

Response to OFTA's Consultation on
Licensing Framework for Third Generation Mobile Services
by
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Executive Summary

- SmarTone welcomes the opportunity to participate in and put forward its views on the licensing framework for 3G mobile services.
- It is timely that 3G mobile licenses should be introduced in Hong Kong to complement and expand the present range of services available on 2G technology. 3G licenses can be issued as soon as possible but commercial roll out should allow time for the maturity of infrastructure and terminal development.
- SmarTone supports the TA's technology-neutral approach in 3G standards. The 3G standards should not be imposed but left open to commercial choice. However, the 3G standards adopted should not impose inefficiency and technical conflict in spectrum utilisation.
- From a technology point of view, in order to exploit the full potential of 3G services to provide multi-media and high-speed data services, each 3G operator should be allocated with a bandwidth of 2 x 15 MHz paired spectrum plus 5MHz unpaired spectrum for maximum reliability and efficiency. However, the proposal of 2 x 10 MHz paired spectrum plus 5MHz unpaired spectrum is technically feasible to provide basic 3G functionality at least in the beginning. For continued 3G development, there will be the need for additional spectrum. This will need to be allocated for future multi-media services and to alleviate capacity issues as customer and traffic demand grows.
- 5 MHz unpaired spectrum should be allocated with paired spectrum in the initial licenses, and especially the case when only 2 x 10MHz is allocated.
- SmarTone believes existing operators and new entrants should be treated equally. Spectrum should not be specifically reserved for new entrant and successful license applicants should be allocated equal amount of spectrum bandwidth.
- Selection of licensees on merit is most appropriate for Hong Kong market. Whilst superficially attractive to Government, an auction would lead to significant investment being diverted away from network development and service innovations into the up-front licenses fees. It is inevitable that such fees would impact on the pricing to the customers.
- Review and enhancement of the current regulatory framework should take place prior to commercial launch of the 3G services.

- Roaming between 2G and 3G networks should not be mandatory but be the subject of commercial arrangement between operators.
- There is no need to provide for the mandatory separation of service provision from network operation. If it occurs, this should be the result of commercial negotiations and should not be imposed by regulators.
- Length of 3G licenses should be 25 years.

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1. **Introduction**

- 1.1 SmarTone is pleased to see OFTA entering a new phase in its consultations over the Third Generation Mobile (3G) Services, by publishing and inviting comment on a paper concerning 'Licensing Framework for Third Generation Mobile Services'. OFTA in its paper has raised a number of important issues on which it has invited comment from the industry. SmarTone welcomes this and has taken the opportunity to participate in the consultation exercise. SmarTone regards this response as a first step in the consultation process and looks forward to discussing the issues in greater depth over the next few months.
- 1.2 SmarTone supports the timely introduction of 3G mobile services and indeed took the early step back in July 1999 of conducting an extensive field trial on the 3G system using Ericsson's UMTS trial system. This trial was extremely successful and useful. SmarTone shared the results of the trial with OFTA and with a wider audience by posting the results on OFTA's web site for public access.
- 1.3 SmarTone has a clear vision of how the next generation of mobile services will benefit both business and personal users. SmarTone is a strong believer that further evolution towards 3G will keep Hong Kong at the forefront of developments in mobile communications and information services to the significant benefit of Hong Kong.

2. **An Overview of Hong Kong Mobile Communications Market**

- 2.1 The mobile communications market in Hong Kong is regarded as one of the most competitive in the world with 6 mobile operators running 11 networks. Since the introduction of analogue mobile service into Hong Kong in the mid-1980's, the mobile subscriber base has grown to over 3.9 million (as of OFTA statistics at end March) in less than 20 years. The mobile penetration in Hong Kong is about 58%, one of the highest in the world and is higher than fixed line penetration, which is at 3.8 million. (as of OFTA statistics at end March 2000)
- 2.2 The overwhelming success of mobile communications industry was really initiated by the introduction of the Second Generation Mobile (2G) system which employs digital technology. One of the most popular technical standards is the GSM standard.
- 2.3 SmarTone is at the forefront of GSM technology by deploying the first GSM network in Asia in 1993. With the introduction of six Personal Communication Service (PCS) licenses in 1996, the mobile communication market has undergone a dramatic change. Because of fierce competition among mobile operators,

customer tariffs and the cost of mobile handsets have also dropped dramatically. Because of vigorous competition, the market has seen consolidation in 1997 where some of the original PCS (1800MHz) licensees have merged with the GSM (900MHz) mobile operators.

