CALCULATION OF THE COSTS OF EFFICIENT PROVISION FOR SOME ELECTRONIC COMMUNICATION SERVICES PROVIDED AT WHOLESALE LEVEL IN ROMANIA

A report summarising responses to the Final Public Consultation related to the Mobile, POI and Fixed Models

PUBLIC VERSION

Purpose: Provide ANCOM's answers to the responses received by ANCOM following the Consultation related to the Calculation of the costs of efficient provision for some electronic communications services provided at the wholesale level in Romania – Mobile Model.

November 2013

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2 Introduction

1. ANCOM ("National Authority for Management and Regulation in Communications") presented:
    a. A POI model (model POI – v public) and its documentation.
    b. A Fixed model (model LRIC fix core – v public) and its documentation.
    c. A Mobile Model (model mobil generic – v public) and its documentation.

    These documents have been prepared by TERA Consultants for ANCOM.
2. These files were sent to the Romanian operators on November 14th 2012, together with operator specific confidential versions of the models and were presented and discussed during an industry group meeting on the 30th and 31st of October 2012.
3. Following the public consultation, ANCOM has received a set of comments, and where appropriate has updated
    a. The POI Model.
    b. The Fixed Model.
    c. The Mobile Model.

    ANCOM has also synthesized the operators' comments, and has provided and published detailed responses to each of their comments (Responses on the Mobile Model, Responses on Fixed Core Model and Responses on POI model).
4. The updated files were published and operator specific confidential versions were again sent to Romanian operators on 28 August 2013:
5. Following the Final Public Consultation, ANCOM has received a set of comments. ANCOM & TERA thank the operators for the time taken in this Final Public Consultation and is glad that several operators took this opportunity to provide additional insights on the POI, Fixed and Mobile Models respectively. The comments were received from the following stakeholders: :

a. POI model: A1 Telecom (A1), Orange Romania (and Analysys Mason), Romtelecom, UPC Romania (UPC) and Vodafone Romania (Vodafone) ;

b. Fixed core model: Romtelecom

c. Mobile Model: Cosmote Romanian Mobile Telecommunications (Cosmote), Orange Romania (and Analysys Mason), and Vodafone Romania S.A. (Vodafone). .

6. RCS & RDS has not specifically commented on the costing models but requested that tariffs proposed should apply as soon as possible.
7. The following section summarises the analysis of all stakeholders' comments and the responses of TERA Consultants and ANCOM.

3 Main changes made to the costing models as a result of the comments received

3.1 Type of answers provided

The answers provided for each comment provided by the respondents can be classified in 3 types:

1. Comment accepted
2. Comment accepted but limited impact on the calculations and results
3. Comment cannot be accepted

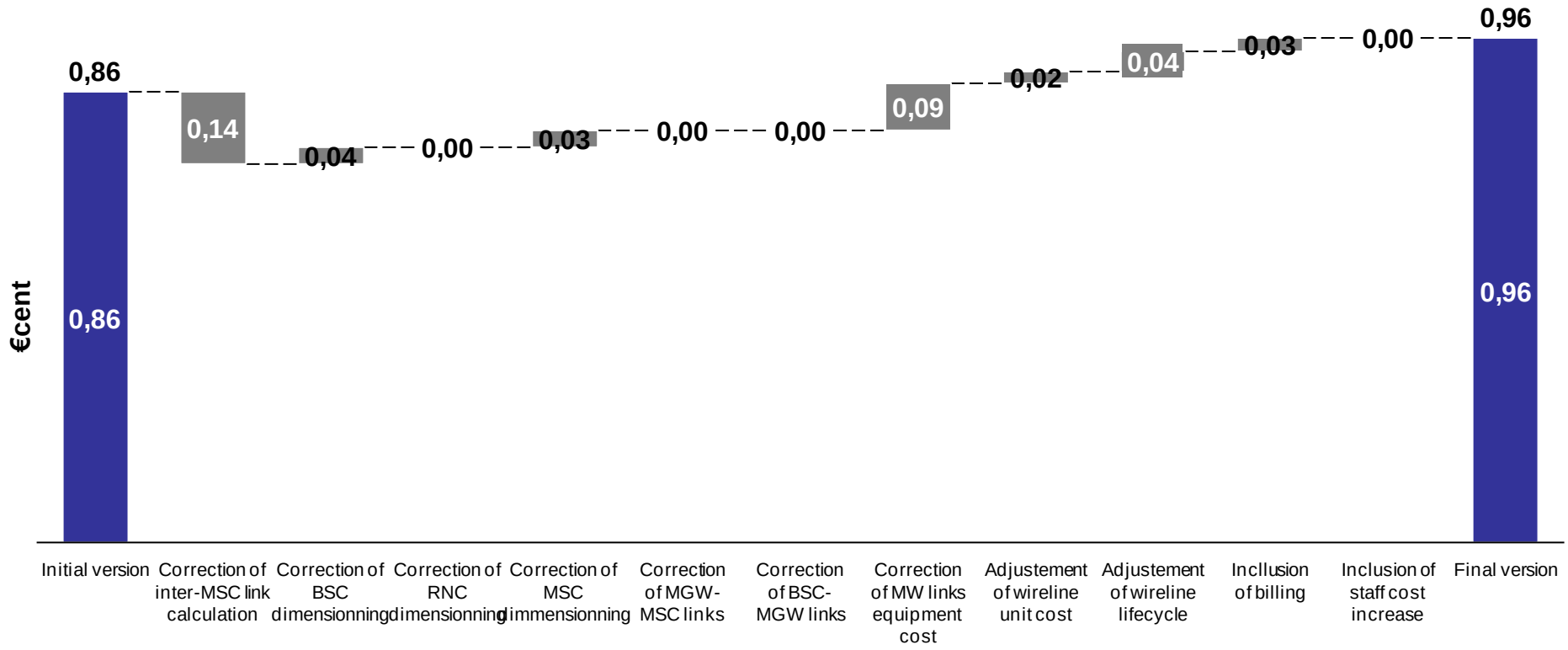
3.2 Main impacts on the Models

Several comments were received from the operators. The main consequences relate to the following issues:

<u>Responses to the Mobile Model and TERA & ANCOM view and position</u>

1. **Issue 1: Network dimensioning – RAN:** comment cannot be accepted
2. **Issue 2: Network dimensioning – Core:** comment accepted
3. **Issue 3: Network dimensioning – Transmission**: comment accepted
4. **Issue 4: Traffic related comments:** comment cannot be accepted
5. **Issue 5: Spectrum:** comment cannot be accepted
6. **Issue 6: Additional costs to be allocated to incoming voice call termination:** comment accepted
7. **Issue 7: Costing comments:** comment cannot be accepted
8. **Issue 8: Model Audit:** comment cannot be accepted

The impact of the main final modifications on the pure LRIC MTR cost of the generic operator for 2014 is displayed below:



<u>Responses to the Mobile service pricing and TERA & ANCOM view and position</u>

9. **Issue 9: Pure LRIC vs LRAIC+:** comment cannot be accepted
10. **Issue 10: Response to ANCOM and TERA arguments:** comment cannot be accepted

Responses to the PoI Model and TERA & ANCOM view and position

11. **Issue 11: Number of hours worked per month**: comment accepted
12. **Issue 12: Hourly cost attributed to "network testing and analysis" tasks**: comment accepted
13. **Issue 13: Cost per hour:** comment cannot be accepted
14. **Issue 14: Monthly rent for interconnection links – per km charge:** comment accepted
15. **Issue 15: Monthly rent for interconnection links – level of price:** comment accepted
16. **Issue 16: Task duration**: comment accepted
17. **Issue 17: Material costs**: comment cannot be accepted
18. **Issue 18: Installation of transmission equipment:** comment cannot be accepted
19. **Issue 19: Activities subsequent to a number of PoI services:** comment cannot be accepted
20. **Issue 20: Installation of port in the switch and IC link**: comment cannot be accepted

The impact of the main final modifications on PoI service costs is displayed below:

Type of service	Total service cost	Total Service cost in consultation
	€	€
Configuration of partner in PoA/PoI	578	539
Reconfiguration of partner in PoA/PoI	565	526
Removal of partner in PoA/PoI	175	148
Installation of port in the switch	285	276
Reconfiguration of port in the switch	255	247
Removal of port from the switch	97	100
Monthly rent of port in the switch	39	37
Other reconfiguration operations - for the 1st circuit	411	358
Other reconfiguration operations - for each of the other circuits in the same reconfiguration operation	91	61
Connection charge for the IC link	96	89
Reconfiguration charge for the IC link	90	84
Disconnection charge for the IC link	68	64
STM1 port monthly fee	333	331
Capacity reservation	200	200
Increase of capacity order	407	350
Decrease of capacity order	197	199
Reconnect a suspended service	186	170
Connecting the equipments of 2 operators collocated in Romtelecom's space - connection fee	225	187
Connecting the equipments of 2 operators collocated in Romtelecom's space - monthly fee	0,1	0
Administration fee for cascade payment in the transit arrangements	72	72

The impact on the E1 and STM1 PoI tariffs is:

- For E1: move from €88/E1/km/month to €40/E1/km/month which means a price per E1 of €120/month
- For STM1: move from €6408/STM1/km/month to €1865/STM1/km/month which means a price per STM1 of € 5595/month

Responses to the Fixed core model and TERA & ANCOM view and position

21. **Issue 21: Model size:** comment not accepted
22. **Issue 22: Model transparency:** comment not accepted
23. **Issue 23: Model sensitivity:** comment not accepted
24. **Issue 24: Need for a model audit:** comment not accepted
25. **Issue 25: Generic operator**: **:** comment accepted
26. **Issue 26: Usage per line of VoIP customers**: comment accepted
27. **Issue 27: Voice traffic forecasts**: comment accepted
28. **Issue 28: Broadband subscriber forecasts**: comment accepted
29. **Issue 29: Number portability costs**: comment not accepted
30. **Issue 30: National and regional FTRs**: comment not accepted
31. **Issue 31: Transit**: comment not accepted

The impact of the main final modifications on the pure LRIC FTR cost is displayed below:

c€/min	2013	2014	2015
Initial model	0.15 (generic)	0.15 (generic)	0.15 (generic)
Updated model	0.14 (generic)	0.14 (generic)	0.14 (generic)

The final impact of the main modification on the call origination cost is displayed below:

c€/min	2013	2014	2015
Initial model	1,77	1,44	1,26
Updated model	1,88	1,51	1,38

Responses to the Fixed core service pricing and TERA & ANCOM view and position

32. **Issue 32: Appropriate cost standard for Romania**: comment cannot be accepted
33. **Issue 33: Implementation of the charge control:** comment cannot be accepted

4 Responses to the Mobile Model and TERA & ANCOM view and position

Issue 1: Network dimensioning – RAN			Table of contents
Respondent	Comments received	Response	
✂	The respondent states that the TRX calculation method should implement the RAN usage factor introduced to dimension the number of sites.	**Comment cannot be accepted** The RAN usage factor was introduced to take into account the operators' long-term network planning and the time taken to find additional sites for additional capacity: it is thus clear that while finding additional sites can take some time, adding TRX for additional capacity is performed much more quickly by operators. Moreover the dimensioning of the TRX already includes the spare-capacity mark-up in order to dimension the traffic at the busy hour to make sure that the TRX can deliver the required capacity. Finally the model already ensures that the total number of calculated TRX is similar, if not higher, than the total number of TRX as stated by Romanian operators in reality.	
	The respondent dos not agree with the TRX dimensioning in the 1800MHz band which is not realistic. The respondent has brought new technical inputs demonstrating that the traffic that can be off-loaded to the 1800MHz band is below the theoretical capacity per site due to several constraints. The respondent therefore provides an input table of operational limit to TRX per sector suggested for its network and for a generic operator in Romania in the 1800 MHz band.	**Comment cannot be accepted** No other operator submitted such comment and the data was not provided beforehand during the previous data request, modelling and consultation phases. Also it is reminded that the generic operator already has an effective limit to TRXs per sector of 4 in all the five geotypes due to spectrum constraints, and the table provided by the respondent provides average values and not maximum values. Finally the approach taken in the model is already a conservative one given expected evolution of the constraints	

Geotype	Average number of TRXs per sector in the 1800MHz band in the respondents network	Operational limit to TRXs per sector suggested for an efficient operator in Romania in the 1800MHz band
Dense urban	✂	3
Urban	✂	4
Suburban	✂	4
Rural 1	✂	3
Rural 2	✂	3

in this bandwidth.

The respondent disagrees with the RNC dimensioning approach used in the model. It argues that the RNC usage factor is not taken into account for the Erlang calculation (whereas it is taken into account for the Mbps, IuB and cell dimensioning).

Comment accepted

The RNC usage factor was labelled by the respondent as "✂ NodeB and ✂cells" so it was unclear if it should have been applied to the Erlang traffic. The factor is now also applied on the Erlang dimensioning.

Before the final release of the model, the RNC dimensioning inputs have been revisited in order to recalibrate the model so that the generate RNC are similar to the actual RNC as stated by operators:

- The RNC usage factor is implemented (Sheet 4.3, lines 1680 to 1684);
- It has been ensured that all the RNC dimensioning rules remain coherent so that the number of calculated RNC is at best equal (or at least slightly higher) than the number of RNC stated by the operators. This has been performed on a case-by-case basis as no additional data was provided by the operators. The updated

	rules (on Erlang, MBPs, IuB and Cells) are in Sheets 2.x, line 585). • The updated rules ensure that the Erlang rule (most direct voice traffic-related rule) is the main RNC-driver to provide a greater weight on the traffic modularity.
The respondent states that 2G IBS TRX are not taken into account	**Comment cannot be accepted** The 2G IBS TRX are already embedded as the total number of TRX calculated by the model for the 2G RAN is already significantly higher than the "real" total number of TRX as stated by the respondent. The model implements conservative dimensioning rules that is applied to each operator and lead to a similar number of TRX or even a higher number of TRX. Furthermore integrating the 2G IBS TRX would lead to: • Reviewing the dimensioning rules specifically for the respondent, which are too conservative given the calculated number of TRX compared to the "real" number of TRX (this is not the case for other operators). This would lead to a decrease of the final costs. • Reducing the pure LRIC costs, as TRX for the IBS are stable because IBS are not primarily traffic driven.
The respondent states that 3G IBS transceivers and cells are not taken into account.	**Comment cannot be accepted** The 3G IBS transceivers are already embedded as the total number of 3G transceivers calculated by the model for the 3G RAN is already significantly higher than the "real" total number of 3G transceivers as stated by the respondent. The model implements conservative dimensioning rules that is applied to each operator and lead to a similar number of 3G transceivers or even a higher number of 3G transceivers. Furthermore integrating the 3G transceivers would lead to: • Reviewing the dimensioning rules specifically for the respondent, which are too conservative given the calculated number of 3G

		transceivers compared to the "real" number of 3G transceivers (this is not the case for other operators). This would lead to a decrease of the final costs. • Reducing the pure LRIC costs, as 3G transceivers for the 3G IBS are stable because 3G IBS are not primarily traffic driven.
✂	The respondent is of the view that traffic allocation between voice and data at the level of RNC is not realistic, leading to incorrect RNC dimensioning. The respondent states that: • *"The load on RNC is mainly due to mobility (especially locating customers) and smartphones,not due to data traffic."* • In 2011 the RNC load is ✂% data for the generic whereas it should be closer to ✂ data.	**Comment cannot be accepted** No other respondent raised this issue. The RNC is a 3G asset which means that it is first and foremost focused on a data service technology. This is especially true in Romania where operators have repeatedly stated that the 2G voice traffic remains very important given the large number of 2G-handsets. In LRAIC+, when allocating the RNC costs between different services, the 3G data dimensioning constraints is very important, especially as the respondent states that its RNC load is due to mobility (which is technologically neutral) or smartphones (which are 3G). In Pure LRIC, as the respondent states that "*the load on RNC is mainly due to mobility (especially locating customers) and smartphones, not due to data traffic"* it is unclear why the removal of the incoming voice call traffic would affect the number of RNCs. Furthermore the RNC load in data for the respondent is ✂ in 2011, which is close to the figure submitted by the respondent.
	The respondent states that the dimensioning of the RNC is entirely data traffic driven and as such very few RNC are deemed incremental to the termination service.	**Comment accepted (partially)** The RNC dimensioning rules have been revised (see response above). Nevertheless the operators have repeatedly stated that the voice service is mainly delivered on the 2G network due to the very large share of remaining 2G-only handsets on the market (see below "Issue 4: Traffic related comments"). As such it is thus logical that the RNC dimensioning, which is a 3G network component, is somehow driven by data traffic.

