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STARHUB SUBMISSION
ON IDA CONSULTATION DOCUMENT ISSUED ON 3 DECEMBER 2001
ON PROPOSED POLICY APPROACH TO 3G INFRASTRUCTURE SHARING
IN SINGAPORE

StarHub appreciates the opportunity to comment on IDA's consultation paper on the proposed policy approach to 3G infrastructure sharing in Singapore.

General Comments

3G technology holds a lot of promise, the realisation of the full potential of which will warrant investment that will span many years. Operators around the world in general are currently facing numerous uncertainties beyond their control. These include:

(i) Lack of maturity of 3G technology – the uncertainty of 3G technology and the still evolving standards at this time, subject an operator to a fair degree of technology risk if it were to go into full scale implementation earlier than the market is ready for it. Most 3G equipment vendors similarly are less likely to implement the full functionalities of 3G networks at the onset, but rather adopt a selective and progressive approach based upon perceived market demands, available R&D resources and the rollout rate in the market. In this respect, early investments by operators would have to account for the numerous upgrades both in hardware and software of the initial 3G equipment, and the eventual equipment replacement within a short span of time.

(ii) Weak economic climate – the weak economic climate has in general affected demand for high speed mobile data services, which are often positioned as premium services.

(iii) Lack of compelling content and applications – significantly, the fact that there are few compelling applications in the market has further worsened the situation. Consumers are not convinced that the current suite of the high speed mobile data services and the current suite of content and applications justifies the premium rates they have to pay.

As with any service, the business case for 3G is dependent on a combination of factors such as market demand for these services, availability of applications, terminal readiness, volume availability of terminals, network equipment readiness, alternative services (e.g. GPRS) and the extent of capital expenditure and operating costs required.

Network infrastructure sharing has recently emerged in Europe in various forms in response to several factors, to name a few:-

- the huge fees paid for 3G licences in some countries;
- the huge capital investment to rollout a full 3G network;
- limited financing due to downgrading in credit-rating and weak sentiment within the financing community;
- the requirement to meet a specific deadline for 3G rollout; and
- the environmental pressure to minimise the number of sites and antennas.

Most infrastructure sharing initiatives are driven by the need to control the cost of network rollout. They do not however address the other issues affecting 3G rollout that are highlighted above. In most cases in Europe, sharing is mostly concentrated in rural and suburban areas.

The extent of cost reduction is highly dependent on the sharing model adopted and the duration for which infrastructure is shared. It is our view that short term infrastructure sharing provides limited benefits for cost reduction. Infrastructure sharing also gives rise to numerous commercial and technical coordination issues (which will be discussed in later sections) which need to be addressed.

As mentioned earlier, cost is but one of many factors that an operator has to consider in its 3G deployment plan. Factors related to equipment and application development and readiness are equally important and infrastructure sharing cannot address these issues. In fact, in the light of technical issues, IDA may need to re-consider its 31 December 2004 rollout deadline. Even with infrastructure sharing, the above deadline may not be feasible. Further, pushing out services over a network that is not mature may lead to poor customer experience which would be detrimental to the perception of serviceability of 3G in the future.

Below are our comments on specific queries raised by IDA.

Is the deployment of 3G facing delays due to unforeseen difficulties, including the availability of funding and technology? Would infrastructure sharing alleviate these difficulties?

There are numerous issues influencing 3G deployment, such as technology maturity, application availability, the global economic slowdown, significant cost/capex and financing difficulties.

1) Technology maturity

   3G standards are still evolving, subjecting operators to a fair degree of technology risk if they were to go into full scale implementation earlier than the market is ready for it. Most 3G equipment vendors similarly are less likely to implement the full functionalities of 3G networks at the onset, but rather adopt a selective and progressive approach

based upon perceived market demand, available R&D resources and the rollout rate in the market. In this respect, early investments by operators would have to account for the numerous upgrades both in hardware and software of the initial 3G equipment, and eventual equipment replacement within a short span of time.

A similar consideration applies to the availability of fully functional, standardised terminals that are able to support dual/multi-mode operation and interoperability across different applications and platforms. Terminal availability, maturity and stability has yet to be demonstrated. Past experiences have shown that actual volume availability can significantly lag test prototypes and forecast availability dates.

2) Availability of compelling content and applications

The fact that there are few compelling applications in the market has caused concern as to the urgency of high speed mobile data services. Consumers do not appear driven to the the current suite of the high speed mobile data services and the current suite of content and applications.

3) Global economic slowdown

The economic slowdown exacerbated by the 911 incident has adversely affected many economies around the world. Differing reports and studies on economic forecasts have surfaced to predict the recovery of the economies but uncertainties abound. Telecom companies (both service providers and vendors) have not been spared. There is also great uncertainty in relation to subscriber take-up of 3G services. Thus, the revenue part of the equation for 3G business case is adversely affected. Infrastructure sharing in this case could do little to alleviate the delays in 3G deployment.

3G deployment is affected by a wide range of factors. Depending on the sharing model adopted, infrastructure sharing may reduce the initial capital investment by operators to some extent. The overall business case however is underpinned by a multitude of issues such as market demand, handset readiness, applications, capital expenditure and relevant operating costs. Infrastructure sharing would do little to alleviate the difficulties in the areas of technology maturity and application availability.

What are the potential and benefits arising from 3G infrastructure sharing that would accrue to our telecommunication industry as a whole and to consumers? Would infrastructure sharing actually lead to faster and better 3G services? How would infrastructure sharing lead to faster and better 3G services?