- 2.4 With the introduction of Mobile Number Portability (MNP) in March 1999, the competition intensified to a level that some mobile operators offered cut-throat service tariffs and heavily subsidized handset prices to retain or attract new customers. All mobile operators attacked market share by driving the service tariff towards cost or even below cost. Now, we can see that there is little room for the existing mobile operators to further reduce the service tariff to generate new customers. The mobile market has reached a high level of maturity that some mobile operators especially SmarTone have developed value-added services and data applications in order to differentiate from others while building brand in different market segments.
- 2.5 In 1999, we can see that some mobile operators including SmarTone have started to focus in mobile data applications and prepare for the introduction of 2.5G technologies like General Packet Switching System (GPRS) and Enhanced Data-rate for Global Evolution (EDGE). In 1999, SmarTone has deployed technologies like High-speed Circuit Switched Data (HSCSD) and Wireless Application Protocol (WAP) to prepare for the emerging wireless multi-media communication age where anytime, anywhere multi-media applications are expected from customers.
- 2.6 The existing mobile operators in Hong Kong have made significant contribution in terms of investment in the mobile infrastructure and offering innovative services. As the technology and the demands of customers keep changing, operators need to constantly upgrade their networks and systems. The existing mobile operators have been doing very well to maintain Hong Kong at the forefront of mobile communication technology in Asia.
- 2.7 As mentioned above, the mobile market in Hong Kong can be regarded as a very mature one where competition is fierce and market forces are at full play. SmarTone believe that the 3G spectrum should be seen as the capacity expansion needed by the existing operators to provide multi-media and high-speed data services to their customers, instead of as a means of introducing more competition into the market.

3. **3G standards in Hong Kong – single or multi-standards (para 2.9)**

SmarTone supports a technology-neutral approach to 3G standards so long as these are compatible with each other.

- 3.1 SmarTone advocates a technology-neutral approach to 3G standards in the interest of consumer choice and innovation, but subject to adequate safeguards of interoperability and maximum efficiency in spectrum allocation.
- 3.2 In order to achieve economies of scale both in infrastructure and terminal equipment which will be to customers' benefit, the fewest number of standards should be introduced. However, if more than one standard is adopted, it will be desirable that customers can have the choice of switching operators without buying new terminal equipment.

4. **3G Services in 2G Spectrum (para 3.8)**

SmarTone supports OFTA's proposal to permit the existing 2G operators, whether they are successful or not in obtaining 3G spectrum, to use any IMT-2000 standard within their assigned 2G frequency bands for 3G mobile services.

- 4.1 The evolution of a 2G system to accommodate 3G services is just a natural move on the part of mobile operators and will take place when the equipment is ready in the market. The decision to introduce 3G services in 2G spectrum should be purely commercial and left to the individual 2G operators and therefore need not have regulation intervention.
- 4.2 Moreover, usability of 3G technology in 2G spectrum depends very much on equipment development by equipment vendors, which in turn will depend on demand for equipment in 2G bands. However, at present there is no roadmap, no delivery timing and therefore no guarantee on equipment availability from major vendors. Any decision on using the 3G technology in 2G spectrum now will be premature.
- 4.3 There will be additional technical and logistical problems of how existing 2G customers can be migrated onto the new 3G standard. Spectrum requirements will still be the same, i.e. 10-15 MHz, which are currently not available to operators in the already highly loaded 2G spectrum. This implementation will become feasible only if a solid migration plan not affecting existing customers is identified.

5. **Band Plan for 3G Services (para 3.12)**

SmarTone supports OFTA's proposal of adopting a 3G band plan that is compliant with the ITU IMT-2000 allocation.

- 5.1 It is vital that the adopted 3G frequency band plan is supported by most of the

major equipment manufacturers globally to ensure that customers can benefit from the economies of scale and wide choice of selection in terms of terminal equipment.

6. **Individual Operator's Bandwidth Requirement (para 3.19)**

From the technology point of view, SmarTone sees that all successful applicants should be awarded 2 x 15 MHz paired spectrum plus 5 MHz unpaired spectrum to maximise the benefits of 3G to provide innovative multi-media services to end-users with maximum reliability and efficiency.

The proposal of 2 x 10 MHz paired spectrum plus 5 MHz unpaired spectrum is however technically feasible to support basic 3G functionality in the initial stages of service launch. Business viability of 3G development in the longer term is however heavily reliant on additional paired spectrum being allocated soonest, so as to minimise the limitation on offering bandwidth-hungry multimedia services and the potential problem of insufficient capacity to meet growing customer and traffic demand.

To ensure a level playing field, the spectrum allocation plan should be the same regardless of whether the applicant is a new entrant or an incumbent operator.

