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**From:** Woollard, Jayne [mailto:Jayne.Woollard@time4lime.com]

**Sent:** 27 October 2010 15:27

**To:** David Archbold; David Laliberte; Jasper Mikkelsen; Mark Connors; Vandendries, Frans; Austin, Donald; Facey, Camille; Victor.Corcoran@digicelgroup.com; Tom.Kinstler@telecayman.com; Richard.Brazeau@javelinbermuda.com; Edenholm@westtel.ky; Gareth.Forbes@digicelgroup.com; Jan.Tjernell@digicelgroup.com; Raul.Nicholson-Coe@digicelgroup.com; Nadine.Ramsay@digicelgroup.com; Consultations; mark.scanlan@digicelgroup.com; andrew.gorton@digicelgroup.com; kevin.barrins@digicelgroup.com; ageorge@telcordia.com; jhayes@telcordia.com; Ritch, Anthony; Mellaneo, Dwayne; Burnstein, David; Smith, Pete

**Subject:** Redacted version of ICTA Phase III round 4 FLLRIC Interrogatories

Good afternoon,

Further to the Authority's letter, Re: *Fourth Round of Interrogatories Regarding LIME's FLLRIC Phase 3 Submissions*, dated 20 October 2010, please find attached a redacted copy of the Authority's interrogatories.

Please do not hesitate to call me if you have any questions.

Kindest Regards,



Jayne Woollard  
PA - General Manager

D: +1 345 815 3550  
M: +1 345 926 5533  
F: +1 345 949 6286  
Jayne.Woollard@time4lime.com  
PO Box 293 George Town, Grand Cayman, Cayman Islands  
www.time4lime.com

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1. In the 'Mobile Services Costs' sheet of the 3G module (both with and without mobile-to-mobile (MTM) interconnect), cell B36 does not sum across all costs. To calculate the total network service cost the formula would need to be: "=SUM(B11:B29)". Correct the module or provide a detailed explanation for why it should sum over a subset of the element costs.
2. In the 'Mobile Services Costs' sheet of the 3G module (both with and without MTM interconnect), cells K36 and Q36 show excessive total service costs. This error appears due to use of an erroneous formula. Specifically, the later part of the used formula adds together average component cost and routing factors. To correct this error the formula in cell K36 should be amended to:  
 "= (SUMPRODUCT(\$C\$11:\$C\$15,K11:K15)+SUMPRODUCT(\$C\$16:\$C\$18,K16:K18))\*K32+SUMPRODUCT(\$C\$20:\$C\$23,K20:K23)\*K33+SUMPRODUCT(\$C\$25:\$C\$26,K25:K26)\*K34+(SUMPRODUCT(\$C\$28:\$C\$29,K28:K29))\*K35."  
 To correct the formula in cell Q36 it should be amended to:  
 "= (SUMPRODUCT(\$C\$11:\$C\$15,Q11:Q15)+SUMPRODUCT(\$C\$16:\$C\$18,Q16:Q18))\*Q32+SUMPRODUCT(\$C\$20:\$C\$23,Q20:Q23)\*Q33+SUMPRODUCT(\$C\$25:\$C\$26,Q25:Q26)\*Q34+(SUMPRODUCT(\$C\$28:\$C\$29,Q28:Q29))\*Q35". To check whether these changes are correct the sum of total network service cost calculated by adding together cost in cells E36:U36 should be the same as the cost shown in cell B36 (subject to making the corrections in the previous interrogatory). Make the appropriate corrections to the 3G module.
3. In the 'Mobile Services Costs' sheet of the 2G module (both with and without MTM interconnect), cells E37:P37 calculate the total network service cost of each service. The formula used in each cell fails to include the cost of network element "400-GSM: Interconnect Specific Links". To correct this error each of cells E37:P37 need to be corrected. For example cell E37 should be amended to:  
 "=SUMPRODUCT(\$C\$11:\$C\$18,E11:E18)\*E33+SUMPRODUCT(\$C\$20:\$C\$23,E20:E23)\*E34+SUMPRODUCT(\$C\$25:\$C\$26,E25:E26)\*E35+SUMPRODUCT(\$C\$28:\$C\$28,E28:E28)\*E36". Make the appropriate corrections to the 2G module.
4. In the 'Expense Factors' sheet of the 2G module which has been adjusted to take account of MTM interconnect, the operating cost associated with the network element '400-GSM: Interconnect Specific Links' is calculated. The implementation of direct MTM interconnect results in an extraordinarily high amount of estimated operating costs for '400-GSM: Interconnect Specific Links' is increased very substantially. Confirm the reasonableness of the