✂	The respondent is of the view that additional modularity should be introduced into the model by reflecting the fact the price paid for BSC equipment should vary with traffic load handled. An operator may purchase a BSC with greater processing power in order to facilitate demand, rather than increasing the total amount of equipment.	**Comment accepted (partially)** See responses to “Issue 13: Cost inputs – Cost variability” (p.43) in the Responses on the Mobile Model document (June 2013). No operator has provided any data to support an additional modularity. The BSC dimensioning inputs have been revisited in order to recalibrate the model so that the generated BSC are similar to the actual BSC as stated by operators, and the recalibration is focused solely on the Erland dimensioning rule (and not the TRX dimensioning rule) to provide a greater weight on the traffic modularity. The Erlang dimensioning rule has thus been revised for the generic (Sheet 2.5 Generic, cell L582).

Issue 2: Network dimensioning – Core

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Respondent	Comments received	Response
✂	The respondent disagrees with the MSC-S dimensioning method used in the model. The figure provided by the respondent would have been misinterpreted, and would correspond to the total cumulative capacity in the respondent's network, including all its MSC-S. Moreover the respondent states that the subscribers and BH call attempts are not the main drivers to dimension the number of MSC-S for its network.	**Comment accepted** The MSC dimensioning rules have been revised according to the data submitted by the operators and adjusted so that the total number of modelled MSC is similar or higher than the "real" number of MSCs as stated by the operators: • The subscriber base threshold is increased from 700k to 1.8M (maximum stated by an operator); • The BH call attempts threshold in increased from 1.1M to 1.3M to reflect the fact that it is not the main driver; • The BH traffic threshold is decreased from 373k Erlangs to 50k Erlangs to ensure that it is the main driver. The updated rules (on subscriber base, BH call attempts and BH traffic) are in Sheets 2.x, line 590.
✂	The respondent states that the MSC-S dimensioning should reflect a variable component relating to the termination traffic.	
✂	The respondent is of the view that the model assumes that each MSC can support up to 700,000 subscribers, but this is too conservative, as it is possible to purchase MSCs that support significantly more subscribers.	
✂	The respondent is of the view that additional modularity should be introduced into the model by reflecting the fact the price paid for MSC equipment should vary with traffic load handled. An operator may purchase a MSC with greater processing power in order to facilitate demand, rather than increasing the total amount of equipment.	**Comment accepted (partially)** See responses to "Issue 13: Cost inputs – Cost variability" (p.43) in the Responses on the Mobile Model document (June 2013). Additional cost-variability to traffic is introduced for the MSC as operators have provided new detailed data on dimensioning rules (see response above). Although it is unfortunate that such data was not submitted beforehand, updated data provided in a collaborative manner is always welcomed to better fine-tune the model.

Issue 3: Network dimensioning – Transmission

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Respondent	Comments received	Response
✂	The transmission algorithm should be reviewed as it leads to an over-dimension the size of the transmission link. For instance the dimensioning of the BSC-to-MGW links can be adjusted as "*an efficient operator would not deploy STM-4 links from BSCs to MGW when STM-1 links are big enough to support the underlying traffic*".	**Comment accepted** As the transmission algorithm led to under-efficiency according to the respondent, it was revised BSC-MGW, RNC-MGW, MGW-MSC and inter MSC links (sheet '4.5 Nwk Design Transmission', lines 1595 to 1715.). This adjustment brings more efficiency in the calculation of STMx, avoiding large gaps (jumps due to threshold effects): • Indeed, an efficient operator would not deploy an additional STM-16 links from inter-MSC-S link when a STM-4 link is big enough to support the underlying traffic. • For illustration purposes, 1.01 STM16 is not converted to 2 STM16 but to 1 STM16 and 1 STM1.
	The respondent has identified a material error in the E1 cost for backbone links..	**Comment accepted** The formula is corrected; the impact is negligible as there are very few E1 links in the backbone (if any).
	The respondent is of the view that calculations performed for transmission costs are mixing different types of costs. It states that the model does not differentiate between: • Different types of wireline links (leased lines vs own fiber). • Links and equipment.	**Comment cannot be accepted** No other operator submitted this comment, either in the precedent Public Consultation or in this Final Public Consultation. The model has to strike a balance between complexity and operators' capabilities in gathering data for the model. As such the Transmission module is already very detailed, and it is unclear why adding even more complexity would provide any significant changes in the final results.

The respondent is of the view that calculations performed for transmission costs are based on unreasonable assumptions, and lead to an under-estimation of the unitary costs:

- Microwave OPEX: does not take into account layer-2&3 opex.
- STM1/4/16 fibre optic links capex & opex.

Furthermore, the respondent uses in its calculation a conversion factor of 2.5 in order to assess the value over 6 years of an investment initially considered over 15 years.

Comment accepted

The model now considers both layers 2 and 3 for wireless and wireline transmission. The unit costs (OPEX/CAPEX) have been updated accordingly:

Generic operator	CAPEX (€)		OPEX (€)	
	Previous	Updated	Previous	Updated
MW 7Mhz	42 849	43 500	1 183	3 912
MW 14 Mhz	42 849	43 500	1 234	3 963
MW 28 Mhz	42 849	43 500	1 306	4 035
OF STM1	3 732	45 000	1 304	3 000
OF STM4	4 177	75 000	1 304	6 000
OF STM16	16 877	110 000	3 687	9 000

As for the economic lifetime issue relating to transmission links and equipment, a conservative assumption of 8 years for the generic operator has been implemented. This value is based on international benchmark as detailed in the following table:

(years)	France	UK	Portugal	Israel	AUS	Jordan	Sweden
Min	8	10	8	10	8	10	10
Max	10	10	10	10	8	10	10

✂	The respondent states that there is a material error in the model related with the level of aggregation in the network. does not agree with the share of aggregated sites in the network.	**Comment cannot be accepted** It is important to note that the aggregation principle and the corresponding parameters have been set previously to the precedent Public consultation, however this comment has not been raised before by the respondent. We bring to the attention of the respondent that the aggregation implementation is based on two parameters with equal importance: • Share of aggregation sites (set to 90%): It represents the number of sites aggregated out of 100 sites. The rest is directly linked to BSC/RNC; • Aggregation rate (set to 17%): It represents the number of needed aggregators out of 100 aggregated sites; Both of the above parameters have been calibrated following the previous Public consultation, in the light of the data provided by operators, in order to be in line with their expectations. The respondent, which focused its comment on the first parameter, can observe that the second parameter is voluntarily set to a very conservative value (of ~1 aggregator for 5 aggregated sites). In consequence, even if the respondent, and any other operator, did not provide additional information relating to the second parameter, it seems obvious that the product of the two parameters is already very conservative, and cannot reasonably be changed.

Issue 4: Traffic related comments

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Respondent	Comments received	Response
✂	Looking at the traffic distribution between 2G & 3G, the respondent finds that the traffic migration profile is very optimistic comparing to the real situation in the market. The respondent appreciates that the model has been changed comparing to its previous version but, in its opinion, the share of the 3G voice traffic is still very large. As explained during discussions with Tera and ANCOM, voice traffic migration to 3G is mainly driven by the adoption of 3G terminals in Romania and by customers' choice in selecting the type of network preferred (2G only or 2G & 3G). It expects a delayed adoption of 3G terminals in Romania comparing with other EU Countries given that Romania has one of the lowest levels of disposable income in the EU.	**Comment cannot be accepted** The traffic split has been updated thanks to the data submitted in the previous consultation phase. In fact the model was populated with the traffic data of the operator "as is", which implies that the 2G and 3G traffic for the specific model of the respondent is fully in line with the submitted data. The traffic split is a very conservative estimate which takes into account the competitive dynamics in the Romanian mobile market, as well as the fact that 3G allows higher spectral efficiency in delivering services to end-users, including for voice. Moreover the respondent has based some of its responses on an external study (the GSMA 2011 European Mobile Industry Observatory[1]). Interestingly enough, the GSMA study provides a benchmark of 3G penetration in European countries (page 10). It shows that Romania has a percentage of its population with 3G-enabled phones in 2011 at 41%, which is ✂ points higher than the respondent. Moreover, according to the GSMA, the 3G-enabled phones penetration is similar to Germany (43%) and higher than in France (39%).
✂	The respondent is of the view that the model over-estimates the amount of voice traffic on the 3G network relative to 2G. Lower voice traffic on 3G is partially explained by the respondent's customer base, of which ✂ have 2G-only handsets (which implies that only ✂ have a 3G-enabled handset).	

[1] GSMA, European Mobile Industry Observatory, 2011.

✂	The respondent is of the view that to correctly dimension the network, busy hour assumptions should reflect: • The percentage of traffic in the busy hour will be higher for an individual cell than the national average. • and monthly variability should be considered when identifying the busy hour load on the network.	**Comment cannot be accepted** The model already takes into account the BH traffic as the sum of the dimensioning BH traffic of all the cells in the RAN of the respondent. The model adds a spare capacity mark-up, and then adds an additional RAN usage factor. The dimensioning rules remained as conservative as possible so as to dimension the RAN as having a similar size, if not larger, than the “real” one as stated by the operators. Please also refer to Issue 1: Network dimensioning – RAN for more details.

Issue 5: Spectrum

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Respondent	Comments received	Response
✂	The respondent disagrees with the 15MHz usage assumption in 2100 MHz bandwidth for the 2006 - 2020 period.	**Comment cannot be accepted** The model is deployed for a generic efficient operator having access to and effectively using the whole spectrum. Efficient service provision is incompatible with spectrum hoarding.
✂	The model assumes the generic operator deploys three carriers of 2.1Mhz spectrum throughout the modelled period, but the respondent does not plan on using the third band until the second half of 2014.	

Issue 6: Additional costs to be allocated to incoming voice call termination

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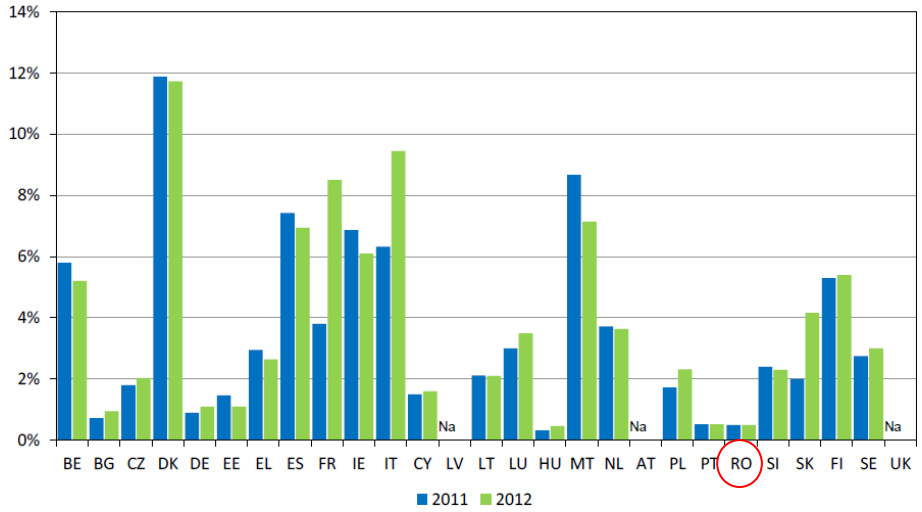
Respondent	Comments received	Response
✂	The respondent is of the view that the "blended termination cost (network only)" is incorrect.	**Comment accepted** It is a material error and has been corrected. The "blended termination cost (network only)" is an intermediate calculation for indicative purposes and the correction has no impact on the final calculation: it can be verified that the "blended termination cost (all costs)" calculation in line 2725 is correct.
✂	The respondent is of the view that the total cost of interconnection staff being used in the model is incorrect (the 2010 cost is used instead of the 2011). Moreover an annual increase should be implemented.	**Comment accepted (partially)** The interconnection staff cost for the respondent is corrected for the 2011 year. The annual increase is set at the EURO area inflation rate, which has been 1.1% in September 2013 on annualised basis[2].
✂	The respondent is of the view that the spread of the cost of interconnection staff over all services is incorrect and should not include on-net traffic.	**Comment accepted** The reasoning behind the inclusion of the on-net traffic is to recognise the benefit of non-discrimination by implying that each (vertically integrated) operator should bear a cost of the interconnection staff because it is "self-interconnected". This is in line with the 2003 ComReg decision on regulating fixed interconnection[3]. After carefully reviewing this issue, it is finally decided that the on-net component of the voice and SMS traffic is removed as the operators need to deal with interconnection for all the other services (including outgoing voice and SMS).

[2] Eurostat, Euro area annual inflation down to 1.1%, September 2013.

[3] ComReg, Decision 03/57 on Fixed Interconnection Charging Mechanisms, 29th May 2003.

✂	The respondent does not agree with the direct interconnection costs used in the model: • It is of the view to increase the share of interconnection staff costs allocated to termination from 50% to 80%. • It is of the view to add the costs corresponding to interconnection billing system..	**Comment accepted (partially)** **Interconnection staff increase:** The interconnection staff cost now increases at the inflation rate (see response above). **Share of interconnection staff:** The share of interconnection staff costs allocated to voice termination remains at 50%, as the interconnection staff is also dedicated on dealing with other incoming traffic (e.g. SMS) and dealing with interconnection of outgoing traffic.
✂	The respondent does not agree with the direct interconnection costs used in the model: • It is of the view that the interconnection staff cost should increase by 4.5% each year. • It is of the view to increase the share of interconnection staff costs allocated to termination from 50% to 75%. • It is of the view to add the costs corresponding to interconnection billing system. • It is of the view that a proportion of the number portability platform and supporting infrastructure costs should also be included in the terminating increment.	**Share of billing system:** The pure LRIC is calculated by removing the incoming voice call traffic, but keeping the incoming SMS and MMS traffic as well as the data traffic. As they all require the billing system, the removal of solely incoming voice call traffic should not impact the billing system. However, if Billing is a fixed cost which does not vary with interconnection traffic, a proportion of the wholesale billing costs can be attributed to incoming voice. According to the data submitted by the respondent, 900 000 Euros of billing system expenditures is allocated to to the incoming voice traffic in 2013 (Sheet 2.5 Generic, cell S762). **Share of number portability platform:** The pure LRIC is calculated for each operator by assuming that he no longer delivers the incoming voice call traffic, although it still does provide outgoing voice traffic and incoming and outgoing SMS traffic. As a consequence the number portability platform is still required to ensure that a customer can migrate from one operator to the other while keeping a single number. Furthermore Romania has one of the lowest number portability rate in Europe according to the European Commission. As a consequence no mobile number portability platform cost is allocated to the incoming voice call termination.

Mobile number portability transactions as a % of total subscriptions, 2011 (Jan-Sept) - 2012 (Jan-Sept)



Source: European Commission (Digital Agenda Scoreboard 2013)

Issue 7: Costing comments

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Respondent	Comments received	Response
✂	The respondent proposes to identify separately the equipment software economic life of 2 years.	**Comment cannot be accepted** The equipment economic life is in line with the data submitted by operators and other public mobile models.
✂	The respondent is of the view that the economic depreciation results are counter-intuitive. There is some surprising variability with the BSCs (and some other network elements) with the number of incremental assets increasing in some years and decreasing in other years. The result is negative investment in some periods due to assets being disposed and then repurchased again in the next period at a lower price due to the negative cost trend.	**Comment cannot be accepted** The pure LRIC economic depreciation is calculated by running the model twice: • First step is to run the model with the incoming voice call termination; • Second step is to run the model without the incoming voice call termination. Because of this two step calculation, some assets may be required for a given period to deliver additional incoming voice call termination, and then are no longer required in the period after because the size of the on-net and outgoing traffic (voice, SMS and data) has increased and the spare capacity is sufficient to deliver the incoming voice call termination. As a consequence it is unclear why the total cost of the asset during its entire lifetime should be fully allocated to the incoming voice call termination.

Issue 8: Model Audit

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Respondent	Comments received	Response
✂	The respondent is of the view that a full audit of the modelling should be performed and this audit should focus on: • Are there any errors in the excel formulae? • Is the functionality of the model consistent with the model specification provided by TERA?	**Comment cannot be accepted** The costing model is reasonably robust and the parameters and assumptions used provide a reasonable reflection of the underlying data on which they are based as well as of best modelling practices prevalent in the EU. The model has been built by TERA Consultants which is an independent company. Within TERA Consultants, several levels of verifications have been conducted between consultants, the manager and the project leader before the publication of the first version of the model, before the publication of the updated version of the model and before the publication of the final model. ANCOM has reviewed the model at each step of the process and has requested TERA Consultants to conduct sensitivity analyses to test the functionality of the model and verification against reality (see the mobile documentation), before validating the model versions for consultation. Operators have had the opportunity to review the model since it was published in November 2012, i.e. 11 months ago, especially as the model structure did not change significantly over this period. In addition, the mobile model has been verified twice by four operators and their consultants. Following these consecutive and multiple verifications, the costing model has benefited from adjustments and calibration improvements which ensure the model is fit for the purpose of estimating the costs of efficient service provision in Romania.
✂	The respondent is of the view that an independent audit should be conducted on the model to alleviate concerns about model transparency and robustness.	