One of the major difficulties faced in network rollout is site acquisition (acquiring building owners' approval). Site sharing between operators would aid the deployment process through speedier site approval. Certainly for situations where a single party owns a large number of buildings, this would assist in reducing the bottleneck. An area of particular benefit is the sharing of towers and monopoles, where significant difficulties exist in achieving owner approval due to regulatory limitations. Sharing of such facilities would also greatly minimise disruption caused to businesses and the general public. It should be

pointed out that, however, site sharing does not necessarily reduce the cost of network rollout as each operator would still need to install its own equipment.

The extent of cost savings through infrastructure sharing depends very much on the sharing model adopted. Site sharing while facilitating speedier access to sites is limited in the amount of cost it saves. Sharing significant portions of the mobile network, such as sharing the entire radio access network, in comparison has greater potential for reducing capital costs.

There is no clear evidence to indicate that infrastructure sharing would lead to faster and better 3G services. The provision of faster and better 3G services is dependent on the availability of compelling applications, technology maturity and is driven mainly by market demand and consumer readiness and speed in adopting new technologies and services.

What would be the appropriate type, nature and extent, timing and duration, of infrastructure sharing? Please provide reason and rationale.

A wide range of options exist for infrastructure sharing, from simply sharing sites and antenna poles to extensive sharing of entire network portions such as the radio access network or even an entire network in an MVNO type arrangement. The amount of cost savings potentially increases with the extent of infrastructure sharing.

Possible models of infrastructure sharing include:

1) Site sharing;
2) Sharing of radio access network (RAN);
3) Geographic network sharing (aka national roaming); and
4) Total network sharing through a joint venture or MVNO arrangement.

The first and second options require lower initial investment because of the cost savings in the sharing of RAN equipment and the reduction in costs related to civil works, power and peripherals as in site sharing.

National roaming relies on network sharing within certain geographic regions. Outside the coverage area of their own provider, subscribers could roam into the 3G network of another operator. This approach also reduces capital expenditure and operating costs, depending on the number of parties involved and the proportion of the country that operators cover. This is likely the most feasible means of sharing as operators will be responsible for specific geographical areas and can work fairly independently. It also potentially reduces the amount of co-ordination between operators. Further, in the event that each operator decides to rollout its own network, a geographical network sharing arrangement would best facilitate this.

Under the MVNO arrangement, all sharing operators may share a common 3G system and maintains only its own HLR, billing and service platform. The common 3G system will be managed by an independent / joint-ventured company which manages the 3G design and capacity to cater to the current and future needs of all operators.

Operators could consider the above options, or a combination of which, that may potentially reduce the initial capital expenditure, in particular, the proposition of geographic network sharing.

The greater the level of network sharing also means the greater level of technical and commercial complexity involved. Some of the issues arising from greater levels of network sharing include:

- sharing of sensitive traffic information when operating a common network;
- operations and planning for expansion;
- interoperability with each operators legacy networks; and
- ownership of sites and network elements after sharing ceases.

A key issue arising out of the above is the duration that the network infrastructure is to be shared. On most counts, interim or short term network sharing would result in limited benefits to operators. The need to optimise, upgrade and 'separate' the networks in a short period of time would outweigh any benefits gained from sharing the infrastructure. True benefit would be gained if 3G infrastructure were to be shared on a long-term basis rather than just as an interim measure. In this regard, it is felt that the actual duration of sharing be left to the sharing parties to determine based on their benefit analysis.

Would any potential competition concern arise with infrastructure sharing? If so, how should such competition concerns be addressed to ensure that there is no adverse impact to consumers benefits in terms of choice of service provider, access and availability of services as well as the range of quality of services and pricing?

If only one 3G network is constructed to be shared by all operators; then obviously some form of regulatory oversight would be needed as this single network would essentially have a monopoly on the market. QoS and rollout milestones would be required. As long as there are at least two competitive 3G infrastructures being built, competitive dynamics will ensure QoS and rollout aggressiveness.

However, the regulatory regime should not allow two operators who together hold more than 60% market share, to share infrastructure.

What are the monitoring, and enforcement, issues that may arise on the extent of infrastructure sharing to be established and their scale-back? What would be appropriate monitoring criteria to ensure that infrastructure sharing takes place in accordance to an approved framework? How should scale-down of the infrastructure sharing be monitored?

Establishment of a shared 3G infrastructure should be left to commercial negotiations / arrangements between sharing operators. It is therefore no need for monitoring and enforcement by IDA, save for the above-mentioned.

Conclusion

Given the lack of maturity of 3G technology and uncertainty surrounding 3G, many regulators around the world have relaxed rollout requirements for operators. Operators in Singapore face the same technological and commercial challenges and therefore IDA should remove their 31 December 2004 deadline for operators to achieve nationwide rollout and instead leave rollout schedules to the commercial decision of operators.

3G deployment is also affected by application availability, the global economic slowdown, significant cost/capex and financing difficulties. Infrastructure sharing does have the potential to alleviate difficulties in site acquisition (where there is site sharing) and has potential for cost reduction (where larger portions of the network are shared). However, sharing of larger portions of the network raises other technical and commercial complexities which would need to be addressed and would in themselves take time to resolve.

StarHub is, in-principle, open to IDA's proposal of 3G infrastructure sharing although the issues raised in previous sections of this response need to be carefully considered and studied.

StarHub also feels that for any form of infrastructure sharing to be effective, the duration of sharing should be left to the sharing partners to decide, and in any case cannot be for only the interim and transitory period. As long as effective competition amongst operators can take place, it should not matter whether there is a single or 3 completely separate networks.

1 February 2002