'400-GSM: Interconnect Specific Links' operating costs as shown in the 'Expense Factors' sheet cell V71 given the operating costs provided in 'FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls' and similar costs in the 3G module or revise the calculation documenting any changes to the module.

5. Provide detailed documentation (for example an invoice or bill of materials as provided in LIME's response to the third round interrogatory No. 2, including a table summarizing the cost of relevant components) to show the cost of the MSC cost element as indicated in cell F25 of the 'Cost assumptions' sheet in the 2G module. The Authority notes that, in ICTA Decision 2008-2 paragraph 361, LIME was directed to document the cost assumptions used in the 2G module. LIME's response to this direction was to provide Appendix XVI, as well as Appendix X Part I. The Authority has reviewed this documentation and has been unable to derive the cost of the MSC as shown in the 2G module.
6. Provide detailed documentation (for example an invoice or bill of materials as provided in LIME's response to the third round interrogatory No. 2, including a table summarizing the cost of relevant components) to show the cost of the MSS and Media Gateway cost element as indicated in cell E27 and E28 of the 'Cost assumptions' sheet in the 3G module. The Authority notes that it in ICTA Decision 2008-2 paragraph 76 directed LIME to provide (among other things) a documented 3G module. The Authority has reviewed the documentation provided, "Revision of LRIC Mobile Model from 2G to 3G" and has been unable to find documentation for the cost the MSS and Media Gateway as shown in the 3G module.
7. In LIME's response to the third round interrogatory No. 2, it provided a bill of materials detailing the cost of the HLR. This cost is applied to the 3G module. The Authority notes that both second round interrogatory No. 17a and third round interrogatory No. 2 were related to the 2G module. In addition, the HLR cost provided as a response to third round interrogatory No. 2 differs from that provided as a response to second round interrogatory No. 17a. Accordingly, the Authority asks LIME to provide a detailed clarification of the following:
  - a. Confirm whether the cost of the HLR provided as a response to the third round interrogatory No. 2 is to be used in the 3G module.
  - b. Explain the difference in cost between the HLR cost in the 2G module and HLR cost in the 3G module.

8. In LIME's response to the third round interrogatory No. 9, it reported that it had made appropriate corrections to cell X33 in the 'Volume input for TD' sheet by inputting the correct value (##), as reported in Appendix V, sheet 'drivers,' cell C27. The Authority notes that this correction has been made in the fixed module without MTM interconnect but not in the fixed module with MTM interconnect. Perform this correction in the fixed module with MTM interconnect.
9. In LIME's response to the second round interrogatory No. 50, LIME presented an analysis identifying the implied level of wireless substitution, based on the company's projected growth of fixed and mobile subscribers. In third round interrogatory No. 12, LIME was asked to provide a detailed explanation and the underlying calculations of how the figure is used in each module. LIME's response to that question did not provide any underlying calculations nor did it show how LIME's analysis has been implemented in each module. For example, how has the figure of ##% been used to adjust the demand assumptions for number of voice subscribers, data and SMS subscribers, and traffic for each service? Provide a detailed explanation and the underlying calculations of how the figure is used in each cost module.
10. In LIME's response to the third round interrogatory No. 15, it explains that a ##% reduction has been made for all billing-related interconnect specific opex ("FAC Input sheet" cells C45:C50) and ##% reduction for other opex on the assumption that they are volume driven ("FAC Input sheet" cell C44). However, inspection of the modules show that operating costs related to the cost category "100-Billing: Manage Interconnect Billing" in "FAC Input sheet" cell C44 has been reduced by ##% and the remaining interconnect billing items in "FAC Input sheet" cell C45:C50 have been reduced by ##%. This appears contrary to the explanation provided by LIME. Confirm the correct approach and make the appropriate adjustments where necessary.
11. In LIME's response to the third round interrogatory No. 16, it explains that the Existing Billing system cost in the fixed cost module is reduced by CI\$## which consists of Billing Upgrade costs and CDR Mediation Processing (##). While LIME acknowledges that this is a rough proxy, the Authority notes that Billing Upgrade is a capital / installation cost, while CDR Mediation is an annual recurring cost. Provide a detailed explanation to justify summing an annual recurring cost and (one-off) installation cost and why the annual recurring cost is not included as an expense factor input.