The respondent is of the view that all assumptions and benchmarks applied should be fully documented and their sources in both the model and the model documentation should be further specified to enable proper review by operators.	**Comment cannot be accepted** The question was previously asked for cell radii, and a full list of the public models benchmarked is available in the "Issue 2: Network dimensioning – Cell radii" (p.8) in the Responses on the Mobile Model document (June 2013). These models were reviewed for all the other parameters (not only the cell radii). It would not be relevant to provide the specific rules of the 500+ specific parameters of the generic, especially as it would reveal that some data was provided by a single operator (because the other operators did not provide information), which would represent a confidentiality breach. The purpose of having two consultation phases is specifically aimed at receiving comments on the parameters for the generic operator. In fact all the operators (including the respondent) took the opportunity to review the parameter of the generic operator, and provide additional insights for the parameters that were deemed incoherent or unrealistic.

5 Responses to the Mobile service pricing and TERA & ANCOM view and position

Issue 9: Pure LRIC vs LRAIC+		Table of contents
Respondent	Comments received	Response
✂	The respondent disagrees with the use of Pure LRIC for pricing instead of LRAIC+: • It considers usage in Romania is significantly higher than nearly all European countries and prices are lower than nearly all European countries. For the respondent, there is no need for such a draconian intervention to solve a problem that does not actually exist. • It considers that LRAIC+ gives better incentives to invest, which is vital for the Romanian economy, that the ability for the Industry to invest is not reduced at a time when there is a need to roll out the next generation technology.	**Comment cannot be accepted** The respondent does not provide any supporting evidence or data.

✂	The respondent presents the different available costs standards and shows the merits and demerits of pure LRIC. Merits are: • Can lead to convergence between markets • Approximate marginal costs • Enables to promote efficiency and reduce potential competitive distortion, as it is a two-way service Demerits are: • Waterbed effect • Operators may not be able to recover its fixed and common costs • It may not benefit consumers • Risk of calculation errors is high • Can be problematic in large and sparsely populated countries where more common costs need to be recovered on non regulated services	**Comment cannot be accepted** The respondent's comment is biased since its analysis is incomplete. For example • the comparative analysis is theoretical and does not reflect specific circumstances of a particular service market • It forgets to cite disadvantages of LRAIC+ in the presence of double-sided markets, as well as advantages of the pure LRIC approach such as the very limited impact on cost-recovery due to the fact that termination is a two-way access service. • Also by taking into account pure incremental costs when determining termination rates operators are being encouraged to recover their common costs on retail markets (on which there is a price constraint) and not on a monopolistic market (on which there is a risk of excessive prices).

The respondent states that pure LRIC is an extreme for regulatory pricing while FAC and LRIC+ better strike a balance between conflicting considerations.	**Comment cannot be accepted** It is incorrect to state that pure LRIC is an extreme regulatory pricing since pure LRIC is an intermediate approach between Bill&Keep and LRIC+ (SAC is never an option in the electronic communications field). Bill&Keep has been considered by the European Commission which commissioned a study on this subject[4]. It is important to remind that pure LRIC is applied to two-way access services such as (mobile) termination services: this means that, when termination prices decrease, the decrease in termination revenues for an operator is accompanied by a decrease in termination charges on both sides of the termination market. This does not apply for other wholesale regulated services.
The respondent provides a benchmark on the MTR cost standards employed worldwide, with a breakdown by regions (Western Europe, Eastern Europe, Asia, Latin America, MEA): • The benchmark shows that currently LRIC+ is the most widely used worldwide. • The benchmark "*suggests that there is typically a progression in the cost standard applied as a market matures and develops, with FAC being a starting point, before a migration to a LRIC+*." • "*The exception is in Western Europe where in May 2009, the EC recommended a move towards the use of a Pure LRIC cost standard*." As a consequence, the respondent favours the LRAIC+ approach.	**Comment cannot be accepted** The table is incorrect with respect to a number of jurisdictions, such as Bulgaria, Hungary, Netherlands, Slovakia, and surprisingly Romania as well as Greece. Leaving aside these significant inaccuracies, according to the benchmark provided, in Eastern Europe 5 countries have implemented Pure LRIC, 4 have implemented LRAIC+, and 5 rely on a benchmark (with one country Bulgaria, relying a benchmark based on countries that have moved to pure LRIC). As a consequence the pure LRIC approach is more used than the LRAIC+ approach in Eastern Europe. Furthermore it is incorrect to distinguish between the Eastern Europe and Western Europe region, as the European Commission favours a single internal market approach where regulatory frameworks are converging. Even based on the benchmark submitted (which is subject to significant inaccuracies), on the whole Europe, the pure LRIC approach for MTR is dominant with 14 countries, compared to 7 countries only for LRAIC+

[4] TERA Consultants, Hogan Lovells, Study on the future of interconnection charging methods (on behalf of the European Commission), 2010.

✂	The respondent is for the view that mobile broadband will be a key enabler to bridging the Digital Divide. Whilst relatively cheaper than fixed to deploy mobile infrastructure, it still represents significant investment, and in some areas the business case is marginal or negative, and this should be recognised in regulatory and other policy decisions. LRIC+ would be best placed to maintain investment and innovation incentives, and would reduce the risk of negative effects on end-user benefits from a distortion between the relative prices of regulated calls, and non-regulated access and handset costs.	**Comment cannot be accepted** It is unclear why the MTR related to the voice service should affect the digital divide related to the data service, especially as operators have repeatedly stated that the 2G voice traffic share will remain predominant (with around 20% of the voice flowing through the 2G network in 2012, and 40% in 2040). The deployment of a 3G – and *a fortiori* a LTE – network thus relies on business plan that recover costs from delivering data services to consumers, not (incoming) voice call termination as long as this service appears to remain largely on the 2G network. Furthermore the respondent bases its statements on external studies, including the GSMA European Mobile Industry Observatory[5] (2011) and the European Commission E-Communications Household Survey[6] (2013). The GSMA study provides a benchmark of 3G penetration in European countries (page 10). It shows that Romania has a percentage of its Population with 3G Enabled Phones in 2011 at 41%, similar to Germany (43%) and higher than in France (39%). Such studies provided by the respondent cast a doubt on the claim that 3G penetration remains low in Romania due to a large majority of 2G-only handsets:, and that the share of voice traffic on 3G network is still too large and optimistic in Romania. It is also unclear why regulatory intervention should promote operators' investments to be financed from the customers of other operators, or the category of customers which would benefit from such intervention.

[5] GSMA, European Mobile Industry Observatory, 2011.

[6] European Commission, Special Eurobarometer 396 - e-Communications Household Survey, 2013

✂	According to the respondent, the implementation of Pure LRIC, would result in Romania having one of the lowest MTR in the EU, driven by the fact that Romania is sparsely populated (low population density and large rural population), inducing high coverage costs. This will tend to amplify the impact on investment and innovation incentives as there will be a greater proportion of FCCs to recover from other services. The respondent concludes that ANCOM needs to consider whether this low rate is appropriate in the market context.	**Comment cannot be accepted** On the MTR benchmark, the respondent has accurately provided the insight of the Irish High Court (see below). According to the respondent, the Irish High Court "*found that the benchmarking approach adopted by ComReg in this instance (and recommended by the EC) for setting MTRs was outside the scope of what is provided for in the relevant EU and Irish legislation*." This is a sensible conclusion, and the MTR in Romania should thus not be established thanks to a MTR benchmark based on other countries (unlike benchmarking public models to cross check specific technical parameters). The respondent provides a European comparison of population density and urban/rural split suggesting that the MTR cost should be higher. However the respondent does not provide any econometric study relating the MTR cost to the population density or the urban/rural split. Moreover the respondent omits to mention that, in 2014, the generic operator achieves national territory coverage of 93% in 2G and 61% in 3G. Romanian operators have repeatedly stated their difficulty to cover the most remote areas, especially in 3G, so the model has been adapted accordingly.
✂	The respondent is of the view that the EC recommendation is non-binding and it considers that the issues raised in Germany, the Netherlands and Ireland against pure LRIC are highly relevant to the Romanian market. ANCOM should exercise its discretion both in terms of the choice of cost standard, and in terms of ensuring the regulation is implemented in a timeframe that maximises the interests of the Romanian market and consumers.	**Comment cannot be accepted** ANCOM has provided detailed justification for the choice on the cost standard, based on solid economic and legal arguments. Furthermore, the 3 countries listed by the respondent are not relevant: In **Ireland**, the High Court dismissed the use of a benchmark to set MTR, not the use of "pure LRIC" *per se*. In **Germany**, BEREC was requested to assess BNetza's approach and BEREC's view was that pure LRIC should be followed, because the issues raised by BNetzA are either incomplete or inconsistent[7]. This is not mentioned by the respondent.

[7] BEREC Opinion on Phase II investigation pursuant to Article 7a of Directive 2002/21/EC as amended by Directive 2009/140/EC: Case DE/2013/1460 Call termination on individual public telephone networks provided at a fixed location (market 3) in Germany

In the **Netherlands**, OPTA/ACM has finally followed the pure LRIC approach. It is worth quoting the European Commission synthesis of the OPTA/ACM approach:

> "*As to the price control obligation, ACM proposes to regulate the mobile and fixed call termination rates as well as direct interconnection rates in the Netherlands on the basis of a* ***pure BULRIC*** *methodology, in line with the Commission's Recommendation on Termination Rates.* ***Against the background of the Tribunal's August 2011 ruling,*** *ACM demonstrates in its present notification its discretion and assessment of the implementation of the regulatory concept of cost orientation in the light of EU and national law as well as of judgements by the Court of Justice and the national courts. ACM also further motivates the appropriateness of the pure-BULRIC methodology by explaining that, since the previous regulatory period, most Member States have applied a pure BULRIC methodology to set cost oriented call termination rates. The ACM clarifies that not only does the pure BULRIC methodology* ***eliminate the risk of excessive pricing and margin squeeze, stimulate competition, and promote end-user interests,*** *but also that the use by the Dutch regulator of the EU recommended costing methodology, similar to its counterparts in the other Member States,* ***promotes the development of the internal market.*** *In this respect, ACM refers to cross-border traffic that characterises the call termination markets and explains how* ***call termination rates based on a BULRIC-plus methodology only in the Netherlands would lead to an unfair competitive advantage for call termination providers in the Netherlands vis-à-vis call termination providers elsewhere in the Union."***[8]

✂	The respondent assessed the loss to the state budget triggered by the decrease of revenues and margin at more than 10 million euro/year for the entire mobile industry. It also states that revenues and EBITDA are	**Comment cannot be accepted** These matters have already been analysed in the pricing report. This

[8] European Commission, Commission Decision concerning Case NL/2013/1481: Fixed and mobile call termination in the Netherlands, C(2013) 5096 final, 31 July 2013.

financial indicators of the operational profitability of the business and important factors for investment decision: their decrease will mean a reduced level of investments, with all the negative consequences (no technological developments, less businesses and jobs, lower access to the essential services etc).

The respondent states that the decrease of MTR will not be reflected in the retail prices because they are the result of competitive forces (leading to the lowest tariffs in Europe, and one of the highest traffic volumes per user) even if MTR did not suffer any reduction. Decrease in MTR will not benefit to consumers but delay in LTE that will finally be reflected over the end users.

response is thus focused on showing that the respondent's reasoning is flawed.

ARPU: The ARPU has indeed decreased during 2007-2010, but has remained stable ever since.

PRICE: The respondent states that "*the mobile penetration in Romania is above the European average, showing the fact that mobile services are affordable*." Unfortunately this is not the case according to the Eurobarometer study[9] provided by another respondent (see above). The study shows that 71% of Romanian customers believe that mobile prices are too high (cf. page T30). This is 16 points higher than the European average (55%) and ranks Romania at the 7th position on 28 European countries.

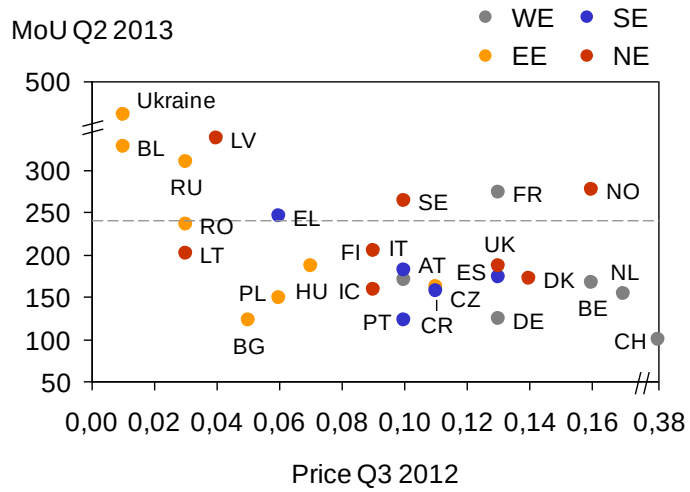
The Eurobarometer study also shows that shows that 45% of Romanian mobile consumers limit the use of mobile Internet because they believe it is too expensive, which is 11 points higher than the European average (34%,cf. page T33).

Interestingly enough, another respondent has provided a GSMA Intelligence study to support the fact that the price per minute is one of the lowest in the region. The GSMA Intelligence study also provides the monthly minutes of use (MoU) per connection. The correlation between both is that the MoU consumption in Romania (236 minutes in Q2 2013[10]) is far from achieving the likes of Ukraine (461 minutes), Latvia (337 minutes), Belarus (327 minutes) and Russia (309 minutes).

[9] European Commission, Special Eurobarometer 396 - e-Communications Household Survey, 2013

[10] Conclusion are similar if the MoU is taken for Q3 2012, which is the latest date for the average mobile price provided by the GSMA Intelligence study submitted by a respondent.

Minutes of use and average price per minute for Western (WE), Southern (SE) Northern (NE) and Eastern (EE) European countries

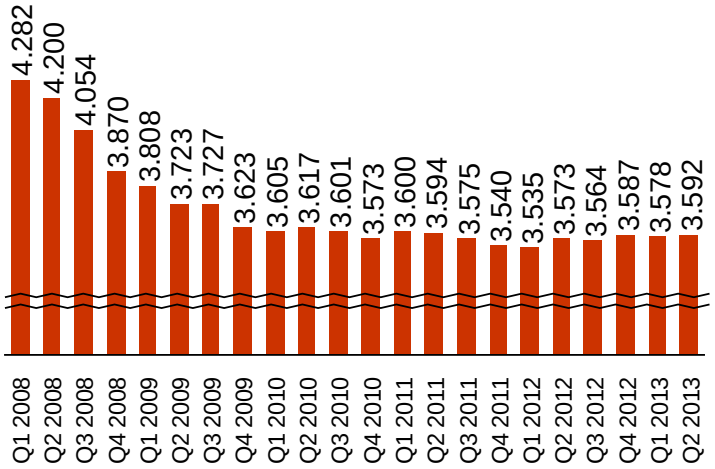


Source: TERA Consultants based on GSMA Intelligence data submitted by a respondent

In fact Romania has one of the lowest MoU of all the countries having a similar price per minute according to the GSMA Intelligence data. The respondent statement that there is a "*strong competition on the market*" is thus irrelevant.

HHI: The HHI study can be performed in volume (subscriber market shares) or in value (revenues market share). The HHI in value can be calculated thanks to the GSMA Wireless Intelligence data. It shows that while the HHI has decreased until 2010, it has remained stable ever since, with even a slight increase between Q4 2011 (3540) and Q2 2013 (3592).

Evolution of Romanian HHI in value



Source: TERA Consultants based on GSMA data

EBITDA: ANCOM understands that with rapidly increasing smartphone penetration, EBITDA margins can be negatively correlated with smartphone activation over the short run, essentially because of equipment subsidies[11].

✂	The respondent states that other countries chose LRAIC+, that is to say the Netherlands and Germany.	**Comment cannot be accepted** See response above.

[11] See for instance Ernst&Young, Metrics transformation in telecommunications, 2013, p.7: "*The launch of high-end smartphones across leading mobile operators is projected to have led to margin pressure for operators worldwide*"

✂

The respondent states that ANCOM should favour LRAIC+ instead of pure LRIC because of legal and regulatory reasons.

- According to the respondent, the EC Recommendation is not binding for the Member States: the conclusion is that ANCOM's decision to calculate termination tariffs based on LRAIC+ would not represent a peculiar situation, as more than 50% of the Member States have not implemented it yet or resorted to another cost calculation method than pure LRIC.
- The pure LRIC method is not in line with the legal provisions in force: According to art. 110, paragraph 1 of the Emergency Government Ordinance no. 111/2011 on the electronic communications, *"For fostering investments, especially in next generation networks, the regulatory authority takes into account the efficient investment made by the respective operator and shall allow the existence of a reasonable rate of return on the invested capital, taking into account the specific risks associated to new project for network investments".* The pure LRIC method allows neither the recovery of common cost nor the recovery of a reasonable rate of return, which means that it represents a breach of the Romanian and EU legislation. In this context the respondent stresses that in Romania the regulated industries are allowed by law to recover their costs through the tariffs they charge. According to the National Authority of Regulation in the Energy Field, the regulated tariff of services is calculated based on cost+ method (cost of services + a reasonable rate of return).
- The respondent states that LRAIC + is used for the calculation all the other regulated services.

