

EXPLANATORY MEMORANDUM

1. This Explanatory Memorandum sets out the reasons for the Direction dated 26 July 2011, issued by the Info-communications Development Authority of Singapore (“**IDA**”) to OpenNet Pte Ltd (“**OpenNet**”), directing it to incorporate modifications to its proposed terms and conditions for connection to OpenNet’s real-time, on-line information and ordering platform (“**Platform**”).
2. Unless the context requires otherwise, all capitalised terms used in this Explanatory Memorandum shall have the same meanings as in OpenNet’s Interconnection Offer (“**ICO**”) for the provision of services over the Next Generation Nationwide Broadband Network (“**Next Gen NBN**”).

Background

3. Under Section 7 of the Code of Practice for Next Gen NBN NetCo Interconnection 2009 (“**Code**”), among other things, OpenNet is required to provide a Platform by November 2011.
4. In order to fulfil the above requirement, OpenNet has submitted to IDA its proposed terms and conditions under which it will offer its Requesting Licensees (“**RLs**”)¹ access/connection to the Platform. To ensure that the proposed terms and conditions are appropriate for the industry, IDA sought feedback from the industry via a public consultation which commenced on 5 May 2011. At the close of the consultation on 19 May 2011, IDA received comments from three (3) respondents (namely, M1 Limited, Nucleus Connect Pte Ltd and Singapore Telecommunications Ltd). While IDA had also invited industry feedback on OpenNet’s proposed changes to the ICO for testing the optical performance of residential end-user fibre connections in the same 5 May 2011 public consultation, IDA has dealt with that issue separately in its decision issued on 11 July 2011.

Issues

Scope of OSS/BSS Connection & Professional Service

5. One respondent commented that it was unclear whether RLs were allowed to order Standard Services - Connectivity via Service Portal GUI (“**Service Portal GUI Connectivity**”) and/or Standard Services - Connectivity via B2B Web Services (“**B2B Web Services Connectivity**”) (collectively the “**Standard Connectivity Service**”) without ordering the OSS/BSS Professional Service (“**Professional Service**”).

¹ A Facilities-Based Operator or Services-Based Operator or Broadcasting Licensee (i.e., Qualifying Person) which submits a written application to acquire Mandated Services under the Interconnection Offer.

6. It is IDA's understanding that:
- (a) it is not necessary for RLs who want to obtain Service Portal GUI Connectivity to order the Professional Service. Such RLs could proceed to access the Platform via the Service Portal GUI Connectivity using the provided user accounts after RLs have installed the necessary VPN client application and upon OpenNet's connectivity set-up. However, if such RLs have additional requirements (e.g., customisation of the Service Portal GUI Connectivity), they would have to request OpenNet to cater to such additional requirements by ordering the Professional Service.
 - (b) OpenNet will require RLs who want to obtain B2B Web Services Connectivity to successfully complete "interconnectivity" testing via OpenNet's test platform before they are allowed to connect to the actual Platform ("**Platform Interconnection Testing Process**") and to order the Professional Service. For those who intend to connect via the existing Platform Application Programming Interface ("**API**"), the scope of the Professional Service would include a project study to integrate and interface with OpenNet's Platform API, as well as resources incurred for set-up and support, and the use of OpenNet's testing environment during the course of the Platform Interconnection Testing Process. Additional requirements by RLs (e.g., customisation of existing Platform API) would similarly be provided by OpenNet through its Professional Service, but the scope of work would depend on the RLs' specific requirements.
7. IDA agrees with the respondent that the current drafting in the ICO is unclear as to whether RLs are allowed to only order a Standard Connectivity Service without ordering the Professional Service. IDA also notes that the need for RLs to successfully undergo the Platform Interconnection Testing Process in order to establish B2B Web Services Connectivity is not made explicit in the ICO. IDA will therefore require OpenNet to clarify the above in its ICO.

Details related to Platform Interconnection Testing Process and approach to acquire the Professional Service for the purpose of undergoing the Platform Interconnection Testing Process

8. One respondent commented that OpenNet's proposed schedules failed to address key gaps in the Platform Interconnection Testing Process with OpenNet. According to the respondent, such gaps or missing information included the unavailability of test cases (including the passing or exit criteria for the test cases) during various test phases (i.e., connectivity testing, handshaking testing and end-to-end testing), the unavailability of charges associated with the test phases, as well as the unclear process, scope and responsibility during each test phase.

