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To,
The Secretary
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg
New Delhi - 110002

January 20, 2011

Kind Attention:- Shri Arvind Kumar, Advisor – I & FN

Subject - Pre Consultation Paper on Review of Interconnection Usage Charges

Sir,

Kindly refer the pre-consultation paper issued by the Authority on "Review of Interconnection Usage Charges dated 24th December, 2010

In this regard, kindly find attached herewith the response of M/s Unitech Wireless Tamil Nadu (Private) Limited* with respect to interconnection usage charge

This is for your information and kind consideration please

Thanking you,

Yours Faithfully

for **Unitech Wireless (Tamilnadu) Private Limited**

(Erstwhile Unitech Wireless (East) Private Limited*)
(Erstwhile Unitech Wireless (West) Private Limited*)
(Erstwhile Unitech Wireless (North) Private Limited*)
(Erstwhile Unitech Wireless (South) Private Limited*)
(Erstwhile Unitech Wireless (Delhi) Private Limited*)
(Erstwhile Unitech Wireless (Mumbai) Private Limited*)
(Erstwhile Unitech Wireless (Kolkata) Private Limited*)

(Vikram Chona)
Head Regulatory – Operations

Enclosed: - As above

Pre-Consultation Process on Review of Interconnection Usage Charges

20 January, 2011

Uninor responses to information requested by TRAI (the Authority, hereafter) via letter dated 24th December, 2010

- i) What should be the framework of Interconnection Usage Charges that meets the requirements of today as well as takes care of future deployment of Wi-Max, High Speed Packet Access (HSPA), Fixed Mobile Convergence (FMC) and Next Generation Network (NGN)?

The Indian telecom industry is witnessing explosive growth currently, with approximately 220 million mobile subscribers added in the past twelve months taking the overall tele density of India to 60%. There are 14 mobile operators in the market today competing for this large subscriber base.

In the past two years several new operators have launched mobile services and the Indian consumer today has a vast array of competitive and customized tariff plans to choose from. New technologies such as 3G, Wi-Max and LTE are up for deployment in the short-to-medium term horizon, which will further increase the ways in which the Indian consumers can continue to use and benefit from being connected to the world around them.

To sustain and further enhance the unique growth story of Indian telecom, witnessed in the past decade, it is absolutely imperative that the environment remains conducive for fair and non-discriminatory competition, operators make the most efficient use of their resources and the Indian consumers continue to be the recipient of advances in technology and innovative products and services.

Interconnection between providers of various telecom services enhances the value that the consumer can derive from being connected through a telecom device as network effects are utilized to the maximum.

A just framework for Interconnection Usage Charges (IUC) is a critical component of ensuring the above. The IUC regime determines how revenue is shared between service providers and has bearing on the competitive landscape of the industry. An effective IUC regime should ensure the following:

- 1) All service providers should be able to gain access to interconnection on reasonable, fair and non-discriminatory terms;
- 2) At the same time, service providers should be fairly compensated for the cost of letting others use their network.

- 3) However, service providers should not be able to unduly transfer network costs to other service providers and impede competition.
- 4) Since new technologies would be introduced by operators depending on the business case at different points in time, the IUC regime should be versatile enough to accommodate new technology networks by one service provider or the other.

A cost oriented regime ensures competition and effective use of economic resources.

The overwhelming majority of telecom service usage currently is on the 2G mobile based platform and efforts should be focused first on ensuring that the average Indian subscriber is provided with a choice of competitive and seamless connectivity on this platform.

The introduction of new technologies such as 3G, Wi-Max, NGN, etc, will lead to all IP networks, facilitating a large variety of new services with innovative tariff models. Going forward the proposed IUC regime should help and not impede the introduction of such new services i.e. gets translated to packet voice calls when networks shift from TDM to IP working.

While on the subject of the Authority's efforts on maintaining a just and fair competitive scenario for the Telecom Industry, we would like to draw the Authority's attention to its 33rd Amendment to TTO, in 2004 permitting operators to offer differential tariffs for off-net and on-net calls on the plea that the market had achieved an intense competitive scenario. That order presumed a similar level of development for all the operators in the market.

