

Hutchison Telephone Company Limited

Comments On the OFTA Document:

"Licensing Framework for Third Generation Mobile Services.

**Analysis of Comments Received, Preliminary Conclusions
and Further Industry Consultation (dated 3 October 2000)"**

Hutchison Telephone Company Limited (HTCL) welcomes this opportunity to submit our views and comments on the second consultation paper on licensing of third generation (3G) mobile services.

3G represents a completely new era for telecommunications service. Quite different from the pure voice telephony of 2G with which everyone is very familiar, 3G mobile service is full of excitement brought by innovation and dynamic evolution, both on the technical and service levels. Services will be innovative and evolving, user behaviour will be significantly different, and hence the network requirements are yet to be defined. Under such considerations, any attempt to pre-determine the regulation and technical requirements would impose limits to its natural process of growth and evolution. HTCL's broad position, as has been concluded by most regulators in other advanced mobile markets, is that consumers and industry in Hong Kong are best served by market forces moderated with light regulatory framework. It would be best left to the market for determination and evaluation.

HTCL is pleased to reiterate its strong support for the following positions of the TA:

- 15 MHz paired + 5 MHz unpaired spectra are to be allocated to each of 4 operators. As stated in our submission on the first consultation paper, this allocation is required to ensure effective provision of full range of 3G services appropriate to the needs of the Hong Kong market.
- New entrants will be treated in the same fashion as incumbents. This enables equal opportunities and fair and effective competition.

The key conclusions of our response to the TA are:

- While we believe MVNOs are important for 3G development, opening of networks to service providers should not be mandated. Access can only be equitably achieved through commercial negotiation. MVNOs do not have to bear the capital costs and risks associated with building a 3G network. Therefore requiring the operators to mandatorily build and maintain a reserved capacity for third party MVNOs with uncertain demand and commitment is extremely unfair and would introduce distortions of true market behaviour of 3G services.
- Wholesale agreements between MVNOs and network operators should be reached through commercial negotiation. In any event, each negotiation should be

assessed on a case by case basis and the wholesale price should not be less than fully allocated costs, including licence fees, capital expenditure and a reasonable commercial return on investment. The commercial terms between the network operator and the MVNO should also include reasonable commitments from the MVNO covering guaranteed period of access and traffic volume in accordance with the capital investment of the operator. Wholesale agreement mechanisms should not form part of the pre-qualification requirement.

- Spectrum auctions provide the most economically efficient and fairest mechanism for 3G operator selection. Pre-qualification criteria should be publicly available prior to submission, transparent and fair, with selection criteria applied equally to all bidders.
- A one-off licence payment is most equitable for all stakeholders and the best approach. The primary alternative, royalty with minimum payment, is non-transparent and economically inefficient.
- With 6 existing operators, Hong Kong is sufficiently competitive to allow roaming agreement between greenfield 3G operators and current operators to be achieved through commercial negotiation. Roaming should not be part of the pre-qualification process.
- Mobile number portability (MNP) should not be required at launch. Mandating MNP at launch is likely to delay service introduction. The TA should convene a technical task force to co-ordinate 3G MNP specification and testing with industry.

OFTA has structured its consultation paper with both statements of intent and requests for comments on selected issues; our response addresses each of these in sequence.

1 Percentage of network capacity that is open

TA:

*2.3.14 The preliminary view of the TA on the percentage of network capacity to be open to any non-affiliated service providers (whether MVNOs or resellers) lies in the range of 30% to 50%. This availability of capacity to non-affiliated service providers would be assessed in the busiest cells during the peak traffic hours. **Industry feedback on what they consider as a reasonable percentage is sought to assist the TA in making a final decision.** The percentage should not be too low as to render the open network requirement meaningless; nor too high to discourage investment incentives.*

HTCL:

While we believe MVNOs are important for 3G development, opening of networks to service providers should not be mandated. Access can only be equitably achieved through commercial negotiation. MVNOs do not have to bear the capital costs and risks associated with building a 3G network. Therefore requiring the operators to mandatorily build and maintain a reserved capacity for third party MVNOs with uncertain demand and commitment is extremely unfair and would introduce