Minimum Spectrum Requirement for Initial Deployment:

- 6.1 It is important to allow operators to plan the massive future investments that 3G will necessarily entail against regulatory stability and certainty. Operators must have the necessary radio resources to support a major investment program. A major aim of the 3G system is the ability to offer the customer a wide variety of new services. It is generally accepted that the use of the Hierarchical Cells Structure (HCS) Topology can best support these different types of service. Hence, the allocation of 3G spectrum must ensure the operator can optimally deploy the HCS.
- 6.2 Ideally, 2x15 MHz is needed for proper network planning. The use of 2G spectrum for macro layer would require multimode multiband phones, the development and timing of which is still unclear. In the consultation paper, OFTA mentioned in paragraph 3.19, "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." SmarTone would like to point out that in order for 2G operators to support the 3G high speed data traffic by using the 2G network as the blanket coverage macro cell layer, the GPRS/EDGE technology is needed to provide the necessary data rate. At the moment, the

GPRS/EDGE – 3G interworking capability is still not proven to be technically feasible in terms of both infrastructure and terminal equipment. Also, with the anticipated heavy loading of the 2G networks when 3G is launched, the 2G macro layer may not have sufficient radio resources to handle such additional 3G handover traffic.

- 6.3 SmarTone as well as other mobile operators have achieved remarkable success in the mobile industry by being one of the highest mobile penetration regions in the world and also renowned for innovative services. We expect that migration of customers from 2G and 2.5G to 3G will take some time and will be greatly influenced by the development of terminal device, and their price points as well as new services and network roll out. Moreover, customers will be given the choice to choose either 2G, 2.5G or 3G services offered by the same operator. Therefore, it is very premature at this stage to make any decision on the bandwidth requirement based on the assumption that there will be sufficient capacity in the existing 2G spectrum to provide the macro layer for 3G.
- 6.4 As a principle therefore, the status of an operator (existing or new) should not be a factor in deciding how much spectrum is assigned to each. All operators should be assigned an equal amount of spectrum to enable them to provide 3G services effectively. The actual amount of spectrum needed should be determined based on the minimum required to operate a 3G network and provide 3G services effectively. We believe that both existing and new entrant operators will have the same need on 3G spectrum in order to run effective and efficient 3G services
- 6.5 Based on ITU IMT2000's (see [1]) recommendation, a minimum bandwidth of 2 x 15MHz paired spectrum plus 5 MHz unpaired spectrum should be allocated in order to exploit the full potential of 3G services like high-speed multi-media and data services. However, 2 x 10 MHz paired spectrum plus 5 MHz unpaired spectrum is technically feasible to support basic 3G functionality in the initial stage of service launch. Business viability of the 3G development in the longer term will be heavily reliant on additional paired spectrum being allocated as soon as possible, so as to minimise the limitation on offering bandwidth-hungry multimedia services and the potential problem of insufficient capacity to meet growing customer and traffic demand.

Allocation of the 5MHz unpaired spectrum:

- 6.6. It was suggested by proposal of the UMTS Forum, 'Minimum Spectrum Demand Per Public Terrestrial UMTS operator in the Initial Phase', Report #5 from the UMTS Forum, 8 September 1998 (see [2]) that if operators are to be only assigned 2 x 10 MHz (paired), that 5 MHz of unpaired spectrum will be needed in addition, and already some possible restrictions will be imposed to the possible UMTS services capability. Without the 5 MHz unpaired spectrum, 2 x 10 MHz

paired spectrum will only have limited UMTS service capability. The allocation of unpaired spectrum is foreseen to handle asymmetric traffic in an optimised way.

- 6.7 For data services, which are expected to be highly asymmetric in nature (with more traffic on the downlink than the uplink), the use of unpaired spectrum (2010-2025 MHz or 1906.1-1920 MHz) is considered to be far more efficient. For this reason the provision of an unpaired 5 MHz carrier to provide coverage and capacity for high traffic density is also considered essential.
- 6.8 Currently, we are not aware of any country assigning 2 x 10 MHz (paired) alone. Those that do assign 2x10 MHz have allocated an additional 5 MHz unpaired spectrum at the same time.

Spectrum Requirement for Subsequent Phases:

- 6.9 Given the uncertainties of the market, operators may have different predictions for the requirements of 3G services, and hence spectrum requirements. Together with the uncertainties surrounding the frequency spectrum that may be available in the future, the proposed spectrum allocation should be incorporated with sufficient flexibility to cater not only for a minimum spectrum package, but also necessary provision for customer and traffic growth. Attempts to limit spectrum allocation to each licensee would only limit the customers from enjoying the full benefits that may be realised by 3G.
- 6.10 SmarTone considers that, in order to cope with the future demand in mobile internet, broadband multi-media services and customer growth, it is highly likely that operators will need more spectrum. SmarTone would therefore urge OFTA to announce to potential bidders the amount of additional spectrum which it anticipates will become available, the timing of such availability and when and how it will be licensed.

7. **Allocation of TDD Spectrum (para 3.21)**

SmarTone considers that it is essential to allocate the unpaired 5 MHz TDD spectrum in the initial licenses.