With the government's decision of January 2008 inducting new Telecom players to achieve faster rollout of networks and cheaper tariffs for customers, the situation has changed, requiring a review of the said order. Now again the situation is that the operators with '*dominant position*' in the market are able to use arbitrage opportunities between wholesale and retail prices to offer very low on-net tariffs – even lower than the termination charge, when in our opinion, they should not be allowed to set tariffs lower than the sum of origination cost and termination cost. These predatory tariffs put a squeeze on the margins of competitors, thus acting as a strong barrier to the new entrants. We believe this to be grossly unfair to new entrants, such as Uninor, and also likely to raise serious issues under the Competition Act, 2002.

We therefore request the Authority to expand the ambit of the current exercise and have a re-look at the 33rd amendment to TTO, so that the Authority ensures their conformity to the avowed objective of maintaining the principles laid down by the Authority on tariff policy:

- Non- discrimination
- Non-Predatory
- IUC compliant

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An on-net termination should cost similar to an off-net termination and the Authority should ensure that instances of predatory pricing where operators are able to provide on-net calls below cost are not permitted.

- ii) What components of IUC for voice, SMS and any other value added services should be reviewed? What should be the level of charge for each component that requires review? Please give detailed justification/reasons to support your viewpoint.

a) Voice:

- *Origination charges:*

We propose that the authority should specify a floor on origination charges with a proviso that any tariff cannot be lower than the sum of termination and origination cost to eliminate instances of predatory pricing.

- *Carriage charges:*

Carriage charges are currently ceiling-based with the ceiling at 65 paise per minute. We propose that while the Authority should retain the ceiling based approach, it should undertake a fresh analysis of the costs to provide carriage and reset the ceiling. High ceiling gives a powerful tool to operators with dominant position in the market in carriage rate negotiations, particularly in poorly connected geographical areas or wherever these dominant incumbent operators can dictate the connectivity. This is becoming all the more pronounced when networks are expanding to rural or far-flung areas.

- *Termination charges for local and long distance calls:*

Mobile and fixed call termination charges for local and long distance calls are currently fixed at 20 paise per minute, effective 1st April, 2009. During the last revision of the IUC charges in 2009, the Authority had arrived at the value of 20 paise per minute by using a top-down Fully Allocated Cost Methodology.

As previously mentioned, today operators with dominant position in the market in India offer very low on-net tariffs, even lower than the current termination rate. This is a strong indication that the current termination rates are above the marginal cost relevant for operators when setting prices.

Given this situation in India, we would like to draw the attention of the Authority to an approach recommended by the European Commission for estimating the cost of Termination – the 'Avoidable Costs' / 'pure LRIC concept'.¹ We quote from the European Commission's recommendation (page 5, points 13 and 14) below:

¹ See: *The Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU* of 07.05.2009 attached with this submission. Also available at: http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/c_2009_3359_en.pdf

*“An incremental cost approach which allocates only efficiently incurred costs that would not be sustained if the service included in the increment was no longer produced (i.e. avoidable costs) promotes efficient production and consumption and minimizes potential competitive distortions. **The further termination rates move away from incremental cost, the greater the competitive distortions between fixed and mobile markets and/or between operators with asymmetric market shares and traffic flows** (emphasis provided).”*

*“Avoidable costs are the difference between the identified total long-run costs of an operator providing its full range of services and the identified total long-run costs of that operator providing its full range of services except for the wholesale call termination service supplied to third parties (i.e. stand-alone cost of an operator not offering termination to third parties). To ensure an appropriate attribution of the costs, a distinction needs to be made between those costs that are traffic-related, i.e. all those fixed and variable costs which rise with increased levels of traffic, and those costs that are non-traffic-related, i.e. all those costs which do not rise with increased levels of traffic. To identify the avoidable costs relevant for wholesale call termination, non-traffic-related costs should be disregarded. Then, it may be appropriate to attribute traffic-related costs firstly to other services (e.g. call origination, SMS, MMS, broadband, leased lines, etc.) with wholesale voice call termination being the final service to be taken into account. The cost allocated to the wholesale call termination service should thus be equal only to the additional cost incurred to provide the service. As a consequence, **cost accounting based on LRIC approach for wholesale call termination services in fixed and mobile markets should allow the recovery only of costs which would be avoided if a wholesale call termination service was no longer provided to third parties** (emphasis provided).”*

The European Commission further elaborates on the principles for calculating the wholesale voice call termination rates in mobile networks (page 11):

“Coverage can be best described as the capability or option to make a single call from any point in the network at a point in time, and capacity represents the additional network costs which are necessary to carry increasing levels of traffic. The need to provide such coverage to subscribers will cause non-traffic-related costs to be incurred which should not be attributed to the wholesale call termination increment.”

