sections of the Association's response address additional policy issues, which have been prepared by the Association's membership. In addition the Association is a Market Representation Partner (MRP) in the 3GPP. The Association has furthermore recently established a high level approach to Third Generation issues and has been active in ITU TG 8/1 contributing to the developments in the ITU IMT-2000 Third Generation standardisation process and intends to be active in other appropriate Third Generation forums.

4.2 Policy issues fall into three main categories licensing, spectrum and standardisation. These are addressed in sections 5 to 7 below

4.3 An evolutionary approach to the transition from the GSM radio interface standard to Third Generation systems utilising an evolved GSM platform is considered essential. Additional to any considerations of a trade or regulatory nature, it is believed that ideally minimal costs would occur and optimal quality and roaming benefits to end users will be realised if a single standard were to be developed with minimal regulatory burden. The Association therefore fully supported the ITU activities to minimise the number of radio interfaces and network options within the IMT-2000 umbrella standard. Given this evolution, it is further considered essential that incumbent GSM operators become significant players in the Third Generation environment. The well being of a high number of existing GSM users, which in many countries will reach penetration levels well above 50% by the time Third Generation is introduced, must be considered carefully in terms of minimum administrative disruption and inconvenience as well as enhanced service offerings.

It is believed that this can be assured only through exploiting the technical possibilities of developing advanced features and services within existing GSM networks, which will evolve thereafter into Third Generation systems.

5. Licensing

5.1 As we move forward and as described above, the evolution to Third Generation is clearly a natural extension of the current service offering to existing customers. The Association would therefore encourage administrations to determine that current GSM operators would be eligible to occupy spectrum identified for Third Generation applications in their home territories.

5.2 Therefore the Association's view is that any additional spectrum identified for Third Generation systems should be open on equal terms to incumbent GSM operators and potential new licensees.

5.3 It should also be noted that many members of the GSM Association consider that their existing licensing arrangements would naturally provide for the granting of new spectrum for their Third Generation services, hence we can expect major parts of the world to opt for an evolution of existing GSM networks/operators into Third Generation networks/operators.

5.4 Based on visibly negative results experienced by several members, the GSM Association is of the opinion that administrations should select Third Generation operators by a comparative process rather than through auctions or similar processes that degrades the importance of system quality. In addition, administrations are urged wherever possible to minimise the costs for operators building Third Generation networks, as for example any additional start-up cost outside the necessary system costs would negatively impact on a quick and qualitative roll-out of Third Generation systems.

5.5 The GSM Association would also wish to mention that if in the event not all of the existing GSM operators receive a IMT-2000/UMTS Third Generation authorisation, then fair competition must be guaranteed between all 3 categories of operator e.g. GSM operators, Third Generation operators and GSM/Third generation operators.

6. Spectrum

The GSM Association fully supports the UMTS Forum's published strategy, and in particular the minimum bandwidth figures. In the light of paragraph 5 above, it is preferred that any UMTS/IMT-2000 Third Generation licensee, including both existing operators and new entrants, has access to a minimum of two paired bands of 15 MHz plus 5 MHz of un-paired spectrum, from within the IMT-2000 core band. The GSM Association therefore fully supports the activities of some regional regulatory authorities to ensure the release of sufficient and appropriate spectrum in a timely manner. It is however noted that several countries have already determined that for competitive reasons more than 4 operators should receive licences in the IMT-2000 core-band. This in turn would require that operators be allocated as a minimum two paired bands of 10 MHz plus 5 MHz. Such a minimum viable spectrum arrangement should only be considered for adoption if the overall opinion in Hong Kong following the consultation process was that some short-term IMT-2000 capacity restrictions were acceptable. This difficulty may be ameliorated in the longer term if additional IMT-2000 spectrum is released in the latter years of this decade.

The Association is also of the opinion that in congested areas a substantial amount of additional third generation spectrum will be required in the not too distant future. In some countries a minimum of 160 MHz (and in others substantially more) of extra spectrum will be needed as early as 2005 in addition to the IMT-2000 core frequency band and the bands currently used for 1st and 2nd Generation public mobile systems. This additional spectrum to be used for IMT-2000 should ideally be globally harmonised and should be contained within a minimal number of frequency bands. The frequency bands in question will require to be allocated to the Mobile Service or Land Mobile Service on a primary basis in the ITU Radio Regulations.

7. Standardisation

7.1 Again, this is a crucial element for the future of GSM as a successful platform for Third Generation systems. The 3GPP and the ITU are currently progressing with work in this field. The GSM Association in the past has fed its own requirements to ETSI SMG and to the UMTS Forum, and has now established a co-operative approach with the 3GPP as an MRP. As a basic principle the Association wishes to see future standards based on open interfaces, not proprietary solutions. Proprietary solutions would not create a healthy climate of competition, which would impact on customers and would not; it is believed, meet the needs of operators, regulators or service providers, and would as a result provide for a less than satisfactory overall service for the end users.