- 7.1 SmarTone considers that the unpaired spectrum should be divided and assigned to licensed operators allowing them to make use of TDD mode of operation to meet demand in localised areas or to cater for imbalance in demand between downlink and uplink.
- 7.2 The view in the UK of the majority of the responses to its 3G consultation paper was notwithstanding that development standards for the TDD mode appeared to be lagging behind that of the FDD, the paired and unpaired spectrum should be

- allocated at the same time. The thought behind this was that allocating the unpaired with paired spectrum would stimulate demand for TDD equipment and promote the need for the timely development of the TDD mode.
- 7.3 To avoid uncertainty in the business plan to the 3G investors, OFTA is urged to allocate the TDD spectrum to the licensed operators in the initial licenses.
- 7.4 From an investor point of view, it is essential that the TDD spectrum is to be allocated together with the FDD spectrum. This entails a more reasonable business case, if the possibility to handle growing capacity and innovative services are guaranteed. Investment would be deterred if there remains possibility of the TDD spectrum being assigned to other new entrants.

8. **Treatment of New Entrant and Incumbent Operators (paras 4.3 and 4.4)**

SmarTone is of the view that the existing operators and the potential new entrants should be treated equally. No spectrum should be reserved for any new entrants and an equal allocation of spectrum should be awarded to all licensees regardless of whether they are new entrants or incumbent operators.

- 8.1 Hong Kong is no doubt the most competitive mobile market in the world with six mobile operators operating eleven mobile networks. The competition increased dramatically after the introduction of mobile number portability in March 1999 and continues unabated. In 1999 the operators offered significantly lower tariff plans and heavily subsidised handsets in order to retain customers. It is clear that some operators are continuing to drive the mobile market tariff towards cost, and sometimes even below cost, in order to capture the market share.
- 8.2 The incumbent mobile operators have demonstrated their commitment in Hong Kong's mobile communications infrastructure in the past by rolling out the 2G network in a very efficient and timely manner and also launching innovative and customer-friendly services. SmarTone and other mobile operators have invested significantly since the start up of network rollout. Continued network expansion and enhancement, building valued-added systems, content and application development have been carried out continuously for the past years. The successful mobile operators should be able to build on their experience, harness their expertise, integrate and complement the 3G network with their existing 2G services and infrastructure and this represent the fastest and most effective way of introducing the 3G network, and with the least environmental impact. This would be to the benefit of customers. It enables mobile communications to move on rapidly to offering more new multi-media services to more end users. Moreover it provides the opportunity to be able to offer the new services in the way the users want them to be offered, namely integrated with voice based services.

8.3 SmarTone as one of the major committed players in the mobile communications market has always been seen by the public as being in the forefront in adopting new technologies and deploying new and innovative services and applications. Some of the major achievements by SmarTone are listed below:

SmarTone's Major Achievement in Technology:

- The first operator in Asia to launch GSM system in 1993, when SmarTone was a brand new entrant to mobile business.
- The first operator in the world to launch Enhanced Full Rate Encoder (EFR) technology (1997) which has significantly improved voice quality. (SmarTone being an incumbent operator has been very aggressive in introducing new technology)
- The first operator in the world to deploy Unstructured Supplementary Service Data (USSD) technology in 1997. USSD is used to launch innovative data and information-on-demand services.
- The first in the world to offer fully overlapped GSM900/GSM1800 dual band network (1998).
- The first operator in Hong Kong to deploy Wireless Application Protocol (WAP) technology in commercial services in September 1999.
- The first operator in Greater China to test Wideband CDMA technology with Ericsson in July 1999.
- SmarTone, together with Ericsson, became the first companies in Asia to launch a network trial of GPRS in December 1999.
- SmarTone and the second largest French telecommunications group SAGEM broke new grounds in GPRS (General Packet Radio Services) technology, scoring an Asia-first by successfully field-trying a SAGEM GPRS handset on SmarTone's GSM mobile network on 19 April 2000. SmarTone and SAGEM have jointly demonstrated the unique advantages of GPRS technology, including packet data transmission and Internet access requiring no dial-up modem connection. The trials were considered the first in the Asia conducted on a GPRS-enabled handset using a GPRS-ready network. Previous field trials were done on a simulated basis using notebook computers instead of a real GPRS handset.
- SmarTone and Taiwan's Far EastTone jointly announced the successful completion of general packet radio services (GPRS) pre-commercial roaming trials between the two networks on 17 May 2000, bringing closer to reality wireless high speed data transmission.

- SmarTone achieved a world-wide first with the introduction of a live operational GPRS (General Packet Radio Services) network on 19 May 2000.