Applying the avoidable cost / pure LRIC method ensures that only the cost related to providing additional network capacity to handle the incoming interconnecting traffic is taken into account when estimating the termination cost. If there was no interconnection then this is the only cost that the operator would have been able to avoid.

A LRIC costing model can be used as a base for cost calculations. An avoidable cost / pure LRIC calculation can be carried out by running the LRIC model twice.

The first time all services are included and the second time the terminated volume is excluded. The difference in costs is the costs avoided if the termination service was to be removed. Results from countries where the method has been deployed (UK, Belgium, Netherlands) indicate that it results in significant reduction in the cost of termination.

The Authority has previously argued against taking capital expenditures into consideration, while TDSAT in its judgment has taken the opposite position. The rationale for Authority for arguing against the inclusion of Capex goes along the following line of reasoning:²

Considering the CAPEX or even proportion of it for calculating the termination charge would unnecessarily transfer the burden of business decisions taken by the service provider to the interconnecting service providers. Decisions like planning horizon, network dimensioning, technology, induction of a service provider should not affect the interconnecting service provider who should be required to pay the bare minimum cost.

Whereas TDSAT argue that:³

It must not be forgotten that every operator must keep its network maintained for use by its own subscribers as well as by subscribers of another operators on equal basis. If that be so, we fail to see any reason as to why the traffic sensitive cost contained in CAPEX should be kept out of consideration.

Basing the IUC on avoidable cost would reconcile the positions by the Authority and TDSAT. First of all, relevant capital costs are indeed taken into account in an avoidable cost calculation, so the concerns raised by TDSAT are addressed. At the same time, the reason for disregarding (fully allocated) capital costs put forward by the Authority will also be addressed. By focusing on avoidable cost, the business decisions with regard to planning horizon, dimensioning etc would hardly have an impact on the estimated avoided cost.

Given the regulatory and competitive situation in India, we therefore, strongly recommend, the Authority to consider the 'Avoidable Costs' / 'Pure LRIC' approach, which has been sighted by the European Commission to estimate mobile termination rate.

- *Termination charge for incoming international calls:*

The value is currently fixed at 40 paise per minute, effective 1st April 2009. It will be almost two years by the time new regulation will likely be released. Perhaps there is a need to look at the termination charge for incoming international calls

² See Section 5.3.23 of the Explanatory Memorandum to "The Telecommunication Interconnection Usage Charges (Tenth Amendment) Regulations, 2009".

³ See chapter 114.Quantum Issue, section 12 of the TDSAT ruling on IUC Charges dated 29th September, 2010.

so that it may not encourage the resurfacing of a grey market in international mobile traffic, because of the arbitrage opportunities which differential termination rates permit.

- *Transit charge:*

Transit charge is currently based at less than 15 paise per minute and left to mutual commercial agreements. Since the majority of the transit is taking place through BSNL facilities, there is hardly any mutuality in commercial terms and the rate gets fixed at the highest regulatory level. With the equipment costs coming down and volumes of business growing there is need to further look and taper these rates to more realistic levels.

- *Transit carriage charge:*

Transit carriage charge is currently fixed at 15 paise per minute, irrespective of distance, effective 1st April, 2009. This has already been challenged by BSNL and BSNL is charging at the rates prescribed for long distance carriage; that is 15 paise for distances less than 50 km and 65 paise for distance greater than 50 km. Therefore, to actually reduce the transit carriage charge the authority should review the applicability within the LDCA and at the same time revisit the long distance carriage charge for intra-LDCA.

b) SMS

- *SMS Termination:*

During the last revision of the IUC charges undertaken in 2009 the Authority had directed that *"IUC for SMS shall continue to be under forbearance. However, these charges should be transparent, reciprocal and non-discriminatory. Reporting requirements have been prescribed"* to keep watch on the market.

As of now, while meeting the above requirements, incumbent operators with dominant position in the market have fixed a very high SMS termination charge – far higher than cost-based. Amongst the incumbent operators the traffic by and large balances out whereas between the new and incumbent operators, there is a substantial SMS traffic imbalance. Thus, the smaller operators as net payers of SMS termination are at a disadvantage under a forbearance regime. This leads to a situation where the small operators are unable to compete effectively in the market as the majority of their SMS traffic is to other networks and a price floor is set on this through artificially high SMS termination charge.

