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Bell Labs Innovations

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Office of the Telecommunications Authority
29/F Wu Chung House
213 Queen's Road East
Wan Chai
Hong Kong
Attn: Senior Telecommunications Controller (Competitive Services)

Dear Madam/Sir,

The Telecommunications Authority (TA) issued its 2nd industry consultation paper on "Licensing Framework for Third Generation Mobile Services" to seek feedback from different players in the industry. Lucent Technologies Asia Pacific Ltd is pleased to express our views on a number of the issues raised in the consultation paper. Commercial issues that we feel are more relevant to an operator or a bidder are not included in our response.

Section 2.3.10

♦ Lucent Technologies applauds TA's commitment to implementing "open networks" in Hong Kong. A credible 3G business case hinges on the ability of service providers to exploit the new packet-data networks to deliver services and applications to end-users that hitherto are only available on the internet. TA has obviously recognized that to speed up early mass adoption of such services and applications, it is necessary to open 3G networks to players that are experienced in service provision in the internet world.

♦ The introduction of "open networks" and MVNOs also promotes optimum use of scarce radio spectrum by a larger number of players. Lucent thoroughly agrees with the TA that it is a positive way to encourage more competition and innovative content and applications to the end-users.

Section 2.3.12

♦ We understand the TA's need to regulate in order to ensure the introduction and maintenance of "open networks" in Hong Kong. However, we consider that any regulation that relies solely on a requirement that network operators "open a minimum amount of network capacity to non-affiliated service providers" can in fact put an artificial ceiling on the openness of networks, and impose unnecessary risk onto network operators. Our view is explained below, together with our suggestions on how "open networks" can be implemented.

♦ 3G networks employ technologies that are vastly different from those presently in use, in particular, packet data networks and wideband-CDMA. The task of tuning and maturing a network will be a complicated one, even when there is only one service provider using the network. For this reason we suggest delaying the entry of MVNOs until after some initial rollout period to allow operators to deploy their infrastructure and manage their vendors to stabilize the radio networks. This will simplify the initial network deployments and allow the operators to understand their costs when framing commercial agreements with MVNOs. At the same time, we understand the need of the TA to balance this practical consideration against the objective of ensuring open and undifferentiated access to all players in a market where being first-to-market oftentimes translates into market leadership.

Section 2.3.14

Considerations/Problems in Implementing Open Networks

♦ Lucent Technologies is of the view that regulations to implement "open networks" should take into account the following considerations:

- The regulations should allow each service provider (whether MVNO or affiliate of a Network Operator) **equal and undifferentiated access** to networks to explore its market advantage to the fullest extent, limited only by end-users' demand and not by regulations stipulating the maximum capacity, coverage or bandwidth that it is entitled to purchase.

- The regulations should endeavour to minimize the additional cost to network operators of providing facilities to each additional service provider.

- The regulations should specify a mechanism for determining the price payable for usage of network resources by service providers.

♦ The imposition of a limitation on the network capacity that a service provider can purchase, whether 30%, 50% or otherwise, imposes an artificial limit on the service provider's ability to offer services (to 30% or 50% or other specified percentage). Therefore, specifying a percentage of network capacity that needs to be made available to service provider in fact is inconsistent with the "open networks" concept.

♦ Measuring capacity usage of a service provider in the busiest cells during peak traffic hours is problematic when considering a service provider that has needs that are different from other service provider(s) using the network. Consider, as an example, a network that is utilised by two service providers. The larger of them, affiliated to the network operator, has a well-established market niche selling its services to corporate users in the central business district. Usage is limited to office hours, with peak usage during the morning and afternoon rush-hours. The other service provider differentiates itself by marketing to residential users, educational institutions and students. The two service providers will want to use network resources in different amounts, at different times, in different areas. It would not be the most efficient or cost-effective way to distribute available resources in this example, by imposing limits on the use by the second service provider by reference to the first service provider – both in terms of capacity and in terms of coverage.

♦ The imposition of a requirement that a certain amount of capacity be made available in a network by a network operator, that is in excess of the capacity needed for its affiliated service provider would, we agree, go some way towards ensuring "open networks". However, it should be appreciated that making available excess capacity adds a risk to the network operator's business case, of having to make additional capital investment, with no corresponding revenue commitment.

♦ We would suggest enhancements to the TA's recommended approach of specifying a percentage of network capacity that each network operator must make available for service providers other than its affiliates. Our suggestions assume that a mechanism will be put in place to arrive at the cost of providing network resources, in the absence of agreement between network operators and service providers. As we consider this to be a purely commercial issue, we make no suggestion on what form such a mechanism could take.

Proper Allocation of Risk

♦ The enormous costs and risks to a network operator of rolling out a 3G network should not be increased by requiring network operators to plan and build excess capacity into their networks for use by any service providers that is not affiliated with the network operator. Such increased costs/risks are clearly costs/risks brought about by the non-affiliated MVNOs and should properly be borne by that MVNOs.