SmarTone's Major Achievement in Launching Innovative Services:

- The first operator in Hong Kong to launch automatic international roaming service (1994) using Common Channel Signalling Number 7 Protocol (C7)/X.25 Protocol Conversion technology. (That was an innovative way to launch international roaming service before Signalling Control and Connection Part (SCCP) protocol was adopted for roaming by Hong Kong Telecom International).
- First operator in the world to launch innovative commercial services based on USSD technology. e.g. Information-on-demand services, phone home service
- SmarTone launched its Internet Service brandname 'iSmart' in April 1999.
- SmarTone launched its IDD service brandname '1638' using its ETS license on 1 January 1999. This service enables SmarTone's mobile customer to enjoy high quality competitive price IDD services.
- First operator in Hong Kong to launch WAP based services in September 1999.
- First operator in Hong Kong to launch China Stored-value Roaming Card Service in December 1999 using USSD technology.
- First operator in Hong Kong to launch International Stored-value Roaming Card Service in February 2000.
- SmarTone, Charles Schwab Hong Kong Ltd, and Ericsson Limited jointly announced on 25 January 2000 that they are developing the first secure Hong Kong mobile phone stock trading service using WAP (wireless application protocol) technology.

8.4 From section 8.3 above we can see that SmarTone has grown to become one of the most technically innovative mobile operators in Hong Kong and in Asia Pacific region. It is evident that SmarTone has become both the technology leader and service innovator in the mobile market.

8.5 SmarTone believes that the purpose behind the introduction of a new entrant into the market is two-fold: (i) increasing the level of competition if the competition is not enough in the market and (ii) injecting new thoughts and ideas to stimulate innovation in the industry. Since the mobile market in Hong Kong is already very

competitive (external investors are concerned that it is over-competitive) and very well penetrated, SmarTone believes that a new entrant should only be introduced if that entrant can demonstrate realistically that it will be able to have a significant innovation on 3G Services.

- 8.6 On the basis of the above, SmarTone is of the view that it may be extremely difficult for a new entrant to satisfy this requirement and hence there is no need for a new entrant in this already competitive market. Should there be a decision to encourage the introduction of new entrants into this market, the TA will no doubt be extremely selective in considering the licensing of potential new entrants. Any new entrant must provide evidence to demonstrate that it has the commitment, resources, capability, technology innovation and track record to rollout the 3G network. SmarTone considers that it has demonstrated the ability to roll out the network effectively and in a timely manner and to launch innovative services.
- 8.7 To ensure that Hong Kong can remain as the centre of technological innovation and the Telecom Hub of Asia, long term investments in the areas of training, infrastructure build-out and technology development are essential to the hi-tech industries. Hence, OFTA should provide an environment that encourages a long-term investment strategy from its telecommunication service providers.

9. **Licensing Options (para 4.6)**

SmarTone is of the view that equal spectrum allocation should be applied to all licensed operators, with no preference given to new entrants. There should not be a combination of 2x15 MHz and 2x10 MHz otherwise it will develop a skewed playing field in the longer term.

From the technological point of view, 2x15 MHz paired plus 5 MHz unpaired spectrum is required to maximise the benefits of 3G to provide innovative multi-media services to end-users with maximum reliability and efficiency. In the case a bandwidth of 2x10 MHz paired plus 5 MHz unpaired spectrum is chosen, we recommend no more than 5 licenses to be issued and that OFTA retain 2x10 MHz for future allocation to the fast growing and innovative successful operators.

For both of the above cases, the 5 MHz unpaired spectrum should be allocated at the same time when the licenses are awarded.

- 9.1 From the technological point of view, SmarTone sees that all successful applicants should be awarded 2 x 15 MHz paired plus 5 MHz unpaired spectrum to maximise the benefits of 3G to provide innovative multi-media services to end-users with maximum reliability and efficiency.

- 9.2 2 x 10 MHz paired plus 5 MHz unpaired spectrum is technically feasible to support basic 3G functionality in the initial stage of service launch. However, business viability of the 3G development in the longer term will be heavily reliant on additional paired spectrum to be allocated soonest, so as to minimise the limitation in offering bandwidth-hungry multimedia services and the potential problem of insufficient capacity to meet growing customer and traffic demand.
- 9.3 Based on the discussion in section 8.5 and 8.6, SmarTone is of the view that to ensure level playing field, no spectrum should be reserved to the new entrant and both the incumbent operators and new entrant should be awarded an equal amount of spectrum allocation.
- 9.4 In summary, SmarTone is of the view that spectrum allocation should be applied equally to all licensed operators, with no preference given to new entrants. Allocation should not be a combination of 2x15 MHz and 2x10 MHz otherwise it will develop a skewed playing field in the longer term. In the case that 2x10 MHz paired plus 5 MHz unpaired spectrum is chosen, we recommend no more than 5 licenses to be issued and OFTA to retain 2x10 MHz for future allocation to the fast growing and innovative successful operators. For both of the above cases, the 5 MHz unpaired spectrum should be allocated at the same time when the licenses are awarded.