The respondent also commented that the current approach to acquire the Professional Service to perform the Platform Interconnection Testing Process had multiple layers of processes and consisted of multiple charges. The respondent further submitted that the process could be streamlined and that certain charges should not be applicable for the above. Another respondent also commented that any suspension during the Platform Interconnection Testing Process should not be subject to charges, especially if such a suspension was attributable to OpenNet.

9. IDA understands that when an RL requests OpenNet's Professional Service for the purpose of undergoing the Platform Interconnection Testing Process, OpenNet will study the specific RL's requirements via a project study and thereafter provide the RL with a quotation and scope of work to be undertaken. The scope of work for the Professional Service will address the key gaps or make available the missing information (highlighted by the respondents in paragraph 8). For an RL who does not wish to proceed, OpenNet will recover the cost that it has incurred to perform the project study. IDA further understands that the above process was put in place to cater to RLs' diverse requirements (e.g., some RLs may require the Professional Service for the purpose of testing the B2B Web Services Connectivity while others may require the Professional Service for the customisation of existing Platform APIs).
10. While it may not be possible to have a simplified process to cater to all RLs' requirements, IDA views that it is possible for OpenNet to provide a simpler ordering process for the Professional Service for RLs who wish to establish B2B Web Services Connectivity (without any customisation to the existing Platform API) ("**Standard Professional Service**"). This is because it is anticipated that the requirements for such RLs would likely be largely similar. In IDA's assessment, the above would likely form the bulk of the requests for the Professional Service from RLs.
11. As RLs' requirements for the Standard Professional Service are likely to be similar, IDA is of the view that it would also be reasonable and feasible for OpenNet to provide the details upfront (i.e., to address the key gaps and make available the missing information as identified in paragraph 8). IDA therefore requires OpenNet to establish and further indicate the following in its Standard Professional Service:
 - (a) Mandatory test cases and the estimated associated man-day(s) required. The associated man-day(s) would cover the time and resources required by OpenNet to provide consultation to the RL on its system integration and interfacing to OpenNet's Platform, as well as actual testing and issue resolution in relation to such integration and interfacing. At the minimum, OpenNet shall provide a description of the test cases, the purpose of the test cases and the criteria for passing the test cases. As the ICO

may become too voluminous and unwieldy if the specific details (e.g., the scope of the test cases and the parties' responsibilities when performing the test cases) of each of the test cases are included in the ICO, such details should be made available by OpenNet in some other document. In this regard, OpenNet shall propose to IDA where RLs can obtain these necessary details. However, such a document shall be incorporated by reference into the ICO so that it would be binding on both OpenNet and its RLs. For the avoidance of doubt, OpenNet shall only include test cases that are necessary and reasonable; and

- (b) Optional test cases and the estimated associated man-day(s) required. The associated man-day(s) would likewise cover the time and resources required by OpenNet to provide consultation to the RL on its system integration and interfacing to OpenNet's Platform, as well as actual testing and issue resolution in relation to such integration and interfacing. At the minimum, OpenNet shall provide a description of the test cases, the purpose of the test cases and the criteria for passing the test cases. Similar to paragraph 11(a), OpenNet shall indicate where RLs can obtain the necessary specific details of the test cases (e.g., the scope of the test cases and the parties' responsibilities when performing the test cases) and incorporate the document containing such details by reference into the ICO.

IDA expects that when an RL submits its request for a Standard Professional Service, it shall indicate if the optional test cases are required. OpenNet's role then will be confined to working out a time schedule for the Standard Professional Service and to tabulate the total man-day(s) required (based on the mandatory test cases and the optional test cases selected). This should significantly reduce the amount of work that OpenNet needs to perform during the order processing stage. In this regard, to be clear, IDA does not expect OpenNet to impose any charges for such scheduling effort as it is only part and parcel of the preliminary activities that OpenNet is required to carry out in any event before it provides any actual services to its RLs.