- 1.1 3G services will only be successful if they provide a range of compelling content to consumers and business users. It is widely expected that Mobile Virtual Network Operator (MVNO) provisions allowing non-licence holders to provide services using a licence holder's infrastructure will allow smaller players to enter the market, providing increased innovation and content diversity leading to an overall increase in the size of the 3G market. MVNOs can range from simple resale of minutes (for example, a major music company purchasing one million wholesale minutes from a licence holder to distribute music) to more complicated services such as telematics or application service provision that require infrastructure investment from the MVNO. However the term MVNO is not defined in the Consultation Paper. In fact there is no internationally accepted definition of such term. Hence it is difficult to identify who shall fall within this category.
- 1.2 While HTCL agrees that MVNOs have the potential to achieve these benefits, we conclude that the costs and complexity of implementing mandatory "open network" separation of network and service provision and a percentage openness exceeds the notional benefits and object to this as a pre-qualification requirement. MVNOs do not have to bear the capital costs and risk associated with building a 3G network. Therefore requiring the operators to mandatorily build and maintain a reserved capacity for third party MVNOs with uncertain demand and commitment is extremely unfair and would introduce distortions of true market behaviour of 3G services.
- 1.3 The anticipated costs to operators, consumers and the regulator of a mandated percentage include:
 - **Infeasible to implement due to technical limitations:** There are genuine technical limitations which make it impossible to mandate the MVNO capacity requirement. Unlike 2G, 3G networks are complex with "breathing" cells, Quality of Service requirements and numerous interfaces. In addition, different MVNOs may connect into different parts of the network. According to 3GPP standard, it is impossible to define a static and objective capacity, to partition the network capacity and to manage the usage in each partition. Specifying a percentage of "open network" is bound to be susceptible to inconsistent interpretation and is difficult to regulate. The costs of such regulation and effective monitoring will exceed the benefits. Additional technical elaboration is included as an appendix to this submission.
 - **Enforcement costs:** OFTA will bear additional costs policing this requirement, considering modifications in the event of technical developments, determining the nature of sanctions in the event of failure to reach the target and assessing the efficacy of the regulation. If such costs are passed back to the operators, it will further increase the burden of the operators or these costs may eventually be borne by the consumers.
 - **Pre-empts commercial activity:** Since it is likely to be in operators' interests to allow MVNOs onto their networks, this proposal unnecessarily seeks to regulate a

behaviour that will probably occur irrespective of the regulation. For example, in the Hong Kong 2G market, we understand that a service provider has purchased airtime from a network operator without any need for regulatory intervention. In addition, the licence terms, level of demand and connection requirements are currently unknown for 3G. It is difficult to see how an effective mutually beneficial arrangement can be defined prior to this information becoming available.

- **Reduced auction prices:** Operators will partially factor the costs of providing any openness requirement and the uncertainty of demand from MVNOs into the amounts they are prepared to bid and will substantially reduce the same.

The radio network is expected to account for a substantial amount of total capex. Maintaining such additional capacity will also unfairly increase the operating expenditure for the operators. Requiring an additional 30% to 50% capacity for as yet un-identified third parties with uncertain demand will substantially reduce the amount operators are prepared to pay at the licence bid.

In addition, this increase in peak funding from additional capital expenditure may limit the capital available for operators to pursue content and service development.

1.4 The possible benefits of a mandated percentage are, conversely, relatively limited:

- **Reduced anti-competitive pricing:** In a market dominated by a single network operator, a MVNO may indeed not be able to negotiate reasonable terms. The 3G market in HK will, however, consist of 4 players with a best forward estimate of equal market shares in the long term, making anti-competitive pricing less likely.
- **Marginal MVNO services:** In attempting to meet the regulatory capacity requirement, operators might be forced to take on MVNO services at lower prices than would have been achieved through open commercial negotiations. This distortion may allow marginal services that would not have been commercially viable without the regulatory requirement to enter the market and provide services to consumers; i.e. in effect, a subsidy from the operator to the marginal MVNO.

On the other hand, if the operator does not subsidise marginal MVNOs, there will be idle capacity which is not economically efficient.

There is also substantial evidence in 2G markets of weakening in regulatory separation between network operation and service provision where this was originally mandated. This is most pronounced in the United Kingdom (UK) and German markets.

1.5 While most regulators of 3G markets encourage operators to develop MVNO propositions, our current understanding is that no other 3G market has mandated separation of network and service provision and none has attempted to specify a capacity range. The percentage network traffic that is generated by MNVOs is seen as more of a consequence of market activity and commercial behaviour, rather than as an attempt to stimulate market activity by mandating a MVNO traffic level.

1.6 In addition, the notion of a mandated level is not consistent with other industries that share some of the characteristics of the 3G market. For example:

- **The unbundled local loop:** Even in markets where there is a dominant provider, a regulated percentage of network traffic is not seen as an effective method of stimulating the market.
- **2G networks:** Our analysis has identified no market that has ever specified a minimum traffic requirement for service providers on an operator's network.
- **International simple resale:** Our understanding is that no percentage of IDD traffic has ever been mandated prior to market liberalisation.

1.7 The UK regulator has issued the following statement: "After a public consultation earlier this year, and taking into consideration the current state and level of competition in the mobile phone market, OFTEL has concluded that the additional benefits to consumers would not be sufficient to justify the substantial regulatory intervention required for MVNOs."¹

1.8 In Italy, MVNOs are unlikely to be introduced, relying on operators to develop the range of services appropriate to the market.