In early 2010 the Authority again engaged the stakeholders to discuss the possibility of prescribing termination charges for SMS. The TRAI Chairman in one meeting had suggested that no termination charge should be levied on SMS, particularly for P-to-P SMS, and a regime based on bill-and-keep should be followed till TRAI revisits the subject. On the advice of TRAI chairman, industry representatives even met, in the month of March, 2010, to arrive at a mechanism for pricing so as to:

- Control the non-genuine P-to-P SMSs
- Deter the flow of A-to-P bulk SMSs to protect the consumer interest.

On both the counts the industry could not reach any consensus and the status today is that the majority of the incumbent operators are charging at the rate of 10 paise per SMS. Even BSNL wants other operators to come on board and pay similar termination charges for SMS.

The Authority's recent regulation on "Telecom Commercial Communication Customer Preference Regulations, 2010" limits the non-genuine P-to-P SMSs by prescribing a limit of not more than 100 SMSs per day from any individual phone. The regulation has also given an identity to A-to-P bulk SMSs by prescribing a special number series beginning with "70".

Further to this regulation the Authority should review the termination charges for P-to-P and A-to-P SMSs. We agree with Authority's assertion that the cost of SMS termination is insignificant compared to voice termination and believe that cost of termination per SMS would not be more than 1 paisa.

One possible solution could be to prescribe bill-and-keep for P-to-P SMSs and a definitive termination charge for A-to-P SMSs.

We would like to draw the attention of the Authority to our letter dated 7 January 2011, in which we have voiced our concerns on the anti-competitive effects of excessive wholesale SMS termination charges are likely to raise serious issues under the Competition Act (2002).

- *SMS Signaling Carriage Charges*

Apart from SMS termination charge there is a need for the Authority to review SMS Signaling Carriage charges which incumbent operators are levying and are as high as 5 paise per SMS. The rate is irrespective of whether the inter-operator signaling exchange takes place at the local POI or nationally at the STP level. It may also be mentioned that in case of network congestion repeat attempts result in SMS Signaling Carriage costs to be as much as 20 paise per SMS. This, seemingly small cost of 5 paise per SMS, adds up to INR 24 million as annual payment to just one incumbent operator.

Therefore, the Authority is requested to review and regulate the following:

1. Cost based SMS termination charge and SMS Signaling Carriage charges (wherever levied)
2. Network point of exchange of SMS traffic.

c) Value added services

The present dispensation from the Authority with regard to mutually agreed revenue share arrangements on the universally available value added services in a LSA and

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making available each others' IN platform on commercial basis have not been successful. Therefore there is a need for the Authority to prescribe the fall back rates of revenue share in respect of every type of IN call so that the industry is mandated to sign the mutual agreement, in the event of non-agreement on commercials. We had also responded with our views to the Authority's consultation paper on the issue on 15 December 2010.

- iii) Which of the approach/methodology should be used by for estimating Interconnection Usage Charges:
- a) Existing Fully Allocated Cost methodology used by TRAI or any variation of it;
 - b) FLRIC or any other variant;
 - c) Bill and Keep;
 - d) Left to forbearance all component of Interconnection Usage Charges;
 - e) Any other methodology

A cost-oriented approach is the most effective way of ensuring a fair IUC regime for all service providers and promoting competition in the market. We propose the adoption of the 'Avoidable Costs'/ pure LRIC concept based on the LRIC cost methodology.

- iv) Explain the approach/costing methodology adopted, provide the model, if any, developed for estimating the level of each component of IUC for voice, SMS & any other value added services with all calculation sheets. Give justification for adopting the proposed/ methodology. Also provide details of revenue, minutes of usage (MOU) (off-net/ on-net), CAPEX and OPEX corresponding to each network element, cables etc. separately for your network.

We suggest the use of an LRIC based-model to calculate the termination cost based on the 'Avoidable Costs'/ pure LRIC concept. We would like to note here that a currently public available LRIC model for the Indian market is the Hybrid-FLLRIC model developed for COAI by Spectrum Value Partners in late 2008. This model did not use the 'avoidable costs' concept but projected a termination charge based on the approach that all network related costs be apportioned amongst different mixes of traffic (incoming/outgoing/off-net/on-net). Additionally, we also feel that some of the assumptions in that model with regards to market penetration, call mix, market share etc., do not reflect current ground realities and were leading to an artificially high termination charge.