- 12. The above process for the Standard Professional Service shall also address situations where OpenNet's actual number of man-day(s) expended is different from what is estimated under the above process. IDA expects OpenNet to charge for the actual man-day(s) expended in the event that OpenNet requires fewer man-day(s) than it has earlier estimated. In situations where OpenNet takes more man-day(s) than estimated and the extension is not attributable to any default on the part of OpenNet, IDA would permit OpenNet to recover the cost of the additional man-day(s) from its RL. OpenNet should also address the situation where the process (including actual testing) needs to be suspended. As suggested by the respondent, IDA agrees that charges should not be imposed during such a period of suspension if the suspension is attributable to any default on the part of OpenNet. For

cases where OpenNet takes more man-day(s) than estimated and/or where any suspensions takes place and these are not attributable to any default on the part of OpenNet or the RL, IDA is also of the view that OpenNet should bear the cost of its own manpower (which it would have incurred ordinarily in any case with or without the RL's requesting such Professional Services).

13. In IDA's assessment, the above process not only simplifies the ordering process and reduces the workload on OpenNet, but would also provide greater transparency and certainty to the industry. IDA will therefore require OpenNet to modify its ICO to incorporate the above.

Changes to OSS/BSS

14. The industry is of the view that OpenNet should not have an unfettered right to suspend, modify, remove and/or to add the Platform in its sole discretion with immediate effect and without notice, and to do the above without any liability, as such actions may raise operational issues and have an adverse impact on the RLs. The general comment from the industry is that such actions by OpenNet must operate within certain acceptable boundaries/constraints. One respondent also commented that: (a) OpenNet must consult RLs before carrying out any action unless it is an emergency; (b) the action to be taken must not adversely affect the RL's systems and operations; and (c) OpenNet should remain liable for its actions. The same respondent also commented that RLs must not be made to incur Professional Service charges when changes are made to the Platform. Another respondent commented that: (a) OpenNet must follow the industry best practice in releasing software changes by being subject to a 'continuous improvement' obligation; (b) when OpenNet intends to release any changes to an existing API, it must inform all RLs about that change and avail such change to all RLs on the same terms; (c) OpenNet must ensure that all RLs' production systems/operations are not disrupted by this change; and (d) OpenNet must allow each RL to implement the enhancement or fix at its own schedule.
15. Considering that any changes to the Platform would likely affect most or all RLs who are connected to it, IDA agrees that it is not reasonable for OpenNet to have such unfettered rights. There should be some clearly articulated principles, as suggested by the industry, to be put in place to guide OpenNet when initiating any changes to the Platform. These include:
 - (a) Any changes to the Platform should not disrupt the systems and operations of RLs who are connected to the Platform. If there is a need to make changes to the Platform at the request of certain RLs (i.e., customisation), such changes should not affect the systems and operations of other RLs who are connected to the Platform.

- (b) If there is a need to make changes to the Platform that will affect systems and operations of RLs who are connected to the Platform (regardless whether such changes are initiated by OpenNet or at the request of other RLs) (“**Industry Affecting Changes**”), there must be a process for OpenNet to work with the industry (including seeking feedback from the RLs in advance and agreeing on the changes and implementation schedule of such changes) before it makes the Industry Affecting Changes. In situations where the parties have any disagreement over these proposed changes, they should resolve their disagreement using the process already provided in the ICO.
- (c) The exceptions to paragraph 15(b) for Industry Affecting Changes are in emergencies or under certain exceptional situations. In IDA’s view, such emergencies or exceptional situations would include situations where: (i) OpenNet needs to take immediate actions to protect the interests of RLs where the integrity of the Platform is at risk due to the actions of other RLs; (ii) there are imminent threats to life or property; or (iii) to comply with legal or regulatory obligations. For the avoidance of doubt, any changes to the Platform permissible under paragraph 15(c) must be reasonable and only to the extent necessary to resolve such emergencies or exceptional situations.
- (d) As stated in Paragraph 15.1 of Appendix 1 to the Code, if OpenNet initiates any changes to its System, it shall bear the costs of the changes to its System and those changes that are consequently necessary for the RLs to continue to provide the Mandated Services in substantially the same manner as before the changes are made to the System. Therefore, the above requirement shall generally apply to Industry Affecting Changes to the Platform, except in emergencies or exceptional situations (including the situations stipulated under paragraph 15(c)).

(the “**Change Management Process**”)

IDA will therefore require OpenNet to incorporate the above Change Management Process in its ICO.

- 16. IDA notes that there are already provisions in the main body of the ICO that govern the treatment of liability under the ICO Agreement. In this regard, IDA agrees with the respondent that the treatment of liability under the specific clause related to changes to its OSS/BSS can be removed.