Comment cannot be accepted

The regulatory framework in place in Romania stipulates the use of pure LRIC for termination services since early 2012. In addition, ANCOM has justified[12] the use of pure LRIC vis-à-vis the Romanian legislation and the specific nature of the termination services.

As detailed in the pricing report and in the responses outlined above:

- A large majority of countries in Europe choose pure LRIC for similar reasons as those identified by ANCOM.
- Mobile call termination is a two-way access service: this means that, when termination prices decrease, the decrease in termination revenues for an operator is accompanied by a decrease in termination charges on both sides of the market. This does not apply for other wholesale regulated services.

The statements on cost recovery are flawed, since:

1. the rate of return for investments embedded in the costing model is 11,1%, one of the highest in the EU,
2. the costing model clearly shows that the long term costs of the mobile business, including its common costs, can be recovered from the network services,
3. the respondent has not submitted any cost calculations highlighting how his business is actually recovering its real annual costs from the services provided.

✂

According to the respondent, the pure LRIC method does not allow the recovery of costs efficiently incurred; such is the case of the one shot fees paid for spectrum licences. The EC expects that mobile operators will try to recoup losses via other services. However, in the case of

Comment cannot be accepted

The costing model demonstrates the feasibility of licences fees recovery.

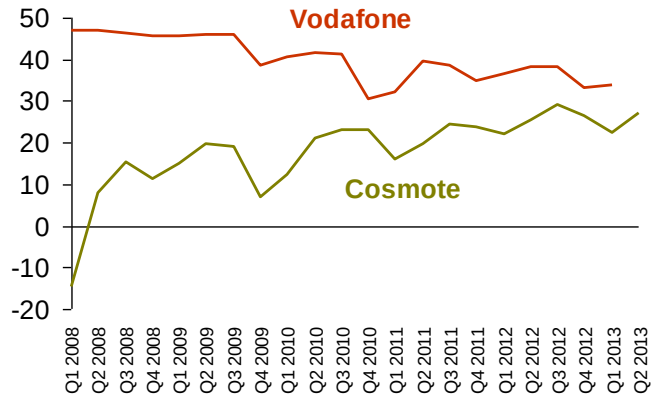
The EBITDA margins of two mobile operators shows that it remains

[12] ANCOM Explanatory memorandum to price setting measures, pages 12 to 27, http://www.ancom.org.ro/uploads/forms_files/expunere_de_motive_LRIC1377774905.pdf

Romania, recovery of cost from the retail market would be impossible due to the current low level of tariffs and current high level of consumption. Practically, the operators will be obliged to reduce their investments in order to recover their losses.

stable for Vodafone since 2010 and is on an increasing trend for Cosmote.

Evolution of Vodafone and Cosmote EBITDA margin (%) in Romania (2008-2013)



Source: GSMA data

Moreover the respondent seems to imply that mobile investments in Romania have reached their peak, and that any modification of the mobile ecosystem will negatively impact the investment level. This is surprising as the Eurobarometer[13] study provided by another respondent (see above) shows that Romania has the lowest mobile QoS of all 28 European countries surveyed:

- (page 79) Only 27% of Romanian mobile consumers estimate that the sound quality when receiving or making calls is “very good”. This is the second worst rate among the 28 European countries (where the average rate is 38%)

[13] European Commission, Special Eurobarometer 396 - e-Communications Household Survey, 2013

		• (page 70) As much as 43% of Romanian mobile consumers have experienced some blocking of online content or applications when using mobile Internet access. This is the highest rate among the 28 European countries (where the average rate is 24%).
✂	According to the respondent, ANCOM should choose LRAIC+ because it maximizes investments and consumer welfare: The telecom industry is a capital intensive industry, an industry that needs to reinvest an important part of its revenues so as to rapidly adopt all the technological innovations. LRAIC+ will support investments and in this way the provision of high standard services to end users.	**Comment cannot be accepted** This has already been dealt with in the pricing report. Moreover it has been shown above that, according to the Eurobarometer[14] study submitted by another respondent that the QoS on mobile phone quality is among the lowest in Europe according to consumers, and that Romanian consumers are more concerned by national call charges than international call charges.

[14] European Commission, Special Eurobarometer 396 - e-Communications Household Survey, 2013

Issue 10: Response to ANCOM and TERA arguments

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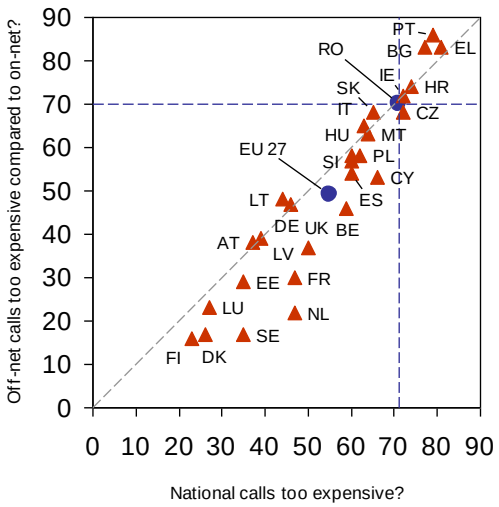
Respondent	Comments received	Response
✂	The respondent is of the view that ANCOM presented a flawed evidence, since it has conducted insufficient market analysis on: • End-user impacts: waterbed effect may potentially occur reducing mobile handset subsidies (for instance) increasing the digital divide in Romania. • Competitive dynamics: the use of affordability measure as a basis for comparing prices is misleading. Vodafone's pricing data is more reliable. Moreover, the use of on-net calls proportion is not an argument for the choice of pure LRIC over LRIC+. And finally, relationship between market concentration and competition and consumer welfare in mobile markets has been demonstrated to be weak. • Dynamic efficiency considerations: 4G infrastructure investment should not be a reference to illustrate impact of MTR on investment since ANCOM's intention to applying pure LRIC was known well before acquisition of 4G licenses. Moreover the fact that operators in Romania have committed to invest in acquiring licences for 4G spectrum is only the first step. The business case for operators to roll out 4G in the less dense territories will depend on the level of regulated prices, knowing that MTR informed by LRIC+ provides stronger investment and innovation incentives than that of pure LRIC.	**Comment cannot be accepted** This has already been dealt with in the pricing report. This response is thus focused on showing that the respondent's reasoning is flawed. **3G UPTAKE:** As seen above, the GSMA European Mobile Industry Observatory provided by the respondent shows that Romania has a percentage of its Population with 3G Enabled Phones in 2011 at 41%, similar to Germany (43%) and higher than in France (39%). As a consequence there does not seem to be a 3G-enabled phone penetration issue in Romania. **COMPETITIVE DYNAMICS**: The respondent does not provide any conclusive evidence that the competitive analysis in the pricing report is flawed, especially on the aspect of the high on-net traffic. Interestingly enough, the Eurobarometer[15] study provided by the respondent show that not only Romanian mobile consumers are among the most dissatisfied by their national call charges (71% believe that they are too high), but also they are among the most dissatisfied by their off-net call charges (with 70% believing off-net calls are too expensive compared to on-net calls).

[15] European Commission, Special Eurobarometer 396 - e-Communications Household Survey, 2013

% of national mobile consumers agreeing that national and off-net calls are too expensive



Source: Eurobarometer report 2013, pp. T30 and T32

Moreover, the waterbed analysis in the pricing report has been confirmed by a number of respondents.

LTE INVESTMENT: As LTE is first and foremost a technology aimed at delivering data services, it is unclear why the MTR related to the voice service should affect the digital divide related to the data service, especially as operators have repeatedly stated that the 2G voice traffic share will remain predominant (with around 20% of the voice flowing through the 2G network in 2012, and 40% in 2040). The deployment of a 3G – and *a fortiori* a LTE – network thus relies on business plan that recover costs from delivering data services to consumers, not (incoming) voice call termination as this service remains largely on the 2G

		network. It is however true that the European Commission would like to see rapid LTE roll-out deployment. However the CEO of Vodafone has retorted that operators already have significant 3G deployments and that Europe is not lagging behind the US: "*It seems to me that if you look at our statistics of usage on 3G and performance, if you compare to the U.S. average data experience, Europe is much more advanced (...) So, I am not sure I understand where and what much more investment would create a benefit given the fact that today, I regularly have in Rome, in London, in Dusseldorf, six, seven, eight, nine megabits per second on my iPad and on my smartphone. Having said that, I am not in the opposite camp, which is the camp of people who say you shouldn't invest because in any case, it doesn't make any difference. So, as I said, constant investment, continuous upgrade of our network; now half of our network is at 43 Mbps which is not the case of the U.S. networks of the old generation; and getting to a target of … 40%-50% LTE by 2015, I think is the right thing to do in Europe*."[16] Last, it is not clear why the respondent suggests that investments in one network should be promoted through extra chargers paid by other network users, instead of their own network users.
✂	ANCOM should recognise that a significant proportion of the benefits from the lower MTRs from a Pure LRIC approach would be accrued outside of Romania, and set MTRs on the basis of LRIC+.	**Comment cannot be accepted** The impact assessment has already been provided in the pricing report. One respondent disagrees with the impact assessment, detailing how the loss of revenues on the international traffic will amount to ✂m€ on its network and 48m€ for the whole industry in 2014 compared to 2013. Another respondent has the same objection, and supports the findings of the KPMG study. The respondents and KPMG provide a biased and incomplete study. The respondent study does not provide any detail on its calculation, making it
✂	The respondent states that the impact over operators ("producer surplus" in the Pricing document) is calculated at national level, not taking into account the international traffic, although the MTR proposed by the ANCOM is applicable,	

[16] RCR Wireless, EC castigates Europe's lag in LTE deployments, 26 July 2013.

according to the current regulation to all traffic, irrespective of its origin.

difficult to verify and replicate. However it seems that the respondent focuses only on the international income loss due to a decrease of Romanian MTR, but does not include the reduction in international costs paid to foreign operators thanks to the MTR and FTR decrease occurring abroad (such as the UK with a 46.6% decrease of the UK MTR in April 2013).

Breakdown of international traffic outgoing from and incoming to Romania among the 7 selected countries (M=mobile, F=fixed)

		Outgoing		Incoming	
(%)		2011	2012	2011	2012
Austria	M	3%	3%	4%	4%
	F	1%	1%	0%	0%
France	M	5%	5%	4%	4%
	F	2%	2%	1%	1%
Germany	M	9%	10%	3%	5%
	F	5%	5%	1%	1%
Italy	M	15%	21%	55%	55%
	F	18%	14%	1%	1%
UK	M	2%	3%	4%	4%
	F	2%	1%	0%	0%
Spain	M	6%	7%	5%	5%
	F	5%	4%	3%	2%
Hungaria	M	4%	4%	1%	1%
	F	1%	1%	0%	0%
other countries		23%	20%	17%	16%
Total		**100%**	**100%**	**100%**	**100%**

Source: ANCOM data

The KPMG study is more detailed, explaining how the international impact was calculated based on the MTR of 4 countries (Italy, Germany, Spain and Hungary) that amount to “80% of international traffic” (slide 14). However the study is plagued by two main inaccuracies:

- Based on the international traffic of Romanian operators, the list of KPMG excludes 3 countries without any justification, namely Austria, the UK and France (which has one of the lowest MTR in Europe). The

effective perimeter to consider in order to capture 80% of the total international traffic is thus the 4 countries of the KPMG studies, added with Austria, the UK and France.

- The KPMG study seems focused only on MTR in other countries. This is however inconsistent, as international outgoing traffic to other countries is also terminated on fixed networks.

The breakdown of outgoing traffic (from Romanian mobile to foreign fixed and mobile) and incoming traffic (from foreign fixed and mobile to Romanian mobile) is displayed below.

Total inbound and outbound international traffic based on ANCOM data for the 7 selected countries

		Outgoing traffic			Incoming traffic		
(m. min.)		2011	2012	2013e	2011	2012	2013e
Austria	M	22	30	32	79	70	74
	F	7	10	10	3	3	3
France	M	36	52	55	68	79	83
	F	12	16	17	12	11	12
Germany	M	67	103	108	56	96	101
	F	41	51	54	19	26	28
Italy	M	109	222	234	1 038	1 035	1 087
	F	131	142	149	27	26	27
UK	M	18	34	35	73	81	85
	F	12	14	15	5	8	8
Spain	M	41	68	72	90	92	96
	F	37	42	45	51	29	30
Hungaria	M	31	40	42	26	24	25
	F	7	10	10	4	4	4
Total		**573**	**836**	**878**	**1 549**	**1 583**	**1 663**

Source: TERA Consultants based on ANCOM data

The total charges (paid by Romanian mobile operators to foreign networks) and revenues (paid by foreign networks to Romanian mobile operators is calculated based on:

- The past traffic of all mobile operators outgoing to and incoming from the 7 selected countries of the panel for 2011 and 2012 (2013 value based on ANCOM data and KPMG forecast);

  The average FTR and MTR in the 7 selected countries of the panel and the average MTR in Romania.

Average MTR and FTR

MTR/FTR

(c€)		Jan-11	Jul-11	Jan-12	Jul-12	Jan-13	Jul-13	Jan-14
Austria	M	2,51 €	2,01 €	2,01 €	2,01 €	2,01 €	2,01 €	0,80 €
	F	1,74 €	1,74 €	1,74 €	1,74 €	1,74 €	1,74 €	0,11 €
France	M	3,07 €	2,00 €	1,50 €	1,00 €	0,84 €	0,80 €	0,80 €
	F	0,40 €	0,40 €	0,30 €	0,30 €	0,08 €	0,08 €	0,08 €
Germany	M	3,37 €	3,37 €	3,37 €	3,37 €	1,85 €	1,85 €	1,82 €
	F	0,45 €	0,45 €	0,38 €	0,38 €	0,30 €	0,30 €	0,30 €
Italy	M*	6,97 €	6,99 €	5,40 €	2,60 €	1,25 €	0,98 €	0,98 €
	F	0,57 €	0,57 €	0,57 €	0,57 €	0,36 €	0,36 €	0,36 €
UK	M*	5,16 €	3,38 €	3,52 €	1,85 €	1,44 €	1,00 €	0,99 €
	F	0,22 €	0,22 €	0,23 €	0,23 €	0,28 €	0,28 €	0,03 €
Spain	M*	5,02 €	4,52 €	4,05 €	3,46 €	2,13 €	1,09 €	1,09 €
	F	0,95 €	0,95 €	0,90 €	0,90 €	0,84 €	0,84 €	0,84 €
Hungaria	M	4,30 €	4,45 €	3,11 €	3,22 €	2,49 €	2,39 €	✂
	F	0,51 €	0,51 €	0,51 €	0,51 €	0,55 €	0,55 €	0,14 €
Romania	M	5,06 €	5,06 €	5,06 €	4,05 €	3,07 €	3,07 €	0,96 €

Source: BEREC (MTR and FTR snapshots)
(*) Averaged with July 2013 value

Total international costs and revenues for Romanian mobile operators

		Charges (real)			Revenues (real)		
(m€)		2011	2012	2013	2011	2012	2013
Austria	M	0,5	0,6	0,6	4,0	3,2	2,3
	F	0,1	0,2	0,2	0,2	0,1	0,1
France	M	0,9	0,7	0,5	3,4	3,6	2,6
	F	0,0	0,0	0,0	0,6	0,5	0,4
Germany	M	2,3	3,5	2,0	2,9	4,4	3,1
	F	0,2	0,2	0,2	0,9	1,2	0,8
Italy	M	7,6	8,9	2,6	52,5	47,2	33,4
	F	0,7	0,8	0,5	1,4	1,2	0,8
UK	M	0,8	0,9	0,4	3,7	3,7	2,6
	F	0,0	0,0	0,0	0,3	0,3	0,2
Spain	M	1,9	2,6	1,2	4,6	4,2	3,0
	F	0,3	0,4	0,4	2,6	1,3	0,9
Hungaria	M	1,4	1,3	1,0	1,3	1,1	0,8
	F	0,0	0,1	0,1	0,2	0,2	0,1
Total	F+M	**16,9**	**20,1**	**9,7**	**78,4**	**72,1**	**51,0**

Source: TERA Consultants based on ANCOM data
(2013 traffic obtained thanks to KPMG forecast)

Romanian mobile operators have earned 201.6m€ during 2011-2013 and have incurred 46.7m€ of international expenses due to foreign FTR and MTR. **This represents a net gain of 155.0m€ for the 2011-2013 period.**

The revenues earned by the Romanian operators are not only due to the traffic imbalance, but also thanks to a higher MTR than in the other countries. If the MTR in Romania had been more balanced and followed the average of MTRs in the 7 countries of the sample (weighted by the outgoing breakdown of traffic), it should have been equal to 4.74c€ in 2011, 3,34c€ in 2012 and 1.44c€ in 2013. As a consequence the revenues of Romanian mobile operators should have been significantly lower.