12. The file "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls," was provided in LIME's response to the third round interrogatory No. 15. In this attachment various cost items are calculated including, OmniLinc SS ADM, E1 Ports, IRM\*, Nokia Signalling Ports, Billing Upgrade and Civil Works. This compares to the following cost items used in the 2G and 3G modules with MTM interconnect: Signalling, STM-1 Cards, ADM Mux, Billing platform and Civil works. The Authority has attempted to match these cost categories in the following table:

<i>Cost category Budgetary Offer</i>	<i>Cost category Cost Module</i>
<b>Nokia Signalling Ports:</b> equipment cost is based on the cost of 2 signalling points. To this is added freight (10% of equipment purchase price), installation labour (proportional mark-up based on CI\$## installation cost for all four items OmniLinc SS ADM, E1 Ports, IRM* and Nokia Signalling Ports) and planning (proportional mark-up based on CI\$## installation cost for all four items mentioned above). No account is taken of duty and spares.	<b>Signalling:</b> based on the cost of 2 Nokia Signalling Ports (the same as in the Budgetary Offer). Freight and installation is added by sharing US\$## in proportion to the equipment cost of Signalling, STM-1 Cards and ADM Mux (see below). Spares are estimated based on a transmission electronics spare percentage in the fixed module. Import duty is estimated as 20% on the equipment cost including freight, installation and spares. Finally, Planning costs equal to 20% of the total equipment costs including freight, installation, spares and duty are added
<b>E1 Ports:</b> equipment cost is based on the cost of two STM-1 divided by 63. Freight, installation, planning are added as per Nokia Signalling Ports above. No account is taken of duty and spares.	<b>STM-1 Cards:</b> based on one STM-1 (the same unit cost as in the Budgetary Offer). Freight, installation, spares and planning are as above.
<b>OmniLinc SS ADM:</b> based on the cost of an OmniLinc SS ADM unit, Optical patchcords, attenuators etc and a spare unit. Freight, installation, planning are added as per Nokia Signalling Ports above. No account is taken of duty.	<b>ADM Mux:</b> based on the cost of an OmniLinc SS ADM unit, Optical patchcords, attenuators etc and a spare unit (the costs are the same as in the Budgetary Offer). Freight, installation, spares and planning are as above.
<b>IRM*:</b> equipment cost is based cost	No direct equivalent in the 2G and 3G

of one IRM. Freight, installation, planning are added as for Nokia Signalling Ports above. No account is taken of duty and spares.	cost modules.
<b>Billing Upgrade:</b> based on various cost items including CS Labour, IT Labour, Switch Engineer, Space, Project Management Costs etc.	<b>Billing platform:</b> based on various cost items including CS Labour, IT Labour, Switch Engineer, Space, Project Management Costs etc. (the same cost as in the Budgetary Offer). Spares are estimated based on a duct spare percentage of 14% in the fixed module. Import duty is estimated as 20% on equipment cost including spares. Finally, planning costs are added as 20% of total equipment costs including spares and duty.
<b>Civil Works:</b> annual and one off costs of 0.036Km of Exclusive (2 Bore) Duct, 0.191Km of Shared Duct (2 Bore) per Bore, 0.473Km of Shared Duct (4 Bore) per Bore 0.443Km of Shared Duct (6 Bore) per Bore 1.203Km of 48 Fibre Cable and Joint box. Annual and one-off costs are based on annualized equipment and installation costs and operating expenditure. No costs are added for freight, duty, planning or spares.	<b>Civil works:</b> The sum of one-off costs of 0.036Km of Exclusive (2 Bore) Duct, 0.191Km of Shared Duct (2 Bore) per Bore, 0.473Km of Shared Duct (4 Bore) per Bore 0.443Km of Shared Duct (6 Bore) per Bore, 1.203Km of 48 Fibre Cable and Joint box (all from Budgetary Offer). The cost of spares is added based on a duct spare percentage in the fixed module. Import duty is estimated as 20% of the civil work cost including spares. Finally, planning costs are added as 20% of total costs including spares and duty.