Rejection of Standard Connectivity Service and Professional Service

17. The industry has raised concerns over the rejection criteria for the Standard Connectivity Service and the Professional Service. One respondent commented that the rejection criteria due to the unavailability of hardware resources and the limit on user accounts were too wide and ambiguous, and should be removed, as OpenNet was expected to manage its resources to overcome the above unavailability. The same respondent also commented that OpenNet should not reject a request because there were significant technical or engineering issues as such issues were expected for any new service. Another respondent requested for clarification on the user account limit mentioned in the rejection criteria for Standard Connectivity Service and commented that the provision of additional accounts should not require the complex procedures under the Professional Service.
18. While IDA agrees that OpenNet should manage its resources to cater to the demand of its RL, IDA is also mindful that there may be situations where this may not be possible (e.g., there is a sudden surge in demand resulting in insufficient ports at the firewall to support the requested Standard Connectivity Service). Therefore, IDA is of the view that it is not unreasonable for OpenNet to cater for such scenarios in its ICO. Nevertheless, IDA expects that such rejection due to hardware unavailability shall be the exception rather than the norm. With regard to user account limit as a rejection criteria for the Standard Connectivity Service, IDA notes that there is no specific user account limit highlighted in the proposed ICO. Therefore, IDA does not agree that OpenNet should reject an application due to a “user account limit” as it is the responsibility of OpenNet as a telecoms operator to manage its resources to cater to its RLs’ demand. In this regard, IDA will require OpenNet to remove “user account limit” as a reason for rejection for the Standard Connectivity Service. Accordingly, IDA will also require OpenNet to remove other references to “user account limit” in its ICO. For the avoidance of doubt, the unavailability of user accounts shall not be considered as hardware unavailability.
19. IDA agrees that in a normal situation where an RL wishes to obtain a Standard Connectivity Service (without any customisation to the Platform API) and if the RL complies with OpenNet’s requirements (e.g., using the type of firewall stated by OpenNet), this should not give rise to any significant technical or engineering issues. Therefore, if there are issues arising from such a situation, OpenNet must work with the RL to resolve these issues instead of simply rejecting the application. The same requirement will apply to OpenNet’s Professional Service. IDA will therefore require OpenNet to make the above clear in the ICO for its Standard Connectivity Service and Professional Service.

20. In addition to the above, to ensure that RLs can continue to procure OpenNet's services in the ICO in the meantime, IDA is of the view that it is reasonable to require OpenNet to allow such RLs, whose requests for Standard Connectivity Service have been rejected due to hardware unavailability or due to significant technical or engineering issues, to procure OpenNet's services by sending requests to OpenNet via email or fax ("**Manual Ordering Process**"). Similarly, RLs who are unable to connect to the Platform, or whose requests for the Professional Service have been rejected due to hardware unavailability or due to significant technical or engineering issues, should also be allowed to procure OpenNet's services through a Manual Ordering Process.

Unavailability of Standard Connectivity Service and Professional Service

21. OpenNet proposed that it would take reasonable measures to cater for additional resources on occasions when it is not able to offer the Standard Connectivity Service due to its unavailability. It was proposed by OpenNet that it would inform the RLs of the delivery date of the Standard Connectivity Service. The industry is of the view that the above is too broad and may be open to abuse. One respondent commented that the clause should be tied to OpenNet's rejection criteria for Standard Connectivity Service. Another respondent commented that OpenNet should be subject to a more stringent obligation to cater for additional resources (i.e., "OpenNet shall take all reasonable measures to cater for additional resources to address the unavailability where possible") given the importance of the Standard Connectivity Service. The respondent also commented that OpenNet should be subject to a reasonable (but absolute) timeline to: (a) notify the RL of the delivery date; and (b) make available the Standard Connectivity Service.
22. Based on the specific clause that OpenNet has proposed, IDA notes that the unavailability of the Standard Connectivity Service is likely to be limited to the scenario where OpenNet rejects requests for such services due to hardware unavailability. For better clarity, IDA requires OpenNet to amend the clause in its ICO.
23. Considering the importance of the Standard Connectivity Service, IDA agrees with the respondent that OpenNet should be subject to a more stringent obligation to take all reasonable measures to cater for additional resources to address the unavailability. IDA also agrees that OpenNet should commit to a reasonable timeframe to notify RLs of the delivery date so as to provide certainty to the RLs. However, IDA is of the view that it may not be appropriate or reasonable to subject OpenNet to a maximum timeframe to make the Standard Connectivity Service available at this point in time. This is because the Standard Connectivity Service is new and there may be unanticipated hardware related issues that may be beyond the reasonable control of OpenNet. To ensure that RLs can still order services from OpenNet, IDA will require OpenNet to allow RLs to request services via a Manual

Ordering Process in the meantime. IDA will monitor the situation in relation to the timeframe needed by OpenNet to resolve its unavailability and assess whether further measures need to be put in place.