1.9 Hence we conclude that, while MVNOs are possible beneficial participants in the growth of 3G services, the TA's proposal mandating an "open network" structure and excess capacity will distort the development of 3G in Hong Kong. Specifying a MVNO capacity is potentially damaging to consumer interests' as the costs of regulation will exceed the benefits. Mandating an open network or MVNO traffic levels should not be included in the pre-qualification requirements.

2 Wholesale Price between 3G Network Licencees and MVNOs

TA:

2.3.15 Regarding the wholesale price of the 3G network licencees to MVNOs and resellers, it is the initial view of the TA that he prefers to leave it first to commercial negotiations among the parties. The TA will only intervene when such negotiations failed and he is requested to make a determination under the interconnection provisions of the Telecommunications Ordinance. In making such a determination, the TA would consider economic principles based on both the "retail minus" and "cost plus" approach. The "retail minus" approach would be based on the retail price of the services provided by the network operator or its affiliated service provider in the market minus the cost of providing the services by the network operator or its affiliated service provider. A competitor would be able to compete with the network operator or its affiliated service provider (by offering the same or

¹ OFTEL's Statement on Mobile Virtual Network Operators is available on the OFTEL website at: <http://www.oftel.gov.uk>

lower retail prices) if the competitor is as efficient, or more efficient, in the service provision. The “cost plus” approach would be based on the relevant long run average incremental cost in operating the network and providing the conveyance service including an appropriate cost of capital commensurate with the risk of investment in a 3G network. **The TA is prepared to consider submissions on which is the industry’s preferred approach.**

HTCL:

Wholesale agreements between MVNOs and network operators should be reached through commercial negotiation. In any event, each negotiation should be assessed on a case by case basis and the wholesale price should not be less than fully allocated costs, including licence fees, capital expenditure and a reasonable commercial return on investment. The commercial terms between the network operator and the MVNO should also include reasonable commitments from the MVNO covering guaranteed period of access and traffic volume in accordance with the capital investment of the operator. Wholesale agreement mechanisms should not form part of the pre-qualification requirement.

- 2.1 Wholesale pricing between network operators and service providers is a mature issue. HTCL supports the TA’s view that commercial negotiations should be the primary mechanism to arrive at such pricing.
- 2.2 In the event of failure to reach agreement, HTCL considers that the TA should take on a mediation role, facilitating commercial agreements between operators and MVNOs using international evidence and precedents to bring parties together. as opposed to determination under the interconnection principles. This will facilitate true market behaviour for the 3G development.
- 2.3 Most countries now employ some form of long range average incremental cost (LRAIC) to determine interconnection rates between fixed and mobile in the event of the failure of commercial negotiations². HTCL suggests that the fixed line analogies of either LRAIC or "retail minus" are not entirely appropriate for the 3G market. MVNOs are likely to connect into different parts of the network resulting in a range of costs for different MVNOs. Further, as the price of 3G content will be broadly independent of the traffic generated, a "retail minus" scheme may result in disproportionate payments to an operator.
- 2.4 LRAIC may be an appropriate costing method where licence costs are low and the asset infrastructure is completely amortised. It is inappropriate when there are substantial licence auction fees and infrastructure costs that must be incurred within short time frames or activities occur solely for the purpose of opening the network to service providers. As these costs are yet to be sunk, the use of

² For example, The EC, DGXIII, “Working Document on Interconnection Pricing in a Liberalised telecommunications market”: “charges for interconnection based on a price level closely linked to the long run incremental costs for providing access to interconnection are appropriate for encouraging the rapid development of an open and competitive market”

LRAIC or some other non-fully allocated cost mechanism is inefficient. Also LRAIC may result in 3G operators subsidising the MVNOs.

- 2.5 Specifying a cost method in advance may also produce unintended consequences. Since MVNOs will have different traffic, connection and revenue profiles, specifying a single cost model will encourage those MVNOs whose cost structure favours the proposed single model to seek determinations rather than enter into commercial negotiations. This may increase OFTA's workload and partially distort the market to favour MVNOs with this cost structure.
- 2.6 HTCL proposes that, in any event, the wholesale price should be assessed on a case by case basis which should not be less than a price based on some form of fully distributed cost of network access. This should include licence fees, capital expenditure and a reasonable commercial return on investment of no less than 20% .³. The commercial terms between the network operators and the MVNOs should also include reasonable commitments from the MVNO covering guaranteed period of access and traffic volume in accordance with the capital investment of the operator.
- 2.7 In the UK, OFTEL has decided against a regulatory interconnection model. "OFTEL considered, among other factors, the potential economic costs and benefits associated with intervention to require the provision of services to MVNOs, including the potential impact on competition and the potential benefits to consumers. OFTEL's conclusion is that there is not enough evidence to justify intervention by OFTEL at present."⁴
- 2.8 Finally, there is a risk that mandating an interconnection arrangement prior to a precise definition of what constitutes an MVNO may re-open a range of interconnection issues as existing service providers seek to re-classify themselves as MVNOs.
- 2.9 In conclusion, HTCL considers that wholesale prices are best handled through commercial negotiation and should not form part of the pre-qualification requirement.

