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Dear Sir,

***PROPOSED FRAMEWORK FOR THE REALLOCATION OF SPECTRUM IN  
THE 900 MHz AND 1800 MHz FREQUENCY BANDS***

**Introduction**

1. We refer to the Consultation Paper (the "**Consultation Paper**") dated 28 June 2007 which was issued by the Info-Communications Development Authority of Singapore (the "**IDA**") on the proposed reallocation of 900 MHz and 1800 MHz frequency bands in Singapore.
2. Singapore Technologies Telemedia ("**ST Telemedia**") is a leading player in the telecommunications and information services industry, with core competencies in mobile telephony, bundled services and global IP services. Headquartered in Singapore, ST Telemedia invests in an innovative group of companies across the globe.
3. Through its intermediate companies, ST Telemedia has an interest in StarHub Ltd ("**StarHub**") and StarHub Mobile Pte Ltd ("**StarHub Mobile**"). ST Telemedia also has interests in a number of other telecommunications companies, including PT Indosat Tbk ("**Indosat**"), Global Crossing Limited, TeleChoice International Limited, Cambodia Shinawatra Company Limited and Lao Telecommunications Company Limited. As one of the founder investors in StarHub, we welcome the opportunity to comment on this issue.
4. In this submission, ST Telemedia will focus its comments on the proposed allocation framework (Questions 6 to 9 of Part IV of the Consultation Paper).

## **IDA's objectives**

5. We understand from the Consultation Paper that the IDA's policy objectives for the proposed spectrum band allocation are:

- To ensure the economically efficient use of spectrum resources; and
- To ensure the continuity of service for end-users.

6. The IDA has also stated a number of views and proposed approaches in the Consultation Paper, which ST Telemedia agrees with, including the following:

- That spectrum management in Singapore is technically harmonised with that of other key jurisdictions (paragraph 8 of the Consultation Paper).
- That operators using the 900 MHz and 1800 MHz spectrum be required to provide PCMTS to the public (paragraph 9 of the Consultation Paper). In this connection, we believe that it is beyond question that the most efficient and effective use of the 900 MHz and 1800 MHz frequency bands is the provision of cellular services.
- That there should be no restriction on the use of technologies employed in the 900 MHz and 1800 MHz spectrum as long as PCMTS services are provided (paragraph 10 of the Consultation Paper).
- That operators utilising the 900 MHz and 1800 MHz spectrum be subject to the same specific license conditions as other PCMTS operators – including network coverage obligations (paragraph 28 of the Consultation Paper).

## **ST Telemedia's Approach**

7. All of ST Telemedia's current investments operate in highly competitive markets and we are in favour of competition. Accordingly, there is no objection to the potential entry of new PCMTS operators in to Singapore.

8. ST Telemedia also highly values regulatory certainty and consistency as this will affect the operations of the company and its various stakeholders (including its shareholders, employees, lenders, subscribers and vendors).

9. We also take the view that the underlying driver of any regulatory/policy action should be for the long term public benefit.

10. In line with the above, we believe that both of the IDA's policy objectives can be achieved without employing a "greenfield" auction process for the 2G spectrum as proposed by the IDA.

11. Potential new entrants can readily be accommodated by issuing what we understand to be unassigned spectrum in the 900 MHz (Extended GSM band) and 1800 MHz frequency bands amounting to approximately 25 MHz of available frequency.

12. We believe that a more effective arrangement for the reallocation of the existing 2G spectrum would be for the IDA to either: (i) extend the length of 2G spectrum right to a more reasonable length; or (ii) provide pre-emptive rights for existing operators, if IDA still wants to carry out any auction.

### Overseas Experience

13. In considering the proposed reallocation, we believe it is important for IDA to take into consideration how overseas authorities have addressed this issue. Looking at the example of Hong Kong, the Office of Telecommunications Authority of Hong Kong (the “Ofca”) has, in considering how expiring 2G spectrum rights should be reallocated, commented that it:

*“is aware of the consideration to provide a stable investment environment and to ensure continuity of customer service. At present, there are more than 7 million mobile customers in Hong Kong. Discounting the relatively small number of customers subscribing to the CDMA and TDMA services, the GSM and PCS services have become a general commodity penetrating all walks of our society and affecting every aspect of our daily life. The existing GSM and PCS licensees have been providing a satisfactory service with continuous investments and improvements. They have also been making efficient use of the scarce frequency spectrum assigned to them. If they were not allowed to continue offering their services to their customers, there would be severe service interruptions, causing confusion and inconvenience to the public. The social consequence would not be acceptable to society as a whole. .... With the above considerations in mind, the TA proposes to offer the “right of first refusal” to the nine incumbent GSM and PCS licensees ONLY, who have been making efficient use of the scarce frequency spectrum assigned to them in the past years.”*

14. ST Telemedia believes that Ofca’s assessment contains valid perspectives as there are a number of similarities between Hong Kong and Singapore. In particular, consideration should be given to:

- Continuity of customer service;
- Providing a stable investment environment;

- Ongoing investment in the networks by the existing operators; and
- Efficiency in the use of spectrum.

### **Answer to IDA's questions**

15. With regards to the specific questions raised by the IDA in the Consultation Paper, ST Telemedia would offer the following comments.

***Q6 "IDA seeks views and comments on the pros and cons for both new entrants and existing rights holders of a 'greenfield' allocation of the spectrum. IDA also seeks comments on how the concerns set out in paragraphs 22(a), (b) and (c) can be adequately addressed if a 'greenfield' allocation of spectrum approach is not pursued"***

16. If the IDA proceeds with the proposed "greenfield" auction, we see four potential scenarios, which could have a serious impact on the cellular telecommunication sector in Singapore:

- First, the existing 2G operators could acquire exactly the same spectrum bands that they have today. However, this process is likely to create considerable uncertainty in the market. In addition, it is possible that speculators will seek to participate in the auction, which could drive up the cost of spectrum. We believe that higher spectrum charges must (inevitably) be reflected through lower capital expenditure by the mobile operators, and/or higher charges to customers.
- Second, the existing 2G operators could acquire a sufficient amount of spectrum to continue their operations, but in different bands to those used today. The cost incurred and disruption to business as a result of moving operators, and potentially subscribers, to their new spectrum bands could be significant, and without any real benefit to the sector overall. It is also likely that the IDA would have to utilise additional spectrum to act as "temporary bands", to serve subscribers during the period of transit.
- Third, the existing 2G operators could acquire an insufficient amount of spectrum to continue their operations. Insufficient spectrum would inevitably impact on the coverage, capacity, and quality-of-service that the mobile operators could deliver to their customers.
- Fourth, existing 2G operators could be unable to acquire any spectrum through the auction. As detailed below, such an outcome would potentially leave up to 3.7 million 2G customers without service. We do not see it as realistic to assume that all of these customers would be able to migrate onto the existing 3G networks, or onto new 2G

networks (if and when they are built). This would potentially compromise the ability of that existing operator to ensure continuity of service.

17. Major disruption to services is a very real possibility under a “greenfield” spectrum auction, and we do not see any major benefits to consumers in the proposed auction. As detailed below, if the IDA’s intention is to increase the number of 2G operators in the Singapore mobile market, or to provide mobile 2G spectrum to new entrants, there is a considerable amount of 2G spectrum which is currently unallocated and is sitting idle.

18. ST Telemedia believes that a “greenfield” allocation of 2G spectrum rights, without any pre-emptive rights for existing operators, would potentially create a range of problems, as outlined below:

- **A potential disruption of services to 2G customers in Singapore.** Moving the 3.7 million existing 2G customers to 3G networks would create significant disruption, and there will be a substantial number of customers who could not (or will not) move. We believe that, in such an outcome, it would be unrealistic to assume any degree of cooperation between the existing operators and the new entrants given that they will be competitors. We therefore believe that service disruptions would be a very real possibility.
- **A potential disruption of services to inbound roamers.** Establishing the necessary commercial and technical relationships with overseas roaming partners can take several years. If the existing mobile operators are unable to provide 2G services, and the new entrants have yet to establish the necessary arrangements with their overseas roaming partners, there will be some deterioration in the standard of roaming services provided to Singapore’s international visitors. We do not believe that this outcome is in line with the Government’s intention of fostering Singapore as an international business and travel hub.
- **A disruption to investment in 2G services.** StarHub and the other mobile operators are currently working with a range of application developers for the development of innovative new 2G services, as well as investing in new capacity and coverage for their 2G networks. A “greenfield” auction would create considerable uncertainty, and will strongly discourage any further investments in 2G networks and services until after the auction has taken place. In addition, if the existing operators were to lose their existing 2G spectrum rights altogether, we believe this would have several major impacts, including the following:
  - (i) It would prevent existing operators from generating a return on their recent investments in 2G infrastructure.