Once adjustments are made which, we believe, fairly reflect current industry conditions, given the latest information on market share development, traffic volume, patterns and projections over the next few years, the termination cost projected by that model reduce to the range of 19 paise-20 paise per minute. This value still does not take into account the 'Avoidable Costs'/pure LRIC concept which when incorporated would further reduce the termination charge.

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- v) Provide cost and revenue corresponding to each service like voice service, SMS, GPRS, EDGE, roaming services and any other value added services. Also provide cost and revenue for interconnecting services like terminating call, originating call, terminating SMS and originating SMS. All cost and revenue data may be cross referenced with the accounting submission report submitted to TRAI

We are a growing new operator and do not have ready data to support TRAI efforts. However, our audited ASR, as of 31st March, 2010 has been submitted to the Authority.

- vi) Justification as to why the model proposed by you should be used for determination of Interconnection Usage Charges for voice calls, SMSs and any other value added services.

As mentioned earlier, we are advocating the use of the 'Avoidable Costs'/ pure LRIC concept based on an LRIC costing methodology.

The 'Avoidable Costs'/ pure LRIC concept is the most optimum way of ensuring that only the *relevant* costs are taken into consideration when calculating the interconnection charges.

We propose a forward looking LRIC based bottom-up model for a hypothetical efficient operator. In a competitive environment, operators would compete on the basis of current costs and would not be compensated for costs which have been incurred through inefficiencies. Historic cost figures therefore need to be adjusted into current cost figures to reflect the costs of an efficient operator employing modern technology. Additionally, in a LRIC model, all costs become variable, and since it is assumed that all assets are replaced in the long run, setting charges based on LRIC allows efficient recovery of costs.

The model of the hypothetical operator can still be reconciled against the actual operators in the Indian market by comparing the assumed unit costs for the hypothetical operator to the unit costs of the established operators.

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COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 7.5.2009
C(2009) 3359 final

COMMISSION RECOMMENDATION

of 7.5.2009

on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU

COMMISSION RECOMMENDATION

of 7.5.2009

on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive)¹ and in particular Article 19(1) thereof,

After consulting the Communications Committee,

Whereas:

- (1) According to Article 8(3) of Directive 2002/21/EC, National Regulatory Authorities (NRAs) shall contribute to the development of the internal market *inter alia* by cooperating with each other and with the Commission in a transparent manner to ensure the development of consistent regulatory practice. However, during the assessment of more than 850 draft measures notified under Article 7 of Directive 2002/21/EC it appeared that inconsistencies in the regulation of voice call termination rates still exist.
- (2) Although some form of cost orientation is generally provided for in most Member States, a divergence between price control measures prevails across the Member States. In addition to a significant variety in the chosen costing tools, there are also different practices in implementing those tools. This widens the spread between wholesale termination rates applied across the European Union, which can only be partly explained by national specificities. The European Regulators Group (ERG) established by Commission Decision 2002/627/EC² recognised this in its Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates. NRAs have also, in a number of cases, authorised higher termination rates for smaller fixed or mobile operators on the grounds that these operators are new entrants into the market and have not benefited from economies of scale and/or are subject to differing cost conditions. These asymmetries exist both within and across national boundaries, although they are slowly decreasing. The ERG recognised in its Common Position that termination rates should normally be symmetric and asymmetry requires an adequate justification.

¹ OJ L 108, 24.4.2002, p. 33. Directive as amended by Regulation (EC) No 717/2007 (OJ L 171, 29.6.2007, p. 32).

² OJ L 200, 30.7.2002. Decision as last amended by Decision 2007/804/EC. (OJ L 323, 8.12.2007, p. 43).