Based on this comparison the Authority asks LIME to provide a detailed clarification of the following:

- a) Freight and installation costs associated with the Signalling, STM-1 Cards and ADM Mux totaling US\$## is added in an equi-proportional manner in the cost modules. LIME explained in its response to third round interrogatory No. 15 that the US\$## has been derived from cells E24:E26 of the 'Cayman' sheet in "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls". These cells contain the following cost categories: "IRM\*", "Installation Services\*" and

"Labor". Explain the adequacy of the using these cost categories considering that "Installation Services\*" and "Labor" are not used in cost calculations performed in "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls".

- b) Explain the adequacy of a 20% planning factor in the cost modules considering the planning cost of CI\$## allocated equi-proportionally to OmniLinc SS ADM, E1 Ports, IRM\* and Nokia Signalling Ports in "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls".
- c) Considering that a spare OmniLinc SS ADM unit would appear to be included in the equipment purchase price of OmniLinc SS ADM in the 'Cayman' sheet in "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls", explain the appropriateness of taking spares into account when calculating the cost of the Signalling cost category in the 2G and 3G cost modules.
- d) Explain the adequacy of excluding duty for cost categories: OmniLinc SS ADM, E1 Ports, IRM\*, Nokia Signalling Ports, Billing Upgrade in "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls" ( 'Cayman' sheet, cells F97:F101), considering that duty is taken into account for similar cost categories in the 2G and 3G modules.
- e) Considering that no account is taken for spares, planning and duty in the calculation of civil work costs in the "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls" ( 'Joining Services - Inputs' sheet), explain in detail the inclusion of spares, planning and duty costs in the 2G and 3G modules for civil costs related to MTM interconnection links.
- f) Explain in detail the use of one-off costs of 0.036Km of Exclusive (2 Bore) Duct, 0.191Km of Shared Duct (2 Bore) per Bore, 0.473Km of Shared Duct (4 Bore) per Bore 0.443Km of Shared Duct (6 Bore) per Bore, 1.203Km of 48 Fibre Cable and Joint box (from the 'schedule' sheet in FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls") in the 2G and 3G modules considering the use of both monthly and one-off costs in the Budgetary Offer.
- g) Considering that no account is taken for spares, planning and duty in the calculation of Billing Upgrade costs in the "FLLRIC Interrog 15 attachment 10\_09\_01 Conf.xls" ( 'Joining Services - Inputs' sheet), explain in detail the inclusion of spares, planning and duty costs for Billing platform in the 2G and 3G modules.

- h) Explain the use of a spare percentage of 14% (used for ducts in the fixed module) as adequate for the Billing platform cost in the 'Cost Assumptions' sheet in 2G and 3G modules (with MTM interconnect).
  - i) The STM-1 Card costs differ between the Budgetary Offer and 2G and 3G modules in the following regards: 1) in the offer 2 STM-1 cards are used and the cost of for an E1 port is estimated by dividing by 63. This cost is since multiplied by 30 to yield the cost used in the offer. 2) in the 2G and 3G module the cost of 1 STM-Card is simply used. Clarify if these two approaches will yield the same result and if not why this is appropriate.
13. The major cost category in the Budgetary Offer, CDR Mediation Processing, is only sparsely documented. The annual cost of CI\$## is taken from what would appear to be a Nokia offer and labeled "Intec License Cost Additional two (2) million recs/day". It is noted that "Intec costs are estimated as the requested quote has not been received". Provide additional documentation to substantiate the quoted amount.