24. IDA notes that connection to the Platform would, in certain situations (e.g., B2B Web Services Connectivity), necessitate the RL to order a Professional Service from OpenNet. It is therefore necessary for OpenNet to also address how it would handle the rejection of the Professional Service due to the unavailability of hardware resources. In IDA's view, unless OpenNet can justify otherwise, the approach should be similar to the approach when OpenNet rejects the Standard Connectivity Service due to the unavailability of hardware resources as stated in paragraph 23. Specifically, OpenNet should: (a) take all reasonable measures to cater for additional resources to address the unavailability; and (b) commit to a reasonable timeframe to notify the RL of the delivery date so as to provide certainty to the RL.

Manual Ordering Process

25. OpenNet proposed that it would accept requests via a Manual Ordering Process if the Platform was unavailable. One respondent commented that OpenNet should continue to accept orders via email and fax regardless of the Platform's availability. Considering that the Platform is new and that it may take some time to stabilise, IDA is of the view that there is merit in OpenNet continuing to allow RLs to send orders via the Manual Ordering Process in the meantime. However, IDA notes that the above is likely to complicate OpenNet's operational processes as it would be receiving orders via multiple means (i.e., automated process via the Platform and Manual Ordering Process). In this regard, IDA is prepared to allow OpenNet to propose a process on how it would treat and provision the orders received via the different means (including the priority of treatment). Notwithstanding the above, IDA's requirement is that on any given day, OpenNet should attend to all orders received in the day so long as the quota has not been reached. In the instance where the quota has been reached, the excess orders should be brought forward accordingly to the earliest day with the next available quota. IDA will review the above together with the industry and OpenNet after six (6) months from the date of OpenNet's operation of the Platform.

Closure of OpenNet's OSS/BSS data centre and downtime for Standard Connectivity Service due to system migration or relocation

26. One respondent commented that OpenNet was under an obligation to provide the Standard Connectivity Service and that such an obligation must not be contingent on the availability of OpenNet's OSS/BSS data centre. In this regard, the respondent suggested that the clause be deleted in its entirety.
27. IDA agrees with the respondent that there is a continuous obligation on OpenNet to provide the Platform and to allow RLs to connect to it, and that such an obligation should not be contingent on the availability of the data centre. In addition to providing advance notification of no less than three (3) months before the scheduled closure of the data centre, OpenNet should also have an obligation to take reasonable measures to minimise disruption to the RLs (e.g., informing RLs of the schedule of migration as well as the necessary steps to obtain the Standard Connectivity Service from an alternative OSS/BSS data centre) and to use reasonable endeavours to provide assistance to RLs on suitable alternatives (e.g., facilitate the procurement of the Standard Connectivity Service from an alternative OSS/BSS data centre and allow RLs to submit orders via the Manual Ordering Process in the interim). IDA will therefore require OpenNet to incorporate the above in its ICO.
28. In the event the Standard Connectivity Service is unavailable due to system migration or relocation, and where RLs are required to perform works to enable themselves to continue to connect to the Platform (similar to the situation relating to the closure of OSS/BSS data centre), IDA is of the view that OpenNet should adopt the same approach as stated in paragraph 27 (i.e., similar notification timeframe as well as similar obligation to minimise disruption and provide assistance). IDA will therefore require OpenNet to incorporate this in its ICO.

Operating hours of Platform

29. OpenNet proposed that its Platform would be available daily from 8 am to 11 pm ("**Operating Hours**") with the exception of fault reporting functionalities, which would be operational 24 hours daily. IDA understands that the Operating Hours can be extended after mid 2012 when OpenNet's operations would have stabilised. IDA will therefore review the length of the Operating Hours at a later stage.