Total international revenues for Romanian mobile operators with adjusted MTR

(m€)	2011	2012	2013
Austria	3,7	2,3	1,1
	0,1	0,1	0,0
France	3,2	2,6	1,2
	0,5	0,4	0,2
Germany	2,7	3,2	1,5
	0,9	0,9	0,4
Italy	49,2	34,6	15,6
	1,3	0,9	0,4
UK	3,5	2,7	1,2
	0,2	0,3	0,1
Spain	4,3	3,1	1,4
	2,4	1,0	0,4
Hungaria	1,2	0,8	0,4
	0,2	0,1	0,1
Total	**73,5**	**52,9**	**23,9**

Source: TERA Consultants based on ANCOM and BEREC data

If the MTR in Romania had been balanced with the foreign termination rates, the incoming revenues would have been lower, at 150.2m€ for 2011-2013 (compared to 201.6m€). **In other words the mobile Romanian operators have earned a net surplus of 51.3m€ during the 2011-2013 period thanks to a higher MTR.**

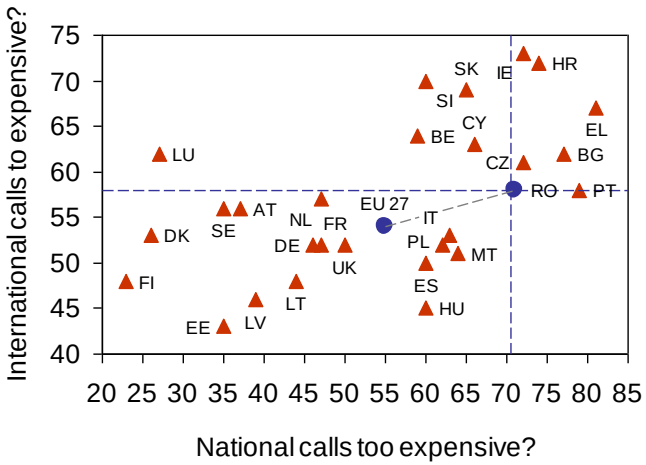
In this context and considering the accelerated move towards pure LRIC termination rates in the European Union, it is to be noted that while over 90% of the international traffic of Romanian operators remains in the EU, more than 75% of total international traffic is exchanged with countries where pure LRIC rates apply.

Furthermore, the Eurobarometer study[17] provided by another respondent (see above) shows that Romanian consumers are much more concerned by national mobile call charges than international mobile call charges.

- The study shows that 71% of Romanian customers believe that mobile prices are too high. This is 16 points higher than the European average (55%) and ranks Romania at the 7th position among the 28 European countries.
- Only 58% of Romanian mobile consumers are concerned about international call charges (close to the European average at 54%), which ranks Romania in the middle of the 28 European countries (at the 12th position).

This suggest that Romanian mobile consumers compared to consumers in other countries are benefiting from MTR decrease abroad, but are expecting their national mobile prices to decrease in the future.

% of national mobile consumers agreeing that national and international calls are too expensive



[17] European Commission, Special Eurobarometer 396 - e-Communications Household Survey, 2013

Source: Eurobarometer report 2013, pp. T30 and T33

✂	The respondent noticed a strange association of data: the impact was calculated based on the level of traffic in 2010, but with the MTR values in 2012. The respondent stresses the need to calculate the impact on the 2013 traffic values.	**Comment cannot be accepted** The 2010 year was displayed for methodological purposes to explain the calculation principles for the net surplus of each operator. The impact assessment is performed from 2013 to 2015 in line with the traffic in the Mobile Model.
✂	The respondent states that MTR decrease has no impact on the retail market, and disagrees with the consumer surplus analysis in the pricing report: • The retail tariff for mobile calls was set at 0.03 eurocents/min. in the pricing report. The respondent disagrees and state that the correct value is 0.019 eurocents/min. according to ANCOM. • Elasticity of MTR vs retail price used in the calculation is 1, while the elasticity of FTR vs retail price is 0.2. The difference is generated by 2 different sources taken into account. This abnormal discrepancy is not at all explained by Tera Consultant. • The source used for the elasticity of the FTR vs retail price, mentioned does not deal with a general elasticity of fixed calls with respect to the FTR (but only with own elasticity of fixed to mobile calls and with the elasticity of fixed calls with respect to the price of subscription or of mobile originated calls). So, the information is misleading. • The source used for the elasticity of the MTR vs the retail price, mentioned above, is also making reference to the demand price elasticity and it is not justified. So, it is an incorrect assumption to consider that a decrease of MTR will be transferred into a decrease of the retail price.	**Comment cannot be accepted** There are a number of ways to calculate the retail tariff for mobile calls. The pricing report was based on the GSMA Intelligence data submitted by another operator (Vodafone). As another respondent states it: "*The pricing data presented by Vodafone is more appropriate, is from a reputable source*." On the other parameters, the respondent states that there is some "abnormal discrepancy", "misleading information", "no justification", "incorrect assumption", "inconsistent parameters". However the respondent fails to provide any alternative source, data or parameter, while it cannot be assumed the respondent is unaware of long term own price or cross-price elasticities for the services it sells. While price elasticities are likely to present significant variation from one country to another, it is reasonable to assume telecoms services consumption in Romania is more sensitive to prices, as compared with in other EU countries. Therefore, the elasticity benchmarks used can represent conservative assumptions.

✂	The respondent is of the view that the arguments of Tera Consulants in favour of pure LRIC are not reliable on economic efficiency: the respondent quotes Ofcom's conclusion that a choice between pure LRIC and LRAIC+ based on allocative efficiency is not possible.	**Comment cannot be accepted** This has already been dealt with in the pricing report. This response is thus focused on showing that the respondent's reasoning is flawed. The respondent ignores the arguments and the evidences presented in this consultation. The respondent only puts forward the conclusion of another analysis performed by Ofcom. In addition, it is to be noted that even the Ofcom's analysis quoted by the respondent has led to the use of pure LRIC, which is in line with ANCOM decision.
✂	The respondent is of the view that the arguments of Tera Consulants in favour of pure LRIC are not reliable on investment decisions: the respondent argues that the study conducted by by Friederiszick, Grajek and Röller does not distinguish between types of regulatory actions. Its scope is too wide and is then not relevant to MTR policy. For the respondent, it is not surprising that no correlation was found between regulation and investment. Furthermore, the argument that operators in Europe made significant investment in 4G despite decreasing MTR is not accepted, because it does not present the counterfactual: how much would the 4G spectrum auctions have raised if the EC had not introduced the idea of pure LRIC in 2009. The proceeds of 4G spectrum auctions are explained by many more factors than operators' willingness to invest	**Comment cannot be accepted** This has already been dealt with in the pricing report. This response is thus focused on showing that the respondent's reasoning is flawed. As demonstrated above, the lack of uptake of 3G data services in Romania has more to do with the pricing and coverage strategy of Romanian operators than a so-called lack of 3G handsets. Moreover it is unclear why LTE, which is a technology aimed at delivering mobile data services, would be impact by voice call termination regulation. In addition, empiric evidences in the EU to not show any correlation between licence fees and infrastructure investments, or between licence fees and MTRs.

✂

The respondent is of the view that the arguments of Tera Consultants in favour of pure LRIC are not reliable on the Promotion of competition:

- PRICES: The respondent is of the view that TERA Consultants is using ITU data which are less applicable than Vodafone's ones.
- ON-NET PROPORTION AND MULTIPLE SIMS: The respondent is of the view that TERA Consultants' submission stating that an operators' natural proportion of on-net calls should in theory be equal to its market share is not correct.
- HHI: Contrary to what Tera Consultants suggests, the HHI indicates that the Romanian mobile market is not only competitive, but the level of competitiveness has increased in recent years. The respondent states that data about this evolution has been provided in its document. Also, according to the respondent, MTR cannot be used to influence HHI.
- EBITDA: The respondent is not of the view that the fact that the EBITDA margin of Vodafone's subsidiary is higher than to other subsidiaries demonstrates a lack of competition. In the contrary, the analysis should be based on the evolution of the EBITDA margin. In this case, it appears that the competition in Romania is increasing (significant drop in the EBITDA margin).
- QUALITY: According to the respondent, high MTRs provide incentives for operators to increase the quality of their networks, so that incoming calls are answered, thus generating revenues. Low MTRs favour a move towards big bucket pricing, long contract terms and loyalty programmes. Such a move reduces operators' incentives to invest in call-carrying capacity (because they earn the same whether or not users are successful in placing calls).

Comment cannot be accepted

Complementary to the Pricing report, the above responses have demonstrated that, according to the data and studies submitted by the respondent themselves:

- ARPU has decreased during the 2007-2010 period, but remained stable ever since.
- Romania has one of the lowest MoU among the countries having a similar price per minute.
- Romanian mobile consumers ARE among the most dissatisfied of their national mobile call charges.
- Romanian mobile consumers ARE among the most dissatisfied of their off-net mobile call charges.
- Romanian mobile consumers ARE NOT among the most dissatisfied of their international mobile call charges.
- The HHI in value is stable since 2010.
- EBITDA margin of two mobile operators is either stable (Vodafone) or on the rise (Cosmote).
- Romania has one of the lowest 3G population coverage of all European countries.
- Romanian mobile consumers ARE among the most dissatisfied of their mobile QoS.

6 Responses to the PoI Model and TERA & ANCOM view and position

Issue 11: Number of hours worked per month			Table of contents
Respondent	Comments received	Response	
✂	The respondent states that the number of worked hours calculated in the PoI model is not based on a correct assumption for the number of working days. The PoI model assumes 255 working days per annum while it should be 365 minus week-ends (104) minus holiday entitlement and public holidays (30), i.e. it should be 231. As a consequence, the number of worked hours per month should be 231/12x8 = 154 instead of 170.	**Comment accepted** The number of worked hours will be changed from 170 to 154.	

Issue 12: Hourly cost attributed to “network testing and analysis” tasks			Table of contents
Respondent	Comments received	Response	
✂	The respondent states that the PoI uses the wrong hourly cost for “network testing and analysis” tasks as it uses the “bureaucratic & paperwork” hourly cost.	**Comment accepted** The correct hourly cost will be attributed to “network testing and analysis” tasks	

Issue 13: Cost per hour

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Respondent	Comments received	Response
✂	The respondent states that the monthly cost of staff used in the PoI model is not the correct one as it is 35% lower than the 2011 one also provided in the mobile model.	**Comment cannot be accepted** The value used in the PoI model is the value provided by the respondent in the response to the 1st consultation (in January 2013). As a consequence, there is no mistake in the PoI model. It is also noted that the value proposed in January 2013 was in line with the average value of other operators and that the new proposed value would be far above. Finally, even if some activities performed may be similar between the PoI cost model and the mobile network cost model, this cannot mean that on average the same staff and same level of staff is used for the PoI activities. Furthermore, evidences in the interconnection business shows that other operators provide POI services of similar quality under more efficient hourly costs.
	The respondent does not understand why the average value used in the PoI is confidential	**Comment cannot be accepted** Average values have been published (see ANCOMs' consultation document).

Issue 14: Monthly rent for interconnection links – per km charge

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Respondent	Comments received	Response
✂	The respondent states that the tariff "monthly rent for interconnection link of 2Mbps related to interconnection link elements provided through Operator's transmission infrastructure" should not be a per km tariff because it would increase cost for long interconnect links	**Comment accepted** Considering operators' comments against a tariff per km for interconnection links and the fact that it could have strong consequences on operators' discussions and negotiations, it is proposed to: • Use a fixed tariff independent of length for interconnection links shorter than 50 km, assuming an average length of 3 km • Keep a tariff per km for interconnection links longer than 50 km. This tariff per km will apply only after 50 km. This approach should apply for both E1 and STM1. This approach is in line with one operator's proposal and has the advantage of keeping the existing structure unmodified for the majority of cases and of giving incentives to develop infrastructure for alternative operators as their incentives to use long interconnection links rather than have a capillary network will be lowered. ANCOM aims at fostering investment in alternative infrastructure (when desirable). It is noted also that, in any case, alternative options can be envisaged (such as dark fibre rental). Furthermore, in order to favour a more efficient and simplified framework for pricing of POI services, it is proposed to include the *"monthly rent for interconnection link (beneficiary space or intermediary point)"* for both E1 and STM1 capacities in the "*monthly rent of interconnect link*".
	The respondent states that the tariff *"monthly rent for interconnection of 2Mbps, distant interconnection"* should be set at €44.2/link/month to be in line with market price	
	The respondent states that the same logic should be followed for STM1.	
✂	The respondent states that the use of a "per km" tariff is a fundamental change in the traditional charging basis used. It states that the measure applied to alternative operators generates a high risk of abuses, legal actions and conflicts between operators. It states that, until now, the use of length independent tariffs by alternative operators enabled Romtelecom to avoid having to support inefficient interconnection architectures. To limit such distortions, the respondent proposes a fix tariff per E1 used irrespective of the distance for all Romanian operators for interconnection links shorter than 50 km, which could be calculated with an average length of 3 km. The respondent considers that this will encourage all operators to efficiently dimension interconnection links. The respondent proposes also that for interconnection links above 50 km, prices should be commercially negotiated and a length dependent tariff could be used.	

✂	The respondent states that the per km tariff proposed by ANCOM would stimulate operators to move as far as possible from the PoI. The respondent takes an example of a neutral collocation where the average distance is below 5 km	

Issue 15: Monthly rent for interconnection links – level of price

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Respondent	Comments received	Response
✂	The respondent states that the tariff "monthly rent for interconnection link of 2Mbps related to interconnection link elements provided through Operator's transmission infrastructure" (€88/km/E1/month) is extremely high	**Comment accepted** To lower the impact and to be consistent with the choice of using pure LRIC for the PoI services (which has not been criticised by any respondent), it is proposed to update the calculation of the interconnection link by removing: - Common costs (as already done in the second consultation) - Trench costs because trenches are already available/shared with other services and mainly access networks. Therefore trench costs should not be avoided when PoI services are removed. In this context, the per km cost component moves from €88/E1/km/month to €31/E1/km/month.
✂	The respondent states the proposed prices for interconnect links are too high	
✂	The respondent states that charges for the use of interconnection links are too high as compared to market prices	

✂	The respondent notes that one STM1 (€6408/STM1/km/month) is now more expensive than 63 E1 (€88,5x63 = €5575/63E1/km/month)	**Comment accepted** This result is due to the fact that the gradient has been applied separately for leased lines below 2Mbps and for leased lines above 2Mbps. As the average cost per Mbps of leased lines below 2Mbps and leased lines above 2Mbps is similar, the use of a separate gradient generates an anomaly. This approach leads to a situation where the cost per Mbps of a 2Mbps leased lines can be cheaper than the cost per Mbps of a 34 or 155 Mbps leases lines, which is the issue at stake. It is therefore proposed to use a single gradient approach for all leased lines below and above 2Mbps which will automatically lead to a lower cost per Mbps for STM1 compared to E1. Therefore, the cost of one STM1 will be lower than the cost of 63 E1. This approach increases E1 price by around 35% and decreases STM1 prices. With this change, the per km cost component are now €40/E1/km/month and €1865/STM1/km/month.
	The respondent states that current calculations do not make transparent the end to end calculation for these links	ANCOM has explicitly mentioned that a public version of the fixed core model has not been realised for the August 2013 consultation, due to two reasons: lack of interest on this model in the November 2012 consultation, combined with the significant efforts to eliminate confidential information from the model structure.
	Finally, the respondent notes that there is a random formula in the November 2012 model under consultation	**Comment not accepted** Since November 2012, the model was updated and the updated version was published. The updated version does not include any random formula. Furthermore, the model version under public consultation had a number of random functions to eliminate confidential information.

Issue 16: Task duration

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Respondent	Comments received	Response
✂	The respondent provides new durations for some tasks: • Preparing a draft solution: 120 min instead of 240 min • Reviewing the solution: 60 min instead of 180 min • Paperwork (work orders, etc.): 50 min instead of 150 min • Updating an IT system or database or updating it: 15 min instead of 30 min • Carrying out tests and analysing tests: 120 min instead of 240 min • Technical department perform work order to unblock technical solution: 60 min instead of 120 min • Technical department monitor the routed traffic from OLO: 60 min instead of 210 min • Reconfiguration activities for switching resources: 90 min instead of 150 min • Technical department eliminate the connection of IC links (incl software changes): 60 min instead of 120 min	**Comment partly accepted** It is proposed to take into account the respondent comments by including them in the average calculations conducted in the PoI model. Indeed, the PoI model conducts average calculations between several operators' submissions and therefore the respondent's values can be included in the averaging formula. However, values proposed by the respondent for "Reviewing the solution", "Paperwork (work orders, etc.)" and "Technical department monitor the routed traffic from OLO" are rejected because they are too far from other respondents' values which were justified by statistics, which is not the case here.