3 Licensing approach

TA:

2.4.1 The advantages of the proposed hybrid approach are as follows:

- *It ensures that only applicants who are willing and able to build out a 3G network are permitted to bid.*

³ Goldman Sachs estimate European 3G operators' EBITDA margins to reach around 40% and return on investment to reach 23%

⁴ See 3.1.2.1 of the OFTEL license information memorandum.

- *It protects consumer interest in that minimum levels of 3G rollout across the HKSAR will be achieved by certain dates.*
- *It still lets the market decide in an objective manner which applicants value 3G licences the most.*
- *The “open network” requirement protects consumers interest by minimizing the possibility of the spectrum price being passed onto the consumers as the TA retains the regulatory option of regulating the wholesale price for the conveyance service over the networks.*

HTCL:

Spectrum auctions provide the most economically efficient and fairest mechanism for 3G operator selection. Pre-qualification criteria should be publicly available prior to submission, transparent and fair, with selection criteria equally applied to all bidders.

- 3.1 HTCL’s initial view, as expressed in the first round of consultation, was to support an auction without pre-qualification since it provides equal opportunity for all bidders and Hong Kong's treasury benefits. As echoed by individuals, academics and political parties/Legislative Councillors, an auctioning process is transparent, fair, objective and economically efficient. The revenue raised from auctioning could help finance the budget of the Government, reduce the tax burden on the community or provide benefits to the disadvantaged who are non-3G users.
- 3.2 HTCL supports an auction process that is both transparent and designed to minimise gaming or other collusive behaviour from bidders. There is a large literature on the effective design of auctions and HTCL re-iterates its support for the TA’s position of a process broadly similar to the UK auction.
- 3.3 HTCL will consider to support a hybrid method of pre-qualification provided that assessment of pre-qualification criteria is based on a set of transparent, objective and quantifiable measures and a set of thresholds and commitments. These should be publicly available prior to submission and are equally applied to all licence bidders. The obligation is on the bidder to demonstrate that they are able to meet these criteria. As in the case of a cash auction, the hybrid approach selected must ensure a speedy process that is in the definite interest of the public and Hong Kong.
- 3.4 The TA has suggested a range of pre-qualification requirements; these must be objective to avoid any sense of politicisation in the pre-qualification round. HTCL’s view on each of these requirements is discussed in the following paragraphs:
- 3.5 HTCL supports the inclusion of financial and technical capability to operate a network as a pre-qualification criterion. This criterion ensures that bidders have access to both the technical competencies and the capital to deliver 3G services and serves as a mechanism to screen out unsuitable candidates.

- 3.6 HTCL objects to the inclusion of a business plan as a pre-qualification criterion. Any 3G business plan must rely on a series of assumptions made about an evolving market. It is, therefore, difficult to develop a set of transparent, objective criteria against which the merits of a business plan can be assessed. In addition, the strengths and weaknesses of the business case will have already been assessed by the capital markets as the bidder seeks financing. This business plan criterion is effectively redundant and does not improve the pre-qualification results.
- 3.7 This perspective on the validity of business plans as a pre-qualification criterion is consistent with the TA's analysis, as noted in its 2nd Consultation Paper:
- "Because 3G services and rollout requirements are so unknown as yet, any attempt to choose between operators on the basis of their business plans may be highly subjective or even arbitrary." (page 5) and
- "... It may arguably be more subjective than previous exercises the TA had conducted since the 3G business is still full of uncertainties" (page 6).
- 3.8 HTCL supports the inclusion of minimum rollout obligations across Hong Kong as a pre-qualification criterion. This is consistent with international thresholds which are listed below:

Country	Auction	Pre-qualification or licence requirement
United Kingdom	Yes	The WT Act Licences contain an obligation to roll out a 3G network covering an area where at least 80% of the population of the UK live, by 31st December 2007 ⁵
Germany	Yes	25% of population by end 2003; 50% by end 2005. 70% requirement may be introduced at some later stage.
Singapore	Yes	100% population coverage by 2003 ⁶
Italy	Yes	Coverage of the capitals of the Italian 21 regions is required within 30 months of the license starting date. Coverage of the capitals of the Italian 103 provinces is required within 30 further months. ⁷

Figure 3-1: International pre-qualification or licence requirements

This pre-qualification criterion should also include a requirement to substantiate the bidder's ability to secure network system and equipment.

⁵ See 2.2.4 of the OFTEL license information memorandum.

⁶ Asian Wall Street Journal, 25 October 2000, page 8.