10. **Operator Selection Arrangement (para 4.14)**

SmarTone supports OFTA's proposed arrangement for operator selection by "Evaluation of the Merits of Applications".

- 10.1 SmarTone believes that a transparent merit system for 3G licensing is most appropriate for Hong Kong since:
- This method is already well established and has been adopted by the TA for many years. This method has been proved to be very effective and fair.
 - The 3G licenses would allow mobile operators to make use of the 3G spectrum to offer the next generation multi-media and high-speed data services and applications. The selection criteria should be based on the capability of the potential candidates launching innovative services effectively, efficiently and in a timely manner.
 - A fair and transparent merit system enables the selection of operators who can build the best possible mobile infrastructure to deliver mobile services at the best value and competitive pricing. This will help to improve Hong Kong's competitive position in the Asia Pacific Region and its status as a telecommunications and information technology hub.

- Up-front investments that are channelled not to spectrum access, but instead to extensive coverage, marketing programs, high quality systems, robust networks and employee training will result in more effective use of the spectrum, and in the long-term will result in more government income.
- Companies with mobile network rollout experience and track record of service innovation should be considered carefully as serious contenders for 3G license instead of just looking at upfront license fee paid as the spectrum auction. This is a more logical and sensible way to select committed players in building the 3G network for Hong Kong's next generation wireless high-speed multi-media infrastructure. Using the spectrum auction method will result in corporations with the biggest financial backup winning the 3G license but not necessarily committed to running the 3G business for the good of the company.
- The current selection by merit is well proven and Hong Kong is now the leading mobile technology application area in Asia outside Japan. The auction of spectrum in US has resulted in the slow development of mobile technology and the US mobile market is still far lagging behind that of Europe, Japan, and some Asian countries like Hong Kong.
- The current selection by merit system is working well. We can see that all the 6 existing operators are committed in rolling out the network. The matter of concern is really on whether there is enough competition in the market and whether the control of the licensing condition is tight enough. The current practice of performance bond has already served the purpose.
- The argument for spectrum auctioning is that spectrum is a scarce public resource and there are concerns that the winners of the licenses will "trade" their licenses for profit without really building the network. However, this loophole can be well safeguarded by imposing a high performance bond and adequate licensing qualifications and conditions.

10.2 Spectrum auctioning on the other hand is not the best choice for Hong Kong for the following reasons:

- To improve Hong Kong's competitive positioning in the region and in the world, we need the best possible mobile infrastructure to deliver mobile services at the best value and competitive pricing. The auction system will award licenses to companies that can pay the most, but may not necessarily be the most competent to offer the best mobile service or to provide the most innovative applications to the end users.
- The experience of other countries has shown that companies that buy the licenses can come under financial pressure. That has delayed the market development more than in countries who have awarded the licenses without requiring a premium for the spectrum.

- There is a cost to spectrum auctioning, which ironically would manifest itself most clearly in the development of a country's telecommunications, multi-media, electronic commerce and technology industries:
 - (i) In the US, operators paid an enormous amount of auction price for their licenses and then failed to raise sufficient funding to roll out their networks. Not only will the network roll-out be delayed but the development of the mobile industry will also be seriously affected when the defaulted spectrum is re-auctioned to new entrants. Partly as a consequence of this, the US is now well behind Europe in terms of mobile technology, and is still struggling to catch up.
 - (ii) The high cost of winning a 3G license by spectrum auctioning means that while the Government gain funding (in the short term), consumers could feel the brunt of the auction costs, as operators seek to transform their initial outlay into profits as soon as possible. Money that would be spent on infrastructure will have to go on paying for auction and license fees. That additional payment has to be recovered to the detriment of consumers in terms of future development of innovative services. Rollout of the network could also be slow. This would in turn lead to a consumer tendency to reduce the amount of usage of mobile phones, and thus limit the earnings of the technology providers and mobile operators. Limited earnings would lead to limited tax receipts, hampering the government spending and future tax cuts. The picture that eventually emerges is of sluggish telecommunication, multi-media, electronic commerce and technology industries in Hong Kong.
- The industry members of the UMTS Forum (See [6]) have studied the charges for granting licenses including spectrum licenses for 3G systems. They formed the view that auctions are not suitable because the high up-front costs paid by the licensees increase investor uncertainty and decrease investment in the network. Further, cost of services to customer will be increased and network coverage obligation may be forgotten as the operators concentrate on getting the maximum revenue from the auction, leaving consumers with an under-developed service. Hence, Governments should seek to encourage innovative and efficient spectrum usage.