- (ii) The investments made by the existing operators in 2G infrastructure would have to be written off (please see below).
  - (iii) If an existing operator was to lose its spectrum right and had to stop providing services within that spectrum range, there is likely to be an adverse impact on the ability of that existing operator to ensure continuity of service.
- **Speculation in spectrum.** It is possible that a “greenfield” auction of the 2G spectrum would attract parties who simply want to hold spectrum for the scarcity value it represents. Such speculation could well drive up the cost of spectrum in Singapore. The IDA should “filter out” such potential speculators prior to any auction through a pre-qualification process and requiring such potential speculators to adhere to the required rollout/coverage obligations.
  - **The inefficient write-off of existing investments in 2G networks.** If the existing 2G operators are unable to acquire 2G spectrum through the proposed auction, it is possible that they would retain some back-end elements of their existing networks (such as billing systems). However, it is likely that the existing mobile operators would have to dispose of (and write-off) hundreds of millions of dollars of 2G infrastructure (such as base stations and MSCs). Such a write-off would be very inefficient.

19. In view of the above, while a “greenfield” allocation may be appropriate for new unallocated spectrum, we respectfully do not see any benefits in the proposed “greenfield” spectrum auction for the existing 2G spectrum rights.

20. ST Telemedia believes that instead of the proposed “greenfield” auction, a more effective approach would be to extend the term of the existing spectrum rights for a period of time in line with international standards (as discussed below). Extending the term of the rights would allow the existing operators to generate a return on the investments they have made, and would encourage further investments in those networks. This extended term could also be made consistent with the term provided to any new operator.

21. If the above approach is not acceptable to the IDA, and the IDA wishes to proceed with a spectrum auction, we believe that IDA should, at the very least, provide existing operators with pre-emptive rights (through a “Right-of-First-Refusal” process).

22. We believe that both these approaches would ensure that the IDA’s policy objectives are achieved.

23. However, if the IDA wishes to carry out a “greenfield” auction of the existing 2G spectrum rights, we submit that at a minimum, two measures must be implemented:

- First, a rigorous pre-qualification exercise should be imposed, to ensure that only capable and experienced mobile operators are eligible to bid for the spectrum rights. This measure is needed to reduce the opportunities for speculation; and
- Second, the IDA would need to ensure that any new entrant acquiring 2G spectrum faces the same licence terms (and, in particular, rollout obligations) as the existing operators. This measure is needed to ensure a level playing field between the operators.

24. The IDA has also asked how the concerns set out in paragraphs 22(a), (b) and (c) of the Consultation Paper could be adequately addressed if a “greenfield” approach is not pursued. ST Telemedia offers the following comments:

- **Paragraph 22(a)**

(i) We understand that one of the IDA’s concerns is that if a “greenfield” approach is not pursued, interested parties (including new entrants) would not be provided with the opportunity to procure spectrum which is a scarce resource.

(ii) As a practical matter, if the IDA wishes to encourage interested parties (including new entrants) into the mobile market, we believe that it should assign currently unallocated and idle spectrum, rather than re-allocating the existing spectrum rights. Assigning unallocated rights would enable the IDA to address its concerns, without generating the disruption and dislocation that a “greenfield” auction would potentially cause as detailed above.

(iii) In this connection, we understand that there are currently at least three spectrum bands which contain unassigned spectrum. These are:

- (a) The 3G band, where 15 MHz of spectrum is unallocated;
- (b) The 1800 MHz band, where 15 MHz of spectrum is unallocated; and
- (c) The 900 MHz band, where 10 MHz of spectrum in the Extended GSM band is unallocated.

Further, as indicated in the Consultation Paper, even if the IDA were to make available all 5 lots of spectrum in the 900 MHz frequency band, and 12 lots of spectrum in the 1800 MHz frequency band, the spectrum left in reserve will be sufficient for an operator to enter the market in the future, to provide PCMTS using 2G or 3G technologies.

- **Paragraph 22(b)**

(i) With regards to the issue of perpetuating legacy spectrum imbalances, we note the IDA's concern over the fact that StarHub Mobile does not have access to 900 MHz spectrum due to legacy imbalances and distortions. However, we believe that this issue can be addressed without the need for a spectrum auction. As noted above, 10 MHz of spectrum in the Extended GSM band is currently unallocated. If a proportion of this spectrum was simply allocated to StarHub Mobile through an administrative process, this would largely alleviate the legacy imbalances and distortions.