⁷ <http://www.citpubs.com/comms/100500.htm>

- 3.9 HTCL supports the inclusion of the access to capital requirement as a pre-qualification criterion. The combination of licence fees and network capital expenditure makes it unlikely that every operator could meet these funding requirements internally. Bidders therefore need effective access to local and international capital markets to deliver services.
- 3.10 HTCL objects to the inclusion of an open network as part of the pre-qualification requirements. This is discussed in detail in section 1.
- 3.11 HTCL supports the inclusion of a deposit as a pre-qualification criterion. Requiring identical deposits from all bidders limits speculative entry into the market and reduces the cost of administrative and logistic support.
- 3.12 HTCL objects to the inclusion of the provision of domestic roaming by 2G operators to 3G new entrants as part of the pre-qualification requirements. This is discussed in detail in section 6.
- 3.13 HTCL supports the notion that the pre-qualification result for a bidder should be either "accept" or "reject" and be independent of the subsequent auction process.
- 3.14 HTCL also supports the pre-qualification criteria requiring financial guarantees to ensure that the capital required to support the minimum rollout conditions will be provided.
- 3.15 In addition, HTCL believes that all submissions should remain confidential to OFTA and that the pre-qualification process should be completed in a timely fashion which will only be in the interest of the public and Hong Kong.
- 3.16 In conclusion, the TA should only use a hybrid approach to licence allocation, with a set of transparent, fair and quantifiable selection criteria which should be publicly available prior to submission and applied equally to all bidders.

4 Licence payment method

TA:

2.5.5.4 Due to the uncertainties and the risks involved, the TA does not favour a pure royalty payment approach. Instead, he considers the following variant to be a viable alternative to lump sum cash payment, upfront or deferred.

2.5.6 Royalties with Guaranteed Minimum Payment

2.5.6.1 To overcome the financial risk borne by the Government in a pure royalty approach, it is possible to require a minimum annual payment that the licencees would need to pay the Government irrespective of its turnover. However if the turnover grows to a point that the royalty calculated using the percentage bid in the auction exceeds the minimum payment, the licensee would need to pay the additional royalty over and above that of the minimum payment. The Government would require a 5-year rolling guarantee of the minimum annual payment.

HTCL:

A one off licence payment is most equitable for all stakeholders and the best approach. The primary alternative, royalty with minimum payment, is non-transparent and economically inefficient.

- 4.1 The TA has proposed four possible payment methods. If we assume that all options have the same present-value, HTCL supports the TA's acknowledgement that the selected payment method should be "simple to assess, simple to administer and reduce the credit risks thereafter". In this spirit, we are of the view that a one-off payment is the most efficient and transparent⁸ and that the advantages outlined by the TA for this payment process significantly outweigh any disadvantages.
- 4.2 The TA suggests that one of the disadvantages of an upfront payment is that it may hinder network rollout and that costs will be passed on to consumers.⁹ As the licence costs are sunk and the market is likely to be sufficiently competitive with four players and certain extent of service substitution from 2.5G, any attempt by an individual operator to increase tariffs will lead to a loss of market share. Similarly, the network rollout is independent of any licence costs and will proceed to both generate income and meet any regulatory requirements.
- 4.3 Another disadvantage indicated by the TA is that small, innovative and financially constrained companies may not be able to participate in the auction. Designing a complicated licence payment structure to allow these firms to enter the market is not efficient. The MVNO mechanism will permit firms with commercially viable propositions to enter the 3G market and deliver services to customers. This allows a range of MVNOs into the market, rather than the small number that could realistically be expected by changes in the licence payment process.
- 4.4 The TA also proposes a deferred payment scheme. This has the putative advantage of allowing payments to fall outside the peak funding requirements of operators. In practice, the licence payments though material, should not be substantial enough to limit debt financing. In addition, if the deferred payment rate is below the company's cost of capital, this could be interpreted as a non-transparent subsidy to the operator.¹⁰
- 4.5 The TA also considers allowing bidders to pay annual payments based on revenues and outlines a series of disadvantages of this approach¹¹. Of the many disadvantages, the most substantive is the lack of bid transparency as the

⁸ Under the assumptions of capital market efficiency and discount rate tractability, any commercial operator would prefer the option with the lowest expected present value.

⁹ See 2.5.3.3 OFTA

¹⁰ In the UK successful bidders had a choice between total fee immediately or 50% immediately and then 5 payments on the sixth to tenth anniversary of the issue date. Instalments are calculated with the formula $I_n = (R/5) \times 1.0865^n$ indicating a 8.65% cost of capital. In Italy, a \$US 1.75 billion deposit was required with licence winners given up to three years to pay the remainder.

¹¹ See 2.5.5.3 OFTA

expected revenue from each bid cannot be compared.¹² A low-percentage bid from an operator with exceptional skills in developing brands and services may stimulate the market and contribute more than a higher-percentage bid from a weaker candidate.