10.3 One of the arguments put forward to justify the auction process is that the license fee will be a sunk cost to the winning bidders. The implication being that the cost of the license will not be passed on to the consumer because ultimately the price of the service will be determined by market forces. Whilst we agree that market forces will determine the price of the service, operators must recover their costs and be able to make a sufficient return to support the long term viability of the business. In economics, the concept of sunk cost applies only where irreversible

investments have already been made. All costs not yet incurred are incremental to the operators. No investor will incur a cost that cannot be recovered from market place. Thus, there will be a natural floor to the range of market price which will be determined by the operators' cost structure and they must include the return required by the party financing the license bid, regardless of whether it is debt or equity financing. In addition, network costs are not all confined to the start up of the business but are constantly increasing in terms of expansion of network capacity, enhancement of coverage and functionality, introduction of new value added services and new developments such as WAP, GPRS and, in future, 3G, etc. Given that no 3G service is up and running anywhere in the world, there is no experience on how those up front auction costs can be recovered without charging customers with at least a proportion early on which could discourage the use and growth of 3G services.

10.4 In summary, 3G network would provide a mobile broadband platform that would support a full range of multi-media and electronic commerce services which are vital to the economic well being of Hong Kong in the Information Age. For Hong Kong to become competitive in the Asia Pacific Region and in the global economy, Hong Kong must remain the status as a telecommunications and information technology hub. Although spectrum auctioning may bring capital revenue to the Government, this represents a huge additional upfront start up cost to 3G operators. This will affect adversely the development of the next generation of telecommunications and Internet infrastructure in Hong Kong. Failure in 3G infrastructure development in Hong Kong may mean bad effect to Hong Kong's future economic. We should not sacrifice the long-term prosperity of Hong Kong to the short-term benefit of spectrum auctioning.

11. **Similar regulatory framework for 3G (para 5.7) and Timing to Review the Current Framework in View of Fixed-mobile Convergence (para 5.12)**

The current 2G regulatory framework should be enhanced to ensure effective competition, especially in:

- **Granting licensees equal rights as those of fixed network**
- **Same treatment as broadband carrier especially in relation to interconnection requirement and charging.**

SmarTone believes that OFTA should review the 3G network regulatory framework especially in the area of interconnection with other networks.

11.1 The issues of interconnection of 3G networks with other networks, such as the fixed networks and broadband networks, in terms of both circuit and packet mode should be reviewed by OFTA using an industry consultation process as soon as possible. Furthermore, the topic of regulatory framework for Internet Protocol (IP)

interconnection should be studied and an industry consultation process should also be carried out.

- 11.2 The customer base of mobile services is overtaking that of fixed line services. Mobile service is now considered as important as fixed service. A Mobile User Survey was conducted by the Hong Kong University Social Science Research Centre in December 1999 (see[3]), and was commissioned by the six mobile operators. The survey result shows that 53.9% of the respondents agreed that the mobile phone is very important to their life and 51.5% of the respondents even rated it as more important than fixed line telephones. Further, 89% of the respondents agreed that mobile accessibility is a consumer right.

12. **Domestic Roaming between 2G and 3G Networks (paras 5.13 and 5.14)**

SmarTone believes that domestic roaming between 2G and 3G networks should be subject to commercial arrangement between operators and not be a mandatory requirement.

- 12.1 SmarTone firmly believes that network competition has contributed to the success of mobile services in Hong Kong and that Hong Kong customers and the Hong Kong economy will benefit the most from a competitive telecommunications marketplace where advanced services are provided by multiple operators over competing infrastructure. Experience has shown that operators are keen to build their own infrastructure because they can take full responsibility for their own network services and determine the level of quality they provide to their customers. In this manner networks can choose to compete on quality of network service, product and service innovation and customer care levels.
- 12.2 A mandatory roaming requirement (3G to 2G) may:
- potentially suppress the establishment of competitive national infrastructure;
 - result in a “regionalised” network environment as operators seek to cherry pick regions;
 - lead to a complexity of customer care/ ownership/ varying quality;
 - potentially penalise the operator which moves first to establish its network;
 - go against OFTA's wishes to see the widest possible deployment of competing 3rd Generation services.
- 12.3 Care would need to be taken in any regulatory determination of the charging levels for mandatory roaming since if the levels are too low there will be little incentive (other than a license obligation) to roll out coverage early since the operator can offer its customers service without having to build infrastructure.