Issue 17: Material costs

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Respondent	Comments received	Response
✂	The respondent asks to clarify the inconsistency between D17 and D45 in the “materials” sheet	**Clarification** D17 and D45 are not inconsistent. D17 corresponds to the Cable /patch between xDF and trasmission equipment card (1 fibre) - excluding installation (recovered by task duration). This is the cost of the equipment. D45 corresponds to the cost of the equipment per used fibre, i.e. having taken into account that all cables are not always utilised (in order to have spare capacity for example).

Issue 18: Installation of transmission equipment

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Respondent	Comments received	Response
✂	The respondent asks to clarify why some of the costs (ports, DDF, ODF) are recovered by the installation of transmission equipment while they are already recover under various types of IC links	**Clarification** DDF, ODF and port costs are not recovered by the installation of transmission equipment but by the monthly rent of the port in the switch (E1 or STM1). Indeed, the port in the switch requires DDF for E1 and ODF for STM1. It is important to note that DDF costs represent 4% of the monthly rent of the E1 port in the switch and ODF costs represent 0.4% of the monthly rent of the STM1 port in the switch.

Issue 19: Activities subsequent to a number of PoI services

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Respondent	Comments received	Response
✂	The respondent explains that some activities under the “configuration of partner PoA/PoI” cannot be performed as listed in the PoI model. As a consequence, some activities related to ports and links whose costs are recovered by separate charges, should be part of the “configuration of partner PoA/PoI” service	**Comment partly accepted** It is important to highlight that the service “configuration of partner PoA/PoI” includes the installation of the first port in the switch. It is therefore proposed to clarify this is in operators’ reference offers but not to modify the scope of the service “configuration of partner PoA/PoI”

Issue 20: Installation of port in the switch and IC link

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Respondent	Comments received	Response
✂	The respondent explains that for the activity “installation of port in the switch”, the activity “Technical department configure the voice network (voice routes, voice instalment)” is only necessary for the first E1.	**Comment not accepted** Even for subsequent E1, configurations are necessary and therefore the comment cannot be accepted. If this comment had been accepted, this would have lowered by only 3% the associated cost of ““installation of port in the switch”
	The respondent states that internal and external communications regarding ports, links and billing tests are common. Therefore they should not be quantified as separated for each individual service.	**Comment not accepted** For each separate request by an operator, it will be necessary for the wholesale department of the requested operator to treat the request which will necessarily require internal and external communications. As a consequence these tasks should be kept.

7 Responses to the Fixed core model and TERA & ANCOM view and position

Issue 21: Model size

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Respondent	Comments received	Response
✂	The respondent believes that the model is long to run but that the use of macros should make this achievable without significant impact on the run time of the model	**Comment cannot be accepted** Macros are already used in the model at many instances: • Pure LRIC calculation • Rebalancing • Calculation for 4 years at the same time On TERA's fixed machine, the model runs in less than 1 minute and 15 seconds when the model is run once. This is a very reasonable speed. The model requires more time when a macro testing several scenarios is used. For example, when rebalancing is calculated and calculation is made over 4 years, the model can run in more than 10 minutes, but this is due to the use of macros.

The respondent recognises that where data is unavailable, appropriate and reasonable assumptions and benchmarks are used. However, the respondent states that if TERA had specific concerns about any gaps in the data provided, then it should have engaged directly with RomTelecom to agree an approach to work around any data limitations	**Comment cannot be accepted** The process described by the respondent is the process that was followed by ANCOM and TERA. Each specific concerns have been raised to the respondent, for example: • 11 questions were sent to the respondent in August 2012 to focus on specific areas of concerns • Further questions were sent in September 2012 on WDM • Gaps have been identified in the first national consultation and the respondent had the opportunity to provide further comments.
While the respondent recognises that the model size has been reduced, it believes it should be further reduced by for example: using mark ups for space, power and air conditioning calculations rather than bottom-up calculations, removing calculations and data which are not used to model outputs (e.g. data in M2654:M5168 in 'PSTN topology' spreadsheet), reducing the prevalence of the function 'SUMIF' in the model.	**Comment cannot be accepted** While power and air calculations do not represent a significant share of costs, it is believed that it is preferable to calculate these costs with details in the context of pure LRIC calculations. Under the pure LRIC approach, the use of a mark up would increase proportionally the cost of FTR while the removal of termination volumes do not necessarily have a proportional impact on power costs. With regards to removing calculations and data which are not used in the model outputs, this comment is contradictory to the respondent's other comments where it states there are not enough 'checks' in the model. These types of calculations (like data in M2654:M5168 in 'PSTN topology' spreadsheet) which the respondent propose to remove are typically used to conduct verifications (in the example, the goal of the column M is to verify that the number of equipment per site is realistic). Finally, it is considered that removing the function 'SUMIF' would make the model more complex.

Issue 22: Model transparency

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Respondent	Comments received	Response
✂	While the respondent recognises efforts to improve model transparency have been made, the respondent adds that the colour code used to distinguish calculations, inputs, copies from the service modules, etc. is not consistently applied in 3 instances. The respondent recognises that the colour coding is not critical for the model.	**Comment accepted** The number of instances found by the respondent compared to the importance of colour coding for the model implies that this comment cannot be considered as critical aspect of the model transparency. In any case, the final model has been modified to change the colour coding used in the first two instances. The 3rd instance ("leased lines per technology") has been left in black as it is indeed a copy value.
	The respondent states that the calculation of the model is not in line with modelling best practices which would see calculations from left to right and from top to bottom (e.g. 'leased lines per technology' sheet)	**Comment cannot be accepted** The structure of the updated model has been modified to reflect the respondent's previous comments. This comment is a new comment while the spreadsheet structure has remained the same. The respondent could have made this comment during the first national consultation. In addition to this, TERA Consultants has generally followed this best practice (from left to right and from top to bottom) but because some sheets include several tables (one single per spreadsheet would not be practical), this rule cannot always be followed. TERA Consultants has added a description of each spreadsheet at the top of each spreadsheet and a list of elements included in this spreadsheet. This facilitates the understanding of each spreadsheet.

The respondent states that some inputs should be collated in the control sheet, in line with best practices such as: the average speed per line connection placed in the 'leased lines per technology' spreadsheet or the 'PSTN routing factors' spreadsheet which includes both inputs and outputs.	**Comment accepted** The control sheet aims at summarising only the main inputs which are key parameters in the model. Even if the parameters listed by the respondent are important, they tend to be less subject to details as they come from the respondent data and appear to be less subject to comments. Here the average speed per line connection is an important calculation but this is the result of a calculation and therefore should not be part of the control panel (it has been put in red). Also, PSTN routing factors are relevant inputs but the size of the table implies that it is preferable not to have it in the control panel.
The respondent notes that there are overly-complex formulas in the model which increases the risk of errors. The respondent recommends constructing multiple simple calculations rather than one extremely complex one.	**Comment cannot be accepted** In such models, the relationships between volumes of traffic and users and number of equipments must be modelled which implies to factor geographical dispersion of traffic and different complex engineering rules. As a consequence, such complex formulas are natural in such models. Similar level of complexity can be found in many other cost models published by regulatory authorities in Europe[18].

[18] For example, the new MTR model published by ARCEP on the 8th of October 2013 (http://www.arcep.fr/uploads/tx_gspublication/model-couts-reseau-mobile-oct2013.zip) includes several formulas such as : =SI(AF$1745>=$H1729;MIN((AF$1745-$H1729+1)/$I1729;1)*MIN((AF$1745-$H1729+1)/$J1729;1)*I1725;0)+SI(AF$1745>=$L1729;MIN((AF$1745-$L1729+1)/$M1729;1)*MIN((AF$1745-$L1729+1)/$N1729;1)*(M1725-I1725);0)+SI(AF$1745>=$P1729;MIN((AF$1745-$P1729+1)/$Q1729;1)*MIN((AF$1745-$P1729+1)/$R1729;1)*(Q1725-M1725);0)+SI(AF$1745>=$T1729;MIN((AF$1745-$T1729+1)/$U1729;1)*MIN((AF$1745-$T1729+1)/$V1729;1)*(U1725-Q1725);0)+SI(AF$1745>=$X1729;MIN((AF$1745-$X1729+1)/$Y1729;1)*MIN((AF$1745-$X1729+1)/$Z1729;1)*(Y1725-U1725);0)+SI(AF$1745>=$AB1729;MIN((AF$1745-$AB1729+1)/$AC1729;1)*MIN((AF$1745-$AB1729+1)/$AD1729;1)*(AC1725-Y1725);0)

This model was not computed by ANCOM's consultants and it is generally admitted that ARCEP is a regulatory authority which follows best practices

Issue 23: Model sensitivity

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Respondent	Comments received	Response
✂	The respondent explains that it is very difficult to trace calculations through the model to identify the rationale behind possible invariance between volume and costs. The respondent explains that the model contains a number of assumptions (such as the variability of the IMS platform) that TERA developed without input from RomTelecom due to a lack of available data but adds that any gaps in the data identified by TERA should have been agreed on a collaborative basis.	**Comment cannot be accepted** There have been several interactions during meetings or conference calls with the respondent[19] to identify which information should be provided,, what are the main modelling assumptions, how the model works . Requests for interactions from the respondent have always been responded positively by ANCOM and TERA. With regards to the variability cost of the IMS platform, this subject was mentioned several times by ANCOM and TERA to the respondent so that the respondent provides the variable part of the IMS platform. This was finally provided by the respondent and accepted by ANCOM and TERA (after benchmarking), even if the value initially expressed by the respondent was not expressed as variable to the number of minutes but variable to the number of customers. It is noted that the respondent does not provide any other example and that the variable cost of the IMS was finally accepted.
	In relation to routing factors, the respondent explains that the routing factors for broadband should be 1 for all components of the network (national, regional, local and DSLAM) and that the model is not sensitive to these routing factors when they are modified in the model.	**Comment accepted** The model has been modified to make the model sensitive to all routing factors and simplify the readability of the modelling in the transmission side. In line with the latest meeting that has been hold with ✂ on 18th November 2013, the routing factors for voice only have been remained (with a value of 200% for national, regional, local)..

[19] For example, on 15 May 2012, 1 August 2012, 3 August 2012, 31 august 2012, 5 November 2012, 16 November 2012, as well as interactions during and after public consultation stages

Issue 24: Need for a model audit

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Respondent	Comments received	Response
✂	The respondent requires ANCOM to conduct an independent audit of the model and reminds that this is best practice for Ofcom (cf. Business Connectivity Market Review in 2013)	**Comment cannot be accepted** The model has been built by TERA Consultants, which is an independent company. Within TERA Consultants, several levels of verifications have been conducted between consultants, the manager and the project leader before the publication of the first version of the model, before the publication of the updated version of the model and before the publication of the final model.. ANCOM has reviewed the model at each step of the process and has requested TERA Consultants to conduct sensitivity analyses and verification against reality (see the fixed core documentation). Operators have had the opportunity to review the model since it was published in November 2012, i.e. 11 months ago, especially as the model structure did not change significantly over this period. It is finally noted that the reference to Ofcom's practice to audit models in the Business Connectivity Market Review in 2013 is not relevant here. Indeed, in Business Connectivity Market Review in 2013, the Ofcom developed the initial model and requested Ernst&Young to audit Ofcom's model while here the process is very different: TERA Consultants developed the initial model and this was reviewed by ANCOM. Also, cost models in Romania were published, which was not the case in Ofcom's case. Last but not least it should be noted that the audit procedure undertaken by one single authority in one specific case where a material error was identified cannot be qualified as best practice.

The respondent states that the aim of the consultation process is for the operators to review the methodology, inputs and most importantly the outputs of the model but not to perform a full model audit	**Comment cannot be accepted** ANCOM has never limited the scope of the review of the models from operators[20]. This is why fully functioning models were provided to operators. It is also noted that considering operators' comments, detailed reviews of fixed and mobile models appear to have been conducted by operators, very often assisted by external consultants. Given the contributions in consultation that have been received, these reviews were not only focused on the methodology, inputs and outputs, but also on the formula and functioning of the model.
The respondent states that there are neither checks functions nor a version control log built in the model and concludes that there is no certainty that the risk related to manual model updates can be eliminated.	**Comment cannot be accepted** In addition to the verification steps listed above, checks have been also conducted in the model: • The spreadsheet "Total Investments", columns L, M and N compares calculated values with historical data. This comparison has been extracted to the spreadsheet « Check output ») • The spreadsheet "Check" implements a check for the order of magnitude of Romtelecom OPEX calculated values, lines 24 to 26.

[20] http://www.ancom.org.ro/en/ancom-submits-to-public-consultation-the-cost-calculation-models-for-interconnection-services-_4889

The respondent states that the revised model still contains numerous error references. The respondent recognises that # errors (such as #REF, #DIV/0 and #N/A) do not influence the outputs of the model but believes they are a sign of poor modelling practice.	**Comment cannot be accepted** The vast majority of # errors have been removed in the model. # errors are observed only in 6 instances: • In the spreadsheet “SDH Demand”, cells from D6640 look for the name of the site (not used) and may contain #N/A values. This is removed in the last version of the model • In the spreadsheet “MPLS Equipment inventory”, some “parent nodes” information are calculated, and, when used, N/A values are taken into account in the calculation. (cells L30, O30, N32989 and L118718). This is not removed in the last version of the model • In spreadsheet “Leased lines per technology”, cells J29:L841 and J855:L667 have #REF! values in the formula, but are not used in the calculation. This is removed in the last version of the model • MPLS Costing spreadsheet has a #REF value in its titles, due to a deleted section, and in cell P26854 (which is a cell which will be deleted). This is removed in the last version of the model • Interconnection additional costs has a #REF value in its titles, due to a deleted section. This is deleted in the last version of the model • Changes tracker has a #REF value due to a deleted spreadsheet. This is deleted in the last version of the model It is therefore clear that the very few instances where # errors appeared had not impact on calculations whatsoever and therefore cannot represent signs of suboptimal modelling practices. They will however be deleted in the last version of the model.

The respondent states that TERA should have mapped equipment and circuits to exchange areas and transmission rings in a separate offline calculation and not incorporated this within the main model.	**Comment cannot be accepted** The respondent comment is somewhat contradictory with its comments on the transparency of the models. Having the majority of calculations in one single model adds indeed transparency. TERA Consultants is currently working for a regulatory authority in Europe which has long experience in building BU-LRIC cost models and which asked TERA Consultants to reduce the number of models used and to make offline calculations as small as possible. While having all calculations in one model increases the size of the model, it also improves transparency and facilitates audit. It is noted that this comment was not made earlier in the process by the respondent.
The respondent notes that there are some differences between the outputs of the service module and the inputs of the core model.	**Comment cannot be accepted** ANCOM has already explained that given the information contained, its confidential character, as well as the functionalities of the costing models, public and/or specific versions of the service module are not necessary. At the specific request of the respondent, a specific version of the service module has been produced and sent to the respondent. Naturally, confidential demand information from other operators has been neutralised (blue colour code, as with all other public model versions) in this version. Neutralisation of confidential information from other fixed network operators, while keeping the formulas for increased transparency, has led to non-trivial differences between the service model (full version) and specific version sent to the operator.

Issue 25: Generic operator

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Respondent	Comments received	Response
✂	The respondent states that it is not appropriate to adopt the generic operator scenario as it would not reflect the respondent underlying costs which are not based on an all-IP network. The respondent explains that its migration will only start in 2015 and will have 3 to 5 years which means that the model assumptions are unrealistic. The respondent notes that the risk of the bottom-up model is that it calculates a level of efficiency that could never be achieved in reality.	**Comment accepted** While the share of use of VoIP is important in Romania mainly due to alternative operators, it is recognised that the respondent has not yet started a massive migration of its customers to VoIP. However, the FTR at stake will be symmetric and therefore should not only reflect the situation of one operator but of an efficient operator in Romania and other operators are using VoIP. Also, the impact of using the specific scenario is almost null as the same value is obtained in such a scenario, even when moving the % of users on VoIP (to 30%). This latter assumption has however not be retained because the decrease in broadband penetration (see issue 28) already decreases this percentage. As a consequence, it is not needed nor relevant to modify the approach followed.

Issue 26: Usage per line of VoIP customers

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Respondent	Comments received	Response
✂	The respondent explains that the parameter used to calculate the VoIP traffic at peak hour should be set constant (at 4%) but should increase to 5% in 2015 because of significant elasticity effects (as VoIP call charges are covered by monthly rental prices), of service development and of the fact that with less fixed lines, traffic per line is going to be more intensive.	**Comment accepted** The respondent's comment does not demonstrate why the 5% is consistent with current trends and information substantiating the proposed value is missing. Also, while arguments used show that average voice traffic should increase (see issue below), these arguments do not demonstrate anything for traffic at peak hour. It is also noted that the value used is a value from 2011 and that the respondent is not capable of providing a value for 2013 while it states at the same time that when usage develops (which has been the case since 2011), usage should increase. Also, in the issue below, it is proposed to increase traffic by 10% compared to what is already included in the model while here, it is proposed to increase the traffic by 5%/4% = 25% compared to what is already included in the model. As a consequence, and to be consistent with the increase discussed below, a rate of 4.4% (increase by 10%) in 2015 is implemented in the model.