- 4.6 In addition, bids could not be transparently or accurately assessed under a royalty approach and the TA would not be able to indicate how much revenue the auction has raised. Performing operators will ultimately pay more in terms of the aggregate licence fees than under performing operators. This unfairly condones incompetence and provides disincentives to improvement and performance. It is difficult to see how the public interest is served under such an arrangement and the marginal benefits of such a scheme are therefore clearly outweighed by the cost. No other country has introduced such a payment scheme for 3G licences.
- 4.7 The modification of the royalty scheme proposed in 2.5.6 to include a minimum payment, which is currently the TA's preferred option, introduces an asymmetry to the calculation that further increases costs with no increase in benefits. Bidders are in effect required to bid on two variables and would now be doubly penalised in the event of poor performance. This payment method is undesirable in that it only adds to the risk of the 3G market, thereby reducing probable auction prices, and is unlikely to result in the greatest economic benefit to the community.

5 Mobile number portability requirements

TA:

4.5.4 The TA firmly believes that MNP is an essential element in protecting the interests of the consumers. Since the implementation of MNP in March 1999, there were over one million portings. The number of portings shows the popularity of the service in the competitive environment of the mobile industry. Consumers would naturally expect MNP to be available for 3G services. The TA therefore affirms the view stated in paragraph 5.19 of the first consultation paper that MNP should be a mandatory requirement for 3G services. As regards the implementation schedule for MNP, the TA considers that MNP should be available from the launch of 3G services in order to bring maximum benefits of MNP to consumers. If necessary, the TA will set up a specialist group working on the technical difficulties which might hinder early implementation of MNP for 3G services.

HTCL:

Mobile number portability should not be required at launch. Mandating MNP at launch is likely to delay service introduction. The TA should convene a

¹² Other disadvantages include credit risks, assessing relative combinations of minimum payment and percentage revenues, market distortions and the possibility of re-negotiation in the case of operator financial difficulties.

technical task force to co-ordinate 3G MNP specification and testing with industry.

5.1 As stated in our previous submission, HTCL's view is against mandated mobile number portability for 3G launch. This is based on the following reasons:

- **Key identifier:** Telephony is not the key service and the telephone number is no longer the only customer identity in the 3G era; there are many other identities which are less portable such as:
 - E-mail address: this is under the control of the domain name of the operator, MVNO or reseller and is non-portable
 - Personal homepage: is also under the domain name of the operator, MVNO or reseller
 - IP Address: Inter-operator IP routing is based on 256 IP addresses block basis, which is referred as Class C address. Porting a single end-user IP address would require routing on single IP level, which is not allowed at the present moment.
- **Implementation:** Since the implementation of 2G MNP in Hong Kong took 8 to 12 months, 3G MNP would inevitably take longer due to higher complexity in 3G. In particular:

Interconnection arrangements for 3G operators and MVNOs are as yet undefined. Undefined items include numbering arrangement for 3G operators and MVNOs, traffic forecasts for interconnection circuits and database dimensioning, the interconnection arrangement between operators and the various logistics arrangements such as most importantly the porting procedures.

With the number of "operators" being greatly increased, assuming that MVNOs are also being included, the existing MNP technical solution will have to be significantly reviewed.

- **Service delays:** In our view, it is not in consumers' interests to wait for 3G voice MNP to be resolved at the sacrifice of the early launch of 3G services.

- 5.2 Only limited information is available, but at least two countries support this view as shown below in Figure 5-1.

Country	Mobile number portability
United Kingdom	<p>Portability provided but no time frame specified. "As all new Mobile PTO T Act Licences contain this requirement, number portability will be available in the 3G market."¹³</p> <p>In the fixed market number portability was optional for all except the largest operators. Small operators were able to either opt out or provide portability on a reciprocal basis.</p>
Germany	Germany has not implemented number portability for the 2G market. It is unlikely that the 3G market will have mandatory number portability at launch.

Figure 5-1: MNP requirements

- 5.3 3G services will have more stakeholders and interconnection options than 2G services. Defining number portability specifications prior to the availability of any market information may lead to poor choices of technologies and processes to enable number portability. HTCL proposes that the TA convene a technical task force to co-ordinate MNP. HTCL would be delighted to participate in this task force.

6 Roaming between 3G and 2G networks

TA:

4.7.3 Having considered the views in the submission, the TA affirms the view that mandatory roaming from 3G to 2G networks would promote effective competition between the new entrants and the incumbents 2G/3G operators during the initial period when the 3G networks of the new entrants are still being rolled out. Therefore he intends to include this domestic roaming requirement as an obligation under the 3G licences issued to incumbent operators. As part of the proposed pre-qualification process, incumbent operators will be required to signify acceptance of this obligation should they be successful in obtaining 3G licences (paragraph 2.3.2 of this paper).

4.7.4 To provide sufficient commercial incentives for the 3G new entrants to roll out their own networks, there should be a "sunset" date when the roaming arrangement would end. A possible "sunset" date could be, say, five years after the new entrant(s) has launched its service.