- **Paragraph 22(c)**

(i) With regards to the IDA's concern about ensuring that spectrum is put to the most efficient use, we believe that there is little doubt that the existing operators (with an aggregate of 3.7 million 2G customers) would make the most efficient use of the spectrum.

(ii) Further, we do not believe that a new entrant would be able to use the existing spectrum rights with the same level of efficiency (in terms of customers served per MHz) as the existing operators.

(iii) As noted by the Ofta, "existing 2G licensees are likely to utilize the allocated spectrum more efficiently than new entrants, especially in the near term, given the significant sunk investments in constructing a mobile network for operation."

25. In conclusion, ST Telemedia therefore believes that the proposed "greenfield" approach should not be pursued, and that more effective alternative approaches should be adopted (such as extending the term of the existing spectrum rights or at least providing existing operators with pre-emptive rights, if an auction is to be carried out).

***Q7. IDA seeks operators' feedback on the implications of such network adjustment, and how IDA can mitigate such network adjustment and minimise disruption to end users, bearing in mind IDA's policy objective of ensuring efficient use of the spectrum. In particular, IDA seeks operators' feedback on the timeframe and processes of cutting over from the operators' existing frequency bands to its new frequency bands, whether additional temporary use frequencies are required for such cut over, and if so, the minimum amount of temporary use spectrum required.***



26. ST Telemedia is not aware of any other country that has re-tendered existing 2G spectrum without providing pre-emptive rights for existing operators.

27. As noted in scenario two of paragraph 16 above, even if the proposed auction simply results in the existing operators having to adjust the spectrum bands they operate in, this would result in added cost, disruption to business and the IDA having to assign “temporary” spectrum bands to facilitate such adjustment.

28. In the event that the existing operators are unable to acquire any spectrum bands in the proposed auction, it is unclear what steps could be taken to fully mitigate the consequential disruption to the business of the existing operators and the continuity of service to the subscribers.

***Q8. IDA seeks views and comments on whether operators should be allowed to indicate interest for specific spectrum lots, as opposed to anonymous spectrum lots.***

29. We agree with the IDA’s views in paragraphs 25 and 26 of the Consultation Paper.

30. To ensure continuity of service, minimise costs of transition and to minimise disruption to business and operations, we believe that the operators should be allowed to indicate their interest for specific spectrum lots.

***Q9. IDA seeks views and comments on whether a 7-year duration for the new spectrum rights is reasonable.***

31. ST Telemedia believes that a 7-year term for a spectrum right is too short, particularly given the heavy rollout obligations imposed on mobile operators in Singapore.

32. Looking at spectrum rights issued in other jurisdictions (for example, in Australia, Europe and Hong Kong), a term of 10 to 20 years appears to be standard. We believe that a term of 10 to 20 years is needed to give sufficient time for operators to fully deploy their networks and then generate a return on their investment.

## **Conclusion**

33. As a major investor in the mobile market, ST Telemedia foresees significant difficulties in a “greenfield” reallocation of the existing 2G spectrum rights (particularly as it is only 7 years since such rights were issued). Such a reallocation could result in significant wasted investment and major service disruptions for a potentially large number of customers.

34. We believe that a more effective arrangement would be for IDA to either: (i) extend the length of 2G spectrum right to a more reasonable length in line with international practice; or (ii) at a minimum, provide pre-emptive rights for existing operators, if IDA still wants to carry out any auction.

35. If the IDA wishes to encourage new entry in the 2G mobile market, we would highlight that there is considerable 2G spectrum which is currently unassigned and available for use, and there is no need to resort to a reallocation of existing 2G spectrum rights.

36. In its consideration of 2G spectrum reallocation, we note that the Ofta has commented explicitly on the need to “provide a stable investment environment and minimize the potential disturbance to the existing customers of 2G services”. We believe that these considerations are equally important for Singapore.

ST Telemedia is grateful for the opportunity to comment on this matter. Should you have any queries or require any clarification on the foregoing, please do not hesitate to contact the undersigned (DID: +65 6723 8778 or E-mail address: sooneng\_kek@sttelemedia.com).

Yours faithfully,

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