- 12.4 The costs and complexity of retro-fitting domestic roaming to existing systems clearly needs to be recognised and existing operators must be able to recover these costs in a fair commercial manner. ETSI has moved forward to integrate the 3G and GSM standards and this progress needs to be maintained to enable
- roaming
 - customers to migrate to 3G more conveniently, and
 - compatible cross border 3G services.
- 12.5 Notwithstanding the standards work, the costs and complexity and the related IT and distribution structures all need further work and study.
- 12.6 Domestic roaming (whether 3G to 2G or vice-versa) may also distort the dimensioning of networks since it would mean that an operator would need to plan for traffic roaming onto its network (as well as the level of roaming of its customers onto other networks). This aspect requires further work. Any obligation to accept domestic roaming would need to be balanced against customer commitments and potentially involve tiered service levels - eg. the customer may roam but at a price.
- 12.7 Roaming might lead to market distortions between 2G and 3G systems. For example, a 3G operator may concentrate on high-density areas for true 3G services, and then rely on 2G systems to carry voice traffic and data services. In this manner the 3G operator could concentrate on the most populated areas and potentially valuable markets.
- 12.8 Given the potential disincentive to build competitive networks if domestic roaming is required from launch, SmarTone would suggest that, for example, domestic roaming could be permitted after operators have met certain network rollout obligations.
- 12.9 However SmarTone's position is that domestic roaming between 2G and 3G should not be a mandatory requirement imposed on existing operators but should be the subject of commercial agreement in the market.

13. **Separation of Service Provision from Network Operation** (para 5.17)

SmarTone believes that there is no need for the mandatory separation of service provision from network operation.

- 13.1 The 3G value chain in future will naturally allow end users to access service and content providers. The need for Mobile Virtual Network Operators (MVNO) may not exist as it does in 2G environment. We should allow the market to judge, and if it is really needed, it should be resolved by commercial negotiation rather than regulatory intervention.

13.2 OFTEL of UK published a consultative document in February 1999 entitled "Competition in the Mobile Market" [4] which reviewed the mobile market generally in the UK and particularly considered the requirement in the licenses of two of the four mobile operators that they should provide wholesale airtime to service providers and how that should be fairly priced (chapter 3 of the document).¹ In October 1999, OFTEL issued a statement following on from the earlier February consultative document entitled "OFTEL Statement on Mobile Virtual Network Operators" [5]. This document concludes that OFTEL is reluctant to take action that might dictate a particular form of MVNO when some of the benefits might also result from different arrangements that can be achieved by commercial negotiation. OFTEL believed that the best way to identify the exact form of MVNO operation that minimises the costs associated with MVNOs and adds maximum value to the mobile industry and consumers is by commercial negotiation between network operators and potential MVNOs.

14. **Mobile Number Portability (para 5.19) and Numbering Requirement (para 5.20)**

SmarTone supports MNP for 3G but OFTA should review the related charging principle.

SmarTone supports the OFTA's proposal of allocating the leading digit "6" primarily for 3G services. However, the differentiation will not be so meaningful if MNP between 2G and 3G is mandated.

14.1 OFTA may need to consider awaiting the outcome of a review for standardised MNP which is currently being worked on by the ETSI

15. **Timing of Issuing Licence**

SmarTone supports OFTA's intention to issue 3G licenses as early as possible, but commercial rollout should allow time for the maturity of infrastructure and terminal development.

16. **Length of Licence**

SmarTone believes that 25 years should be granted as the life of the 3G licenses since the investment of 3G is huge and the pay back period is long.

¹ A further review of the mobile market in 2000 is expect to be published by OFTEL in September 2000.

17. **The Way Forward**

SmarTone regards this response paper as a first step in the consultation process and looks forward to discussing the issues in greater depth with the TA over the next few months. Moreover, it is worth noting that the 3G technology standardisation work (3GPP Release 2000) is still progressing and further changes and enhancement could occur before finalization in about end 2000. Therefore, SmarTone would like to recommend that technical forums can be held on different specialized topic such as deployment of TDD spectrum, issues in domestic roaming between 2G and 3G networks, future spectrum allocation, updated 3G development in other countries, the regulatory framework regarding IP interconnection, etc. SmarTone believes that more exchange idea sessions between OFTA and the industry will facilitate the development of 3G , IT industry and the application and services development industry.

SmarTone will be more than happy to attend further discussion sessions with the TA to discuss in-depth our view on this consultation and other issues of the 3G development. Finally, SmarTone would welcome the TA's request for clarification on any unclear section in this response paper.

References

- [1] ITU's proposal, 'Spectrum Requirement for IMT-2000', ITU-R [IMT.SPEC] Draft (Aug 99)
- [2] Proposal of the UMTS Forum, 'Minimum Spectrum Demand Per Public Terrestrial UMTS operator in the Initial Phase', Report #5 from the UMTS Forum, 8 September 1998
- [3] Mobile User Survey conducted by the Hong Kong University Social Science Research Centre, December 1999.
- [4] "Competition in the Mobile Market", consultation paper published by OFTEL of UK in February 1999.
- [5] "OFTEL Statement on Mobile Virtual Network Operators", statement made by OFTEL UK, October 1999.
- [6] Proposal of the UMTS Forum, 'The impact of license cost levels on the UMTS business case', Report #3 from the UMTS Forum, 10 August 1998