¹³ See 3.2.2.1 of the OFTEL information memorandum

HTCL:

With 6 existing operators, Hong Kong is sufficiently competitive to allow roaming agreement between greenfield 3G operators and current operators to be achieved through commercial negotiation. Roaming should not be part of the pre-qualification process.

- 6.1 The TA has indicated that mandatory roaming from 3G to 2G networks is a method for promoting effective competition. While this is consistent with the European experience, where most regulators have mandated such requirements, HTCL's view is that this is an inappropriate regulatory requirement for the Hong Kong market that would cause additional capital expenditure for incumbents.
- 6.2 The geographic challenges of the Hong Kong market are substantially less than any European country¹⁴. Any operator committed to the 3G market should be able to provide effective network coverage within one year of launch as was achieved by the PCS operators.¹⁵ Mandating a roaming requirement could encourage a new entrant to not fully build-out their network, exactly the opposite to OFTA's intent. Furthermore, a fast rollout of 3G is both in the public interest and in the interest of Hong Kong in sustaining its position as a leading digital communications location.
- 6.3 Even in the event that there is only one new 3G entrant to the Hong Kong mobile market which would require roaming, there would be at least three remaining incumbent GSM operators without a 3G licence who would presumably be interested in providing 2G roaming services. This market structure is sufficient to ensure that commercial negotiation produces the desired result.
- 6.4 Some operators' 2G capacity is almost exhausted. Requiring these incumbents to increase capacity in their 2G network as they are simultaneously investing in building out their own 3G networks transfers costs from the new entrant to incumbents, providing an inefficient and unfair subsidy to the new entrant.
- 6.5 In any event, HTCL believes that a two-year transition period more realistically reflects technical transitional experience in the Hong Kong market. Finally, the proposed five year roaming period extends beyond the expected expiry date of GSM licences, complicating any commercial agreement.

¹⁴ Compare Hong Kong's 1,092 sq km with the UK's 244,000 sq km and the Netherlands 41,000 sq km.

¹⁵ Singapore expects 100% population coverage by 2003, less than 2 years after service launch.

7 Fixed and Mobile Convergence

TA:

4.8.7 The TA considers that there would be further opportunities to consult the industry on the question of fixed and mobile convergence and this subject might be outside the main purpose of this consultation exercise.

HTCL:

- 7.1 HTCL re-iterates its view from its previous submission that, as far as mobile service operators are concerned, it is beneficial from an administrative and regulatory point of view to group such mobile services as Personal Communication Services (PCS) and Public Mobile Radiotelephone Services (PMRS) under the scope of a single category of Carrier (Mobile) Licence and to standardise the set of general conditions which are intended to apply to all mobile services which come under the scope of Carrier (Mobile) Licence.
- 7.2 The TA has stated on 25 October, 2000 on the question of different charging arrangements for interconnection applying to fixed and mobile operators that the distinction could not be removed at this stage because of the substantial difference in operating rights and obligations between the fixed and mobile operators. HTCL's position is that different charging arrangements for interconnection would inevitably create barriers to such convergence. We would like to urge the TA for early consultation on this subject.
- 7.3 In conclusion, we restate our view that the evolving (and converging) nature of 3G services make it essential that the TA transition to a "lighter touch" regulatory framework with the underlying philosophy that regulation is kept to the minimum necessary to achieve appropriate outcomes.

Appendix: Technical Limitations and Challenges in Mandating “Open Network”

The OFTA consultation paper states that certain percentage of capacity should be reserved for MVNOs and "would be assessed in the busiest cells during the peak traffic hours". HTCL's opinion is that technically this would not be feasible, as there is no means to separately partition cell capacity, measure the usages and regulate the usages in each partition for different MVNOs. Moreover, it is not possible to define the cell capacity in an objective, consistent and formalised way due to a range of technical issues specific to W-CDMA. The followings elaborates these arguments:

- a) **3G network operators have no means to regulate and control the traffic and available capacity for different MVNOs.** In order to make available a fixed percentage of network capacity for MVNOs, it is necessary for the network operator to be able to (i) partition the network capacity, and (ii) regulate and control the usage in each partition.

However, according to 3GPP Release 99 24.008 Ver3.4.1 of the Mobile Radio Interface Layer 3 specification, Core Network Protocols-Stage 3, W-CDMA network does not provide any technical standard or feature for implementing such capacity partitioning. In fact it is a general design principle in almost all standards of telecommunication network that all radio users will be treated equally and all radio resources will be allocated whenever available on a non-discriminative basis. The operator has no means to segregate the radio capacity for different groups of customers.

To be able to regulate and control traffic, the operator also needs to measure, distinguish and reconcile radio usage of customers belonging to different MVNOs and its own network. As this requirement is against the non-discriminative network design principle, the measurement function is not available and cannot be fulfilled. Therefore, it is absolutely impossible for the operator to tell how much of its radio capacity is taken up by its own customers and those of MVNOs. Obviously the network operator is not provided with any means to regulate and control the usage in each capacity partition, even if it is possible to have such partition.