7.2 Standardisation must be substantially independent of frequency and therefore any standards developed should be designed to function over the complete range of spectrum envisaged for IMT-2000 as well as on existing GSM and IMT-2000/UMTS frequencies. It must also allow for 'soft migration' with evolutionary options to suit each operator's plans and interests

8. Comments on Specific Questions in the context of the foregoing sections

Paragraph 2.9 - *The TA intends to open to the prospective operators to use any IMT-2000 standards within their assigned 3G frequency bands for 3G mobile services, subject to the TA being satisfied that the various technical standards are compatible with each other from the users' point of view. The main consideration is to ensure that customers can easily switch from one network to another to obtain similar services and to maximise convenience in using roaming services without having to change the mobile terminals. The TA invites view from the industry on this proposal.*

Response – The Association is of the opinion that technologies specified by 3GPP will offer the best opportunities for customers' services and an appropriate evolutionary path for GSM systems and services. The GSM Association's recent initiative, the GSM Global Roaming Forum is likely to facilitate inter-technology IMT-2000 roaming as well as roaming between today's 2G systems. However a major factor will be 3G terminal costs and to achieve the lowest prices for consumers will necessitate minimising the number of variants within the terminal. This includes technology options as well as frequency band options. The first generation of 3GPP specified W-CDMA terminals manufactured for the WARC 1992 IMT-2000 core frequency bands will also include current GSM technologies and frequency bands.

However it should be realised that although early terminals will include both GSM and W-CDMA technologies in order to maximize roaming possibilities; the terminals may not necessarily support inter-technology (GSM/EDGE and W-CDMA) handover or connected mode cell reselection. This is especially pertinent if an early launch of 3G commercial services is envisaged. With GSM already in 148 countries and W-CDMA technology adopted by all 3G operators to date, it now seems clear that the most cost effective and most widely adopted IMT-2000 technology is likely to be W-CDMA, which in turn will maximise the roaming potential for Hong Kong's citizens.

Paragraph 3.12 – *Taking into consideration paragraphs 3.9-3.11, the TA is of the view that Hong Kong should adopt a 3G band plan that is in compliance with the ITU IMT-2000 allocation. Any comment on this issue is welcome.*

Response – The GSM Association fully supports the use of a band plan established in accordance with recommendations developed by 3GPP and ITU-R Study Group 8 for the IMT-2000 spectrum identified in number S5.388 of the Radio Regulations.

Paragraph 3.19: - *Based on the considerations in paragraphs 3.13-3.18, the TA is of the view that a new 3G operator will need 2 x 15 MHz paired spectrum in order to allow the implementation of three-layer hierarchical cell structure and the provision of full range of 3G services including the high speed multimedia services at 2 Mbps in an indoor environment. For incumbent 2G operators, the TA considers that less spectrum would be required because they can upgrade their 2G systems and use them to provide the macro layer. In this case, the minimum spectrum per existing operator is 2 x 10 MHz. If the foregoing spectrum allocation is adopted, between four to six licences can be issued for 3G services, depending on the licensing model adopted (see paragraph 4.5 below). The TA invites comments from the industry on the proposed minimum 3G spectrum allocation to new and existing operators.*

Response - The GSM Association supports the UMTS Forum's published minimum bandwidth figures. Any UMTS/IMT-2000 Third Generation licensee, including both existing operators and new entrants should preferably have access to a minimum of two paired bands of 15 MHz plus 5 MHz of un-paired spectrum, or for national reasons, as a consequence of domestic practicalities an absolute minimum of two paired bands of 10 MHz plus 5 MHz of un-paired spectrum, from within the IMT-2000 core band. Please refer to Section 6 above for more information on this matter.

Paragraph 3.21 - *The TA therefore considers that there may be no immediate need to make a decision on the allocation of the TDD spectrum. However, the TA will reserve the TDD spectrum in the 3G band for use by the licensed 3G operators and will further consult these operators when it is timely to allocate this spectrum. The TA invites views from the industry on the proposed allocation of TDD spectrum.*

Response – The response to paragraph 3.19 above covers this point.

Paragraph 4.6 – *The TA has not yet formed a view on the preference for anyone of the above licensing options and would like to seek comments from the industry prior to making a final decision.*

Response - Of the 4 options mentioned in the document, the first or second alternatives appears to meet the principles outlined by the GSM Association that any additional spectrum identified for 3G systems should be open on equal terms to incumbent GSM operators and potential new licensees. However the first option is to be recommended since it also takes into account the suggested bandwidth per operator requirement developed by the UMTS Forum (i.e. 2x15 MHz plus 5 MHz). The second option whilst meeting the requirements for equality of access would not cover the need for both incumbents and new operators to be awarded an equal amount of spectrum. This specific response also covers the point made in paragraph 4.4 of the consultative document.

Paragraph 4.14 – *The TA invites comments from industry on the intention to select 3G licensees by evaluation based on merit.*

Answer – Based on the experience of the Association's members Worldwide, a transparent comparative (beauty competition) process is considered the optimum solution. Such a process can identify in order of merit those applicants proposing the best approach for implementing a Third Generation service, benchmarked against a number of predetermined criteria. In any event whatever the method chosen, OFTA is urged to minimise the costs for operators building 3G networks, as for example any additional start-up cost outside the necessary system costs may negatively impact on a quick and qualitative roll-out of Hong Kong's 3G systems.

Answers to several questions have not been provided, as they seem to be specific to the Hong Kong market.

9. Conclusions

The GSM Association has provided a response to a number of issues and overall policy principles, which it believes to be important to OFTA's Third Generation consultative process.

The GSM Association would of course be prepared to respond to any questions of clarification that arise after perusal of this document.

The GSM Association looks forward to welcoming Third Generation members from Hong Kong into the GSM Association before too long.