Issue 27: Voice traffic forecasts

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Respondent	Comments received	Response
✂	The respondent states that, based on past traffic evolution, the average voice usage per subscriber should increase by 2.1% per annum instead of 1.6% as assumed by TERA, which leads to a 4.6% increase compared to TERA's value in 2015. The respondent believes this is a conservative assumption considering the current shift in the retail markets towards fixed fee tariffs plans. As a consequence, the respondent proposes to increase the value by 10% in 2015.	**Comment accepted** Even if it is not true to assert that the less lines there are, the more traffic per line there is because of the presence of network effects, the respondent's comment is accepted. Indeed, historical trend plus the move towards fixed fee tariffs plans should increase traffic. The value of 4.6% (increase compared to existing model's value) is indeed a minimum value and therefore the value of 10% is accepted.

Issue 28: Broadband subscriber forecasts

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Respondent	Comments received	Response
✂	The respondent states that the number of broadband customers for the respondent by 2015 is much higher than the respondent's own expectations. The respondent proposes a target penetration of 17 to 18% in 2015 based on historical trends.	**Comment accepted** Considering historical trends of broadband penetration rates and the fact that Romania's fixed network coverage is limited to 85% which is lower than in other European countries on which the model assumptions are based for broadband penetration in the long term, the broadband penetration in 2015 assumed in the model is decreased from 23% to 17.5%. This analysis is reinforced by the fact that the European Commission in its report "Broadband markets in Romania 2013" states that the fixed broadband penetration rate was 16.6% in January 2013 while the model was assuming a value of 18% in 2012 and 20% in 2013.

Issue 29: Number portability costs

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Respondent	Comments received	Response
✂	The respondent believes a proportion of the number portability platform costs should be included in the terminating increment since a specific function of the platform is to enable operators to terminate calls in ported-in number originated from other networks.	**Comment cannot be accepted** It is incorrect for the respondent to state that, it would not have invested in its number portability platform in the absence of a requirement to provide interconnection services. Indeed, even if there was no termination service in Romania for fixed networks, the existence of several parallel fixed infrastructures would have required the need for number portability in order for customers to keep their number when they switch to another fixed infrastructure. It is noted that even if this had been correct, which is not the case, then the respondent fails to provide a precise estimate of what would be the cost of the function dedicated to termination, as it only proposes a capacity based allocation, which is not suitable in the pure LRIC approach were the increment should be precisely identified. It is to be noted that a similar comment was raised by the same respondent in responses to the mobile consultation. This was rejected too. It is important that the fixed and mobile models use consistent assumptions.

8 Responses to the Fixed core service pricing and TERA & ANCOM view and position

Issue 30: National and regional FTRs

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Respondent	Comments received	Response
✂	The respondent proposes to maintain one national and one regional FTR with a difference of 0.06 cents due to investment in regional interconnection done in the past.	**Comment cannot be accepted** Keeping a difference between national and regional interconnection would enable alternative operators having invested in regional interconnection to be active on the wholesale market and compete with Romtelecom in the provision of national interconnection/transit services. However, as explained, this type of tariff differentiation was historically set in order to reflect PSTN network architecture in Romania as well as to provide incentives to alternative operators so that they can be in a position to climb the investment ladder which is not the case anymore. Also, in an NGN context, for an efficient operator using a NGN network, there is no more sensitivity of costs relative to the network level at which interconnection takes place. In Austria, France, Malta, Bulgaria and in the Netherlands, regulatory authorities removed this type of differentiation.

Issue 31: Transit

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Respondent	Comments received	Response
✂	The respondent explains that most operators require transit traffic to be marked and that RomTelecom asks for a separate tariff for this. The respondent proposes to include traffic marking in the transit rate.	**Comment cannot be accepted** If a single tariff included marking is set, then operators not requiring marking will have to pay extra money for this. This would be unfair for these operators.

Issue 32: Appropriate cost standard for Romania

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Respondent	Comments received	Response
✂	The respondent presents the different available costs standards and shows the merits and demerits of pure LRIC. Merits are: • Can lead to convergence between markets • Approximate marginal costs • Enables to promote efficiency and reduce potential competitive distortion, as it is a two-way service Demerits are: • Waterbed effect • Operators may not be able to recover its fixed and common costs • It may not benefit consumers • Risk of calculation errors is high • Can be problematic in large and sparsely populated countries where more common costs need to be recovered on non regulated services	**Comment cannot be accepted** The respondent's comment is biased since its analysis is incomplete, for example: • the comparative analysis is theoretical and does not reflect specific circumstances of a particular service market • It forgets to cite disadvantages of LRAIC+ in the presence of double-sided markets, as well as admitted advantages of the pure LRIC approach such as the fact that impact on cost recovery is very limited due to the fact that termination is a two-way access service. Also by taking into account pure incremental costs when determining termination rates operators are being encouraged to recover their common costs on retail markets (on which there is a price constraint) and not on a monopolistic market (on which there is a risk of excessive prices). • Recovery of fixed and common costs is allowed by ANCOM as explained in the pricing document. It is indeed stated that fixed and common costs not recovered by FTR are recovered *"on all network services including self-supplied origination and origination sold to third parties."* • The fact that Romania is a large and sparsely populated country cannot be linked with FTR regulation. FTRs recover the cost of the core network which is much less sensitive than access networks to the population density and size of the country.

The respondent states that pure LRIC is an extreme for regulatory pricing while FAC and LRIC+ better strike a balance between conflicting considerations.	**Comment cannot be accepted** It is incorrect to state that pure LRIC is an extreme regulatory pricing since pure LRIC is an intermediate approach between bill&keep and LRIC+ (SAC is never an option in the electronic communications field). Bill & keep has been considered by the European Commission which commissioned a study on this subject[21]. It is very important to remind that pure LRIC is applied to two-way access services such as termination services: this means that, when termination prices decrease, the decrease in termination revenues for an operator is accompanied by a decrease in termination charges on both sides of the termination market. This does not apply for other wholesale regulated services.

[21] http://www.teraconsultants.fr/assets/publications/PDF/2010-Nov_mr_final_study_report_F_101123.pdf

The respondent states that only 5 countries in the European Union have decided to move to pure LRIC while 3 have decided to used LRIC+ and 19 have not yet decided	**Comment cannot be accepted** The respondent benchmark is relatively old. Since March 2013, 5 other countries have decided to move on pure LRIC (excluding Romania)[22] which represents a total of 11 countries now. It is important to consider also that: • Even if Germany is not using the pure LRIC approach, existing rates are also twice lower than in Romania • OPTA has decided to use the pure LRIC approach • The case of Finland is extremely specific as the NRA proposed to deregulate the market; This means that only 2 countries out of the 12 that took a decision on pure LRIC vs LRIC+ have decided to keep LRIC+ Among the 15 remaining countries, many are in the process of discussing the choice of the appropriate approach (such as Hungary, Denmark, Italy, Spain). It is therefore inaccurate to say "*adoption of pure LRIC to inform the setting of FTRs has not been universal due to the material downsides associated with the approach",* which is what the respondent states.

[22] Austria (see Commission decision concerning Case AT/2013/1457: Call termination on individual public telephone networks provided at fixed location in Austria - Comments pursuant to Article 7(3) of Directive 2002/21/EC of 16 July 2013)

Ireland (see Commission Decision concerning Case IE/2013/1469 — Call termination on individual public telephone networks provided at a fixed location in Ireland Article 7(3) of Directive 2002/21/EC: No comments of 15 July 2013)

Netherlands (see Commission Decision concerning Case NL/2013/1481: Fixed and mobile call termination in the Netherlands. Article 7(3) of Directive 2002/21/EC: No comments of 31 July 2013)

Portugal (see Commission Decision concerning: Case PT/2013/1491: Call termination on individual public telephone networks provided at a fixed location in Portugal Opening of Phase II investigation pursuant to Article 7a of Directive 2002/21/EC as amended by Directive 2009/140/EC of 12 August 2013) Bottom-up LRIC models are about to be finalised

Slovakia (see Commission Decision concerning Case SK/2013/1455: Wholesale market for call termination on individual public telephone networks provided at a fixed location in Slovakia; and price control remedies on the wholesale market for call termination on individual public telephone networks provided at a fixed location in Slovakia Comments pursuant to Article 7(3) of Directive 2002/21/EC of 13 June 2013)

UK (see Commission Decision concerning Case UK/2013/1495: Call origination on the public telephone network provided at a fixed location in the UK Commission Decision concerning Case UK/2013/1496: Call termination on individual public telephone networks provided at a fixed location in the UK. Comments pursuant to Article 7(3) of Directive 2002/21/EC of 20 September 2013)

The respondent states that the LRIC+ approach should be preferred over the pure LRIC approach as it provides superior investment incentives as a result of allowing for full recovery of fixed common costs. The respondent highlights the need to foster NGA deployment, which should be a policy goal of ANCOM.	**Comment cannot be accepted** First of all, it is not true to state that pure LRIC does not allow for full recovery of fixed common costs since fixed common costs not recovered by pure LRIC have been allocated to other services by ANCOM (see pricing documentation "on all network services including self-supplied origination and origination sold to third parties."). Second, the link between NGA deployment and FTR regulation is not demonstrated by the respondent and cannot be accepted. While termination is a core network service, NGA relates to access networks. In a context where tariffs are supposed to be rebalanced (according to Article 4c of the "1990 EC Directive on services", Member States must allow the former telecommunications' monopolies to rebalance their tariffs; Member States therefore have to provide the EC with the information required to check the compliance with this obligation), cross subsidies between core network services and access network services should not exist. Therefore termination revenues cannot be linked to NGA investment. Otherwise that would mean that an investor which would want to focus on wholesale access network infrastructure (like Openreach in UK) would not be able to act as it would not get any revenues from termination services. If the link made by the respondent between NGA investment and FTR regulation was existing, it would be difficult to understand why the European Commission in its NGA recommendation[23] and in its recommendation on non discrimination and costing methodologies[24] has not addressed this topic while promoting NGA investment is one of the goals of these recommendations.

[23] Commission recommendation of 20 September 2010 on regulated access to Next Generation Access

[24] Commission recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment

The respondent states that the implementation of pure LRIC in Romania would result in Romania having one of the lowest FTR rates in the European Union due to population density which is low and a very large part of the population which lives in rural areas.	**Comment cannot be accepted** It is not correct to state that Romania will have one of the lowest FTR: • Ireland's FTR will be twice lower at 0.075 €cts/min[25] • France's FTR will be twice lower at 0.080 €cts/min[26] • Netherlands's FTR will be 30% lower at 0.108 €cts/min[27] • UK's FTR will be 5 times lower at 0.034 €cts/min[28] • Slovakia's FTR will be 20% lower at 0.123 €cts/min[29] These countries have very different population densities and proportion of population living in rural areas.
The respondent states that the presence of significant digital divide demonstrates the need to maintain investment incentives which is better achieved with LRIC+ standard being superior to a pure LRIC standard.	**Comment cannot be accepted** See comment above about the absence of relationship between FTR and NGA investment. It is to be noted that in the European Union, for the development of fixed and NGA infrastructure in areas which are not profitable and not served by private operators, intervention of states and local authorities is planned and states aids are allowed (see corresponding EU guidelines[30]). These mechanisms represent the main vehicles in Europe to deploy NGA in rural areas. The impact of pure LRIC on the digital divide is therefore not relevant.

[25] Ireland (see Commission Decision concerning Case IE/2013/1469 — Call termination on individual public telephone networks provided at a fixed location in Ireland Article 7(3) of Directive 2002/21/EC: No comments of 15 July 2013)

[26] http://www.arcep.fr/?id=8080#c16875

[27] Netherlands (see Commission Decision concerning Case NL/2013/1481: Fixed and mobile call termination in the Netherlands. Article 7(3) of Directive 2002/21/EC: No comments of 31 July 2013)

[28] UK (see Commission Decision concerning Case UK/2013/1495: Call origination on the public telephone network provided at a fixed location in the UK Commission Decision concerning Case UK/2013/1496: Call termination on individual public telephone networks provided at a fixed location in the UK. Comments pursuant to Article 7(3) of Directive 2002/21/EC of 20 September 2013)

[29] Slovakia (see Commission Decision concerning Case SK/2013/1455: Wholesale market for call termination on individual public telephone networks provided at a fixed location in Slovakia; and price control remedies on the wholesale market for call termination on individual public telephone networks provided at a fixed location in Slovakia Comments pursuant to Article 7(3) of Directive 2002/21/EC of 13 June 2013)

[30] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:025:0001:0026:EN:PDF

The respondent is of the view that the primary issue facing the fixed line market in Romania is one of a lack of infrastructure availability in more rural areas rather than that of the need for further price based competition and that the challenge for the Romanian fixed market is one of improving the business case for investment in fixed broadband.

The respondent is therefore of the view that ANCOM should prefer LRIC+ to pure LRIC and that ANCOM needs to consider the effects of lower FTRs on the numerous small fixed operators.

Comment cannot be accepted

On the impact on broadband and infrastructure investment, see comments above.

On the impact on smaller operators, pure LRIC will facilitate competition and will therefore enable small operators to replicate more easily offers of larger operators which can benefit from network effects.

Finally, the 3 countries listed by the respondent are not relevant:

- Finland has proposed to lift regulation, not to use LRIC+ and the BEREC has requested FICORA to reassess the proposal. The respondent's information is therefore incorrect.
- In the Netherlands, as explained above, OPTA has followed the pure LRIC approach[31].
- In Germany, pure LRIC was not adopted but BEREC was requested to assess BNetza's approach and BEREC's view was that pure LRIC should be followed[32]. This is not mentioned by the respondent.

[31] Netherlands (see Commission Decision concerning Case NL/2013/1481: Fixed and mobile call termination in the Netherlands. Article 7(3) of Directive 2002/21/EC: No comments of 31 July 2013)

[32] BEREC Opinion on Phase II investigation pursuant to Article 7a of Directive 2002/21/EC as amended by Directive 2009/140/EC: Case DE/2013/1460 Call termination on individual public telephone networks provided at a fixed location (market 3) in Germany

The respondent cites the cases of several countries which have not adopted the pure LRIC approach:

- In Finland, Ficora has rejected the use of the LRIC approach because this approach is to onerous given there are over 30 local fixed line incumbents in Finland
- In Germany, BNetza kept the LRIC+ approach because the pure LRIC approach was conflicting with BNetza policy objectives, the pure LRIC would result in a burden for the fixed sector, the waterbed effect is not well understood, it is not clear pure LRIC would improve the competitive behaviour of the fixed or mobile operators and because pure LRIC is potentially leading to discriminatory pricing
- In the Netherlands, the Appeal Tribunal overturned the decision of OPTA to use pure LRIC stating it was neither “proportionate” nor “necessary”

The respondent reminds that the EC recommendation is non-binding and that the issues raised by BNetzA in Germany are highly relevant to the Romanian market.

Issue 33: Implementation of the charge control

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Respondent	Comments received	Response
✂	The respondent states that too low FTR and MTR, as proposed by ANCOM, reduce investment capabilities while there is no benefit for end-users who already enjoy one of the most competitive retail offerings in the European Union. The respondent states that MTRs reduction should be postponed by at least 1 year with a 2-3 years glide path.	**Comment cannot be accepted** When comparing with the 4 benchmarked countries (France, Bulgaria, Ireland and Malta), it is important to note that the end of the glide path was January 2013 or Mid-2013 while ANCOM's decision will only start in end 2013. This means that Romania has had too high FTR, especially when considering the European Commission recommendation on FTR and MTR. In terms of percentage of decrease, it is to be noted that in the meantime two countries have applied similar or faster decreases compared to Romania: • In the UK[33], which one of the respondent quotes, FTR are expected to decrease from 0.219 for the 2012/2013 period to 0.034 for the 2013/2014 period which is a 87% decrease; • In Slovakia[34], FTR have decreased on the 1st of August 2013 by 63%. Finally, ANCOM is proposing a lower decrease by using the specific scenario in the first year, like it was implemented in Ireland.
✂	The respondent states that the FTR decrease is too abrupt and this will not benefit end-users because of international incoming revenue decrease. The respondent proposes a glide path.	
✂	The respondent states that the proposed reduction of 78% is 28 percentage points higher than the highest of the four benchmark countries shown. For the respondent, a significant and sudden reduction in FTRs will cause material disruption in the fixed market. It quotes Ofcom which considered in 2011 a four-year glide path as appropriate.	