♦ We suggest that no network operator be compelled to provide facilities or make available capacity beyond what it (or its affiliated service providers) requires **unless and until there is a definite and enforceable commitment to purchase** such capacity. This commitment needs to be in place before additional facilities are built/made available.

Network Planning – Coverage & Capacity

♦ For a network to be truly 'open' and 'equally accessible' to all service providers, it is necessary to ensure that network resources are available when and deployed where they are required by the service providers.

♦ For this to happen, it is essential that all service providers provide to network operators, forecasts of their expected usage in order to ensure adequate deployment/provisioning of network facilities. We suggest that any agreement for purchase by a service provider of network capacity/resources needs to include a mechanism for provision of periodic forecasts by the service provider of its anticipated usage. These forecasts would need to be made by available to the network operator by both affiliated and non-affiliated service providers alike.

♦ A service provider's future coverage and capacity requirements is clearly confidential data, revealing to a great extent, the service provider's strategy. The network operator should hold such data confidential. We suggest that this is an area that requires regulation and strict enforcement by the TA.   The network operator unit responsible for dealing with non-affiliated service providers should be independent from affiliated service providers and should be obliged to keep strictly confidential, all planning and forecasting information relating to other service providers.

Excessive Usage

♦ The purpose of planning is to ensure that network facilities are available to all service providers where and when required.

♦ The nature of forecasts is that they can be wrong. In this context, under-forecasting by one service provider is likely to negatively impact other service providers using the same network.

♦ The cost structure for usage of a network facilities/capacity could be used to encourage accurate forecasting by each service provider, and perhaps even to compensate service providers negatively-impacted by poor forecasting by another service provider. Cost could be structured such that:-

  ▪ if a service provider's usage in a given period comes within the forecasted range (with perhaps a 5% 'buffer') costs follow 'normal' rates; but

- if a service provider's usage in that same period is beyond the forecasted (& buffer) range, costs will follow 'premium' rates, with the premium reflecting the impact of inconvenience/service degradation caused to other service providers on the same network. The risk of inaccurate planning can thus be passed on to the parties responsible for the planning.

A network operator could structure its pricing in such a way as to provide discounts to service providers affected by network quality degradation caused by over-usage by another service provider.

♦ Apart from frequency and duration of use, there may also be a need for a network operator to restrict the size of applications that can be used on a network, especially given the up-link limitations of 3G networks. Service providers may have to provide forecasts also of the maximum bit rates that each of their applications will be requiring, in order for proper planning to be done to ensure that available network resources are access to as large a number of people as it could be.

Measure of Capacity

♦ A service provider's usage of network resources and capacity can be monitored retrospectively at the billing gateway. The measure of erlang for voice traffic and kilobit for data throughput would be an obvious measure.

♦ In the example given above, we have explained why in our view, capacity usage of an MVNO should not be assessed in the busiest cells only. If proper planning and forecasting mechanisms can be put in place (as suggested above) to deploy network resources and capacity as and when needed, the amount of capacity an operator needs to share with other service providers could be based on the total network capacity in a given measurement period.

♦ It should be noted that each vendor of equipment employs different algorithms for measuring usage in the network. There may be a need to standardise these measures of usage in any arrangement to specify maximum usage by a service provider.

Real Time Control is not Practical

♦ We have suggested an 'after-the-fact' network-resource and capacity allocation method because in our view, capacity partitioning in real time is not technically practical.

♦ Although capacity partitioning in real time is technically possible using UMTS defined information elements on the air interface it is not technically practical. The processing requirements are immense in order to filter the information in a meaningful way prior to billing and measurement reporting. Forcing the operator

or MVNO into added investment to monitor in real-time is not an efficient use of investment capital and will ultimately result in added expense for the consumer for minimal value. Additionally because of the UMTS Iu-cs and Iu-ps interface restrictions, all traffic on the UTRAN will have to pass through the UMSC or SGSN before it can be routed to the customer owning party (operator or MVNO). Therefore the benefit for monitoring the UTRAN for the real-time separation of traffic is nullified. Hence in real time, it will not be practical to assess or regulate the network capacity usage of an MVNO. The issue of monitoring must be fully defined and equitable in terms of reporting actual usage in near real-time while protecting the restricted information of both operator and MVNO.

Section 3.3.1

♦ Lucent supports assigning 15MHz X 2 paired spectrum + 5 MHz unpaired spectrum to each successful applicant. As we mentioned in our response to the 1st consultation paper on 3G licensing, such arrangement should allow the deployment of a complete hierarchical cell structure and should provide sufficient spectrum to meet the future 3G traffic demand.

Lucent Technologies would be happy to place our knowledge and resources at the TA's disposal, to conduct further investigation into the matters touched upon by this response, or any other matter that will assist the TA. Please contact our Ms. Melinda Kwong on telephone number 2506 5411 to initiate further discussion.

Yours sincerely,