In summary, there is no way to partition, measure, regulate and control the traffic for different MVNOs and network operator. Consequently, there can be no guarantee of a fixed percentage of capacity being available to multiple service providers on the same network, whether they are the network operator, MVNOs or resellers. Both the regulator and operator will eventually find it impossible to obtain any meaningful traffic measurement data for effective policing the open network concept. Compulsory implementation would highly likely result in unmanageable regulatory environment and uncontrollable grade of service in the radio network, leading to degradation of the 3G service quality.

- b) **Capacity in W-CDMA is a function of the traffic mix:** In GSM, the capacity is constant for a cell, however this is no longer true for W-CDMA. In W-CDMA network, the capacity of a cell is dynamic and varies un-proportionally with different quality of service (QoS) requirement of the services used by the

customers. QoS can be defined as the requirement of a series of performance parameter such as bit error protection, data rate and delays which are used for guaranteeing the satisfactory performance of different service appearing to the end user. In order to sustain the required QoS of different service type, the W-CDMA network allows different processor gain and frame erasure rate for different type of service. Because the capacity of a W-CDMA radio is directly related to how the radio resource is used to handle various types of service, the capacity of each cell also varies with the different types of services going through it. For example, the total available capacity in bits/s for a voice-only scenario would be substantially lower than a scenario involving only high data-rate users. To illustrate more, a cell with the capacity of about 700Kbps for voice only service can provide and up to 1.6Mbps capacity for handling pure a 384Kbps data service. This illustrates a high QoS requirement service like voice would require high channel protection, which would be achieved by lowering the maximum throughput (capacity) of a cell. Unlike GSM, the capacity of a cell will therefore be unpredictable and highly dependent on the mix of traffic. It is therefore not feasible to define the capacity in an objective manner.

- c) **Capacity of a single cell is dynamic and there is no "absolute" measure of capacity.** In W-CDMA, capacity limits are "soft" in that capacity can be borrowed from surrounding cells if they are not fully loaded - this is due to the "cell-breathing" effect. In other words, the coverage area and capacity of the cell is not static but can, and would, change during normal operation, again making precise measurement not feasible.
- d) **Capacity of the radio network depends on the number of terminals in "soft hand-over" at a given point of time:** In W-CDMA, active radio connections are transferred between adjacent cells by linking to 2 or more cells simultaneously to improve call quality, commonly referred to as "soft hand-over". This can consume considerable network capacity, reducing the number of subscribers that can be served by those cells supporting the "soft-handover". As soft hand-over is dynamic and varies according to radio environment, this further leads to an ever-changing capacity available in each cell. In 3GPP, there is no way to avoid this. In a multi-MVNO environment, it is not feasible to take these constant changes in capacity into consideration in a fair and consistent manner.
- e) **Capacity of the radio network will vary as the radio condition or environment changes.** It is well known from current IS-95 cdmaOne systems that practical factors such as the placement of base stations in non-ideal positions, antenna-pointing adjustments, new construction, etc. can all have a degrading effect and change the soft-handover factor, coverage (and hence the traffic mix) and other radio conditions such as noise floor. All these factors are affecting the capacity of a W-CDMA radio and therefore it is not feasible to define capacity in an objective manner with these "real-world" challenges.

In addition, in considering the "open network" concept, the requirements of each MVNO to interface to the network operator's core network may be different. There is no worldwide accepted definition of MVNO and thus it may exist in various forms and consist of different network entities. According to current OFTA proposals, MVNOs can request to connect into various point in the operator's network, such as SGSN, routers, switches, GGSN etc. Each MVNO

will rightly seek the interface which is most convenient and cost-effective for their business proposition, but this will add significant challenges and complication to the network provider to manage and control the traffic in this complicated network environment. It will also create complex network security issues that could, if not foreseen and carefully managed, affect the 3G service rollout.

Moreover, connectivity between MVNO and network operator requires both to synchronise the software releases. Failure to do so would impact the service availability, functionality and performance of the services to be introduced by both MVNOs and the network operator. Since software upgrade is part of the normal network operations, this is almost impractical to be realised.

So HTCL's overall conclusions from this brief technical review are:

- The operator has no means to regulate and guarantee the level of capacity available to each MVNOs or network operator sharing the same network.
- Defining "maximum capacity" in a W-CDMA radio network is subject to many variables and is open to interpretation, and makes it impossible to regulate.
- The "open network" concept, while is possibly attractive from a regulatory perspective, will be impractical to realise and implement in a W-CDMA network , if international specifications are to be followed.
- In this "yet-to-be-defined" environment of 3G services, commercial negotiation is the most appropriate process to balance the diverse requirements of the various stakeholders.