[33] See Commission Decision concerning Case UK/2013/1495: Call origination on the public telephone network provided at a fixed location in the UK Commission Decision concerning Case UK/2013/1496: Call termination on individual public telephone networks provided at a fixed location in the UK. Comments pursuant to Article 7(3) of Directive 2002/21/EC of 20 September 2013

[34] See Commission Decision concerning Case SK/2013/1455: Wholesale market for call termination on individual public telephone networks provided at a fixed location in Slovakia; and price control remedies on the wholesale market for call termination on individual public telephone networks provided at a fixed location in Slovakia Comments pursuant to Article 7(3) of Directive 2002/21/EC

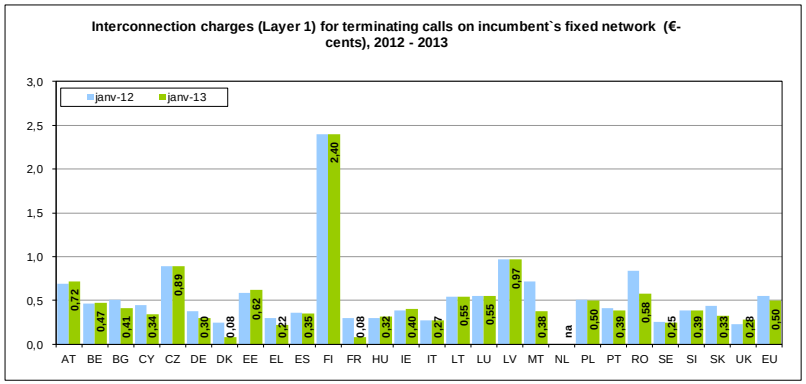
The respondent highlights that there are risks inherent with bottom-up modelling approaches. For the respondent, there is a significant risk both that the regulated price could be set below the incremental cost of production due to modelling errors (such as costs not being identified and included in a bottom-up model or incorrect assumptions), or due to over-optimisation of the theoretically efficient operator. For the respondent, this risk of over-optimisation is likely to be a reality in that the adoption of a “generic operator” scenario (in which an all-IP core network is modelled) would not properly reflect the underlying Pure LRIC costs of the respondent. The respondent therefore recommends the use of a glide path towards an estimate of LRIC+ over a 3 year period.	**Comment cannot be accepted** While there are risks of modelling errors with bottom-up modelling approaches, it appears that these risks can generate both higher costs or lower costs. Also, risks can occur from the data provided by operators which may be overestimated. However, risks with top-down approaches are also well known such as the risk of including inefficiencies. This is why the bottom-up approach is used. Also, it is important to note that it is proposed now to use the specific operator scenario which uses the PSTN technology as a starting point. Therefore, the operator comments on the “generic operator” scenario are not relevant. In any case, it is important to remind that the FTR is set for all operators not only for the respondent and that other operators are operating full NGN networks.
The respondent is of the view that ANCOM’s analysis of end-users’ benefits is theoretical in nature, rather than based on careful assessment of the market and empirical evidence that a move to Pure LRIC to inform the setting of FTRs would be beneficial to end-users. For the respondent, ANCOM has not presented evidence to suggest that FTRs informed by Pure LRIC would be more beneficial to end-users relative to those set on the basis of LRIC+ and therefore it is critical that a thorough analysis is conducted on the impact of end-users. The respondent adds that in Romania, the risk of low income and low revenue generating consumers being disadvantaged is a more material issue than elsewhere in the EU as they would be particularly susceptible to the relative pricing of access and calls, especially so if they do not make outgoing calls or would want to get a fixed line purely for the purpose of broadband access.	**Comment cannot be accepted** There cannot be any objective justification to treat FTRs differently than MTRs. Moreover, it has already been explained that reduced absolute differential between FTRs and MTRs as a result of pure LRIC will be beneficial to fixed network operators and that competitive pressures in the retail market can stimulate passing the savings to fixed customers. Whether the savings are passed on to consumers into more competitive flat rate bundles or telephony offers cannot mean fixed consumers would not be’t be better off. ANCOM also takes note the respondent does not provide fixed line purely for broadband access. Finally, rebalancing the fixed common costs not recovered anymore by FTR to other services (even if pure LRIC also reduces significantly interconnection costs paid to other operators), the mark-up only represents around 3% of core network costs so an even lower amount of the retail prices (when considering retail costs, access network costs, etc.). Therefore the impact on users wanting only broadband lines would be very limited.

The respondent explains that the link between market concentration and lower prices can be inconclusive and refers to a recent GSMA report which compared market concentration (as measured by the HHI) with mobile average revenue per connection ("ARPC") levels in EU Member States and found no statistically significant relationship between market concentration and ARPC.	**Comment cannot be accepted** It cannot be rejected that there is a link between competition and HHI levels. The respondent tries to show the absence of link between ARPC and HHI but ARPC is only one component of competition.
For the respondent, ANCOM needs to consider a number of additional factors, namely: 1. The full extent of the waterbed effect needs to be quantified and taken into consideration; 2. ANCOM makes no reference to the high level of infrastructure competition in the fixed broadband market and the implications for a large number of small fixed operators who own their own networks 3. The high market share of Romtelecom is reflective of coverage of large rural areas, where infrastructure competition does not exist, and lower prices to consumers through lower FTR's will not contribute to addressing this issue	**Comment cannot be accepted** With regards to the respondent's comments: 1. The effect on operators has been quantified in the pricing documentation by calculating the evolution of the net surplus/deficit of all stakeholders. 3 operators would benefit from the move to pure LRIC, one would see almost no impact and 2 would be negatively impacted. The waterbed effect would therefore only impact these 2 latter operators but because of the better situation of other operators and therefore because of greater competition, it appears unlikely that they will increase their retail prices 2. This has been discussed in comments above 3. This has been discussed in comments above
The respondent believes that ANCOM's conclusion that "[t*]he outcome is therefore that the analysis of the dynamic efficiency criterion advocates in favour of the Pure LRIC approach for MTRs and FTR's*." . contradicts ANCOM's view of the impact on end-users' benefits which states that the waterbed effect *"... might be incomplete at best if not inexistent ..."*, and where it quotes the EC saying *"[t]he overall development of termination rates and retail prices [...] does not seem to support the conclusion that reductions in termination rates would lead to increases in retail prices, as suggested by the waterbed effect."* .	**Comment cannot be accepted** It is not clear why this constitutes a contradiction. It does not seem to be contradictory to state that the dynamic efficiency criterion advocates in favour of the pure LRIC and to state that retail prices will probably not increase. It is to be noted that increase in competition resulting from lower FTR and MTR could increase investment incentives so that operators can differentiate themselves (by proposing higher QoS on broadband for example).

The respondent has calculated that its international terminating revenues would be €4.3m lower under a pure LRIC approach than under a LRIC+ approach.

Comment cannot be accepted

It is first noted that the respondent's incoming traffic is 3 times larger than its outgoing traffic which means that it benefits largely from international interconnection revenues, especially when considering that its termination charge was above the European average in 2013 (0.58c€ versus 0.50c€, i.e. +16%, see below graph from the European Commission[35]). It is estimated that the benefit for the respondent was €4.3m. As a consequence, the respondent's argument is that the move to pure LRIC will lower significantly the subsidy it gets from other European countries. One of ANCOM's objective is to contribute to the development of the internal market and the respondent's figures show that the move to pure LRIC will contribute to the development of the internal market by lowering subsidies between countries.



The €4.3m represents less than 1% of the respondent's revenue and less than 3% of the respondent's EBITA for the year 2012.

[35] https://ec.europa.eu/digital-agenda/node/643

9 Final conclusion

9.1 Final conclusion on the Models

To ensure the quality and results of the Bottom-Up Models built for ANCOM, TERA Consultants has worked in a very collaborative manner, both with ANCOM and the operators, with several points of contacts and interactions (including GLI Meetings and bilateral meetings).

When developing the calculation tool (MS Excel) TERA Consultants has systematically followed quality assurance arrangements in order to minimise the risk of errors/mistakes as well as in order to increase acceptance of the cost model results by stakeholders.

The 8 main quality rules systematically followed while developing the Models are described below:

1. Comparison with previous Romanian models. TERA Consultants has reviewed existing models in Romania to better understand Romanian operator's specificities.
2. Open data request. TERA Consultants has been as flexible as possible during the data request phase and the consultation phases, inviting operators to provide additional data deemed relevant.
3. Benchmark with publicly available information: TERA Consultants has reviewed its inputs and modelling algorithms against similar modelling exercises in other countries for consistency checks purposes.
4. Sensitivity analysis: TERA Consultants has performed sensitivity analyses to detect errors/mistakes from counter-intuitive model results.
5. Cross-check analysis: TERA Consultants has performed cross-check analyses to eliminate any risks of errors/mistakes, especially in critical modelling step, including (not exhaustive): traffic 2G/3G split check, traffic breakdown check, cost-recovery check, Pure LRIC calculation algorithm check.
6. Calibration: Before one can rely on the outputs of a cost model, one has to be extremely careful that the demand, network size and network costs are all internally consistent and also consistent with the real-world operating conditions which the operators are subject to. The Models were built to reflect as much as possible Romanian operators' specificities and engineering rules, so that the modelled dimensioning and deployment of networks produces reliable information on the costs associated with the provision of a given service. Hence, intermediate results (such as number of assets) were compared to the real number of assets used by the operators to ensure the relevancy of engineering rules.
7. Reasonably conservative approach: Although the Models were set up to model *reasonably efficient* operators, a conservative stance was taken for several inputs where there remained some uncertainty as to their actual value (for example, the transmission unit costs).
8. Full transparency of Model validation in interaction with stakeholders. TERA Consultants and ANCOM have shared the Models with all the stakeholders in the most transparent way, provided that utmost care was taken on data confidentiality. As such, each operator has received the complete Models related to its network, as well as the model for the "generic operator". TERA Consultants remained also fully transparent during the development process on any counter-intuitive model results, explicitly highlighting these results and inviting stakeholders to comment on it and provide additional insights. Finally the "generic operator" model is public, ensuring that any 3rd-party can have access to it. Thanks to this transparency, Romanian fixed and mobile, assisted by at least 2 consultancies, have had the opportunity to

audit the Models twice and have provided several comments and additional inputs to better fine-tune the Models and final results.

Thanks to the great care taken in developing the Models, the systematic following of the 8 main quality rules, and the thorough review of the Models by 5 operators and 2 consultancies, the Models are able to accurately capture Bottom-Up network design and service costing, fit for the purpose of setting regulated rates on a long run incremental basis in Romania, in accordance with the conceptual framework for the models' development.

Finally, the costing models are also capable to produce results for other wholesale services (for example, origination of calls or mobile SMS) which are unregulated.

9.2 Final recommendation on Pricing

In combination with the Models validation (see § 9.1), TERA Consultants has provided a detailed Pricing report ("Calculation of the costs of efficient provision for some electronic communications services provided at the wholesale level in Romania – Pricing Documentation") providing ANCOM with recommendations on:

- how tariffs for regulated services should be set for the period of the next price control, on the basis of the developed bottom-up LRIC cost Models;
- for each type of service, which cost standard should be used for the cost calculation in the associated cost Model;
- for each type of service, the economic impact of the price control on the different stakeholders, including consumers and the industry.

The Pricing report was subject to a public consultation where all stakeholders had the opportunity to review the analysis and provide additional insights. TERA Consultants has reviewed all the comments submitted by operators and consultancies, and has provided a detailed response to all the different issues raised. The summary of all these responses are embedded in this final report. In light of all the responses provided to the operators' comments, the rationales detailed in the Pricing report remain fully relevant and valid.

In light of the comments received on the Models and the responses provided in this final report, TERA Consultants has updated the Models, which leads to the final results displayed below:

Mobile wholesale voice call termination result (c€ per min.):

c€/min	2013	2014	2015
Vodafone	0,59	0,58	0,57
Orange	0,92	0,89	0,87
Cosmote	1,03	1,00	0,99
RCS&RDS	0,65	0,65	0,64
Generic	0,99	0,96	0,94

Fixed wholesale voice call termination result (c€ per min.):

c€/min	2013	2014	2015
RTC	0,13	0,13	0,15
Generic	0,14	0,14	0,14

Fixed wholesale voice call origination result (c€ per min.):

c€/min	2013	2014	2015
(a.1) Fixed origination from subscribers access lines using carrier selection/pre-selection	1,88	1,51	1,38
(a.2) Fixed origination from public payphones	28,80	28,43	28,30
(b) Calls to a national non-geographic number 0ZAB=0808 (numbers for indirect access to services), irrespective of national or international called number**;**	1,88	1,51	1,38
(c) Call origination services to non-geographic national numbers 0ZAB=0800 (free access calls for caller) and to 116(xyz) numbers (harmonized social services numbers)	1,88	1,51	1,38
(d) Origination self-supply services, irrespective of used technology or transmission environment, including origination services using managed VoIP technology	1,88	1,51	1,38

Fixed wholesale voice transit result (c€ per min.):

c€/min	2013	2014	2015
National Transit	0,15	0,16	0,19

Services provided at the point of interconnection (€):

€	Tariffs
Configuration of partner in PoA/PoI	578
Reconfiguration of partner in PoA/PoI	565
Removal of partner in PoA/PoI	175
Installation of port in the switch	285
Reconfiguration of port in the switch	255
Removal of port from the switch	97
Monthly rent of port in the switch	39
Other reconfiguration operations - for the 1st circuit	411
Other reconfiguration operations - for each of the other circuits in the same reconfiguration operation	91
Connection charge for the IC link	96
Reconfiguration of the IC link	90
Disconnection charge for the IC link	68
Capacity reservation	200
Increase of capacity	407
Decrease of capacity	197
Reconnect a suspended service	186
Connecting the equipment of 2 operators collocated in Romtelecom's space – connection fee	225
Connecting the equipment of 2 operators collocated in Romtelecom's space – monthly fee	0.06
STM1 port monthly fee	333
Administration fee for cascade payment in the transit arrangements	72

Interconnect links

- **E1 : €40/E1/km/month which means a price per E1 of €120/month**
- **STM1 : €1865/STM1/km/month which means a price per STM1 of € 5595/month**

MPLS leased lines results (€ per month):

MPLS Speed		Unit	€/month
64	Kbps	*EUR/Month*	1,09
128	Kbps	*EUR/Month*	1,75
192	Kbps	*EUR/Month*	2,29
256	Kbps	*EUR/Month*	2,76
320	Kbps	*EUR/Month*	3,17
384	Kbps	*EUR/Month*	3,55
512	Kbps	*EUR/Month*	4,22
640	Kbps	*EUR/Month*	4,80
768	Kbps	*EUR/Month*	5,31
960	Kbps	*EUR/Month*	5,99
1024	Kbps	*EUR/Month*	6,19
1984	Kbps	*EUR/Month*	8,36
2048	Kbps	*EUR/Month*	8,46

SDH leased lines results (€ per month) (*):

SDHSpeed		Unit	0-50km	51-100km	101-150km	above150km
64	Kbps	*EUR/Month*	141	833	1033	1151
128	Kbps	*EUR/Month*	226	1345	1677	1869
192	Kbps	*EUR/Month*	296	1767	2210	2463
256	Kbps	*EUR/Month*	356	2133	2677	2984
320	Kbps	*EUR/Month*	409	2462	3097	3453
384	Kbps	*EUR/Month*	458	2762	3482	3883
512	Kbps	*EUR/Month*	544	3296	4172	4655
640	Kbps	*EUR/Month*	618	3764	4782	5337
768	Kbps	*EUR/Month*	684	4181	5331	5950
960	Kbps	*EUR/Month*	769	4734	6064	6771
1024	Kbps	*EUR/Month*	795	4902	6289	7023
1984	Kbps	*EUR/Month*	1068	6768	8867	9916
2048	Kbps	*EUR/Month*	1081	6861	8999	10066

(*) to the extent it is considered efficient to simulate the costs of building a SDH network today

Bundled Ethernet backhaul results (€ per month):

	Total service costs (EUR/month) (core + access)			
	At PCP		At DP (Via PCP)	
	1Gbps	10Gbps	1Gbps	10Gbps
Service 1: Direct link from Cabinet/Container to OLO's ODF at the MDF	256	533	288	565
Service2:SharedlinkfromC/CtoOLO'sODFatMDF	783	6418	799	6434
Service3:SharedlinkfromC/CtoOLO'sODFatanotherlocalMDF	3910	37692	3926	37707
Service4:SharedlinkfromC/CtoOLO'sODFatanotherregionalMDF	7861	77197	7877	77212
Service5:SharedlinkfromC/CtoOLO'sODFatanothernationalMDF	17896	177543	17911	177559

"Alacarte"Ethernetbackhaulresults(€permonth):

"Access"elements	Accessservicecostsexcludingcorecosts(EUR/month)			
	AtPCP		AtDP(ViaPCP)	
	1Gbps	10Gbps	1Gbps	10Gbps
Service1:DirectlinkfromCabinet/ContainertoOLO'sODFattheMDF	188	533	288	565
Service2:SharedlinkfromC/CtoOLO'sODFatMDF	783	6418	799	6434
Services3-5base:SharedlinkfromC/CtoOLO'sODFatanotherMDFlocation	188	465	204	481

"Core"elements(Forservices3to5)

CostofcoresegmentsperMbps	EUR/Mbps /month
Switch-PEsinglesegment	1,82
PE-Psinglesegment	1,93
P-Psinglesegment	4,90