- (3) Significant divergences in the regulatory treatment of fixed and mobile termination rates create fundamental competitive distortions. Termination markets represent a situation of two-way access where both interconnecting operators are presumed to benefit from the arrangement but, as these operators are also in competition with each other for subscribers, termination rates can have important strategic and competitive implications. Where termination rates are set above efficient costs, this creates substantial transfers between fixed and mobile markets and consumers. In addition, in markets where operators have asymmetric market shares, this can result in significant payments from smaller to larger competitors. Furthermore, the absolute level of mobile termination rates remains high in a number of Member States compared to those applied in a number of countries outside of the European Union, and also compared to fixed termination rates generally, thus continuing to translate into high, albeit decreasing, prices for end-consumers. High termination rates tend to lead to high retail prices for originating calls and correspondingly lower usage rates, thus decreasing consumer welfare.
- (4) The lack of harmonisation in the application of cost-accounting principles to termination markets to-date demonstrates a need for a common approach which will provide greater legal certainty and the right incentives for potential investors, and reduce the regulatory burden on existing operators that are currently active in several Member States. The objective of coherent regulation in termination markets is clear and recognised by the NRAs and has been repeatedly expressed by the Commission in the context of its assessment of draft measures under Article 7 of Directive 2002/21/EC.
- (5) Certain provisions of the regulatory framework for electronic communications networks and services require necessary and appropriate cost-accounting mechanisms and price control obligations to be implemented, namely Articles 9, 11 and 13 in conjunction with Recital 20 of Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive)³.
- (6) Commission Recommendation 2005/698/EC of 19 September 2005 on accounting separation and cost accounting under the regulatory framework for electronic communications⁴ has provided a framework for the consistent application of the specific provisions concerning cost accounting and accounting separation, with a view to improving the transparency of regulatory accounting systems, methodologies, auditing and reporting processes to the benefit of all parties involved.
- (7) Wholesale voice call termination is the service required in order to terminate calls to called locations (in fixed networks) or subscribers (in mobile networks). The charging system in the EU is based on Calling Party Network Pays, which means that the termination charge is set by the called network and paid by the calling network. The called party is not billed for this service and generally has no incentive to respond to the termination price set by its network provider. In this context, excessive pricing is the main competition concern of regulatory authorities. High termination prices are ultimately recovered through higher call charges for end users. Taking into account the

³ OJ L 108, 24.4.2002, p. 7.

⁴ OJ L 266, 11.1.2005, p. 64.

two-way access nature of termination markets, further potential competition problems include cross-subsidisation between operators. These potential competition problems are common to both fixed and mobile termination markets. Therefore, in the light of the ability and incentives of terminating operators to raise prices substantially above cost, cost orientation is considered the most appropriate intervention to address this concern over the medium term. Recital 20 of Directive 2002/19/EC notes that the method of cost recovery should be appropriate to the particular circumstances. In view of the specific characteristics of call termination markets and the associated competitive and distributional concerns, the Commission has for a long time recognised that setting a common approach based on an efficient cost standard and the application of symmetrical termination rates would promote efficiency, sustainable competition and maximise consumer benefits in terms of price and service offerings.

- (8) According to Article 8(1) of Directive 2002/21/EC, Member States shall ensure that when carrying out the regulatory tasks specified in that Directive and the specific directives, in particular those designed to ensure effective competition, NRAs take the utmost account of the desirability of making regulations technologically neutral. Article 8(2) of Directive 2002/21/EC further requires NRAs to promote competition by, amongst other things, ensuring that all users derive maximum benefit in terms of choice, price and quality of service and that there is no distortion or restriction of competition. In order to achieve these objectives and a consistent application in all Member States, the regulated termination rates should be brought down to the costs of an efficient operator as soon as possible.
- (9) In a competitive environment, operators would compete on the basis of current costs and would not be compensated for costs which have been incurred through inefficiencies. Historic cost figures therefore need to be adjusted into current cost figures to reflect the costs of an efficient operator employing modern technology.
- (10) Operators which are compensated for actual costs incurred for termination have few incentives to increase efficiency. The implementation of a bottom-up model is consistent with the concept of developing a network for an efficient operator whereby an economic/engineering model of an efficient network is constructed using current costs. It reflects the equipment quantity needed rather than that actually provided and it ignores legacy costs.
- (11) Given the fact that a bottom-up model is based largely on derived data, e.g. network costs are computed using information from equipment vendors, regulators may wish to reconcile the results of a bottom-up model with the results of a top-down model in order to produce as robust results as possible and to avoid large discrepancies in operating cost, capital cost and cost allocation between a hypothetical and a real operator. In order to identify and improve possible shortcomings of the bottom-up model, such as information asymmetry, the NRA may compare the results of the bottom-up modelling approach with those resulting from a corresponding top-down model which uses audited data.
- (12) The cost model should be based on the efficient technological choices available in the timeframe considered by the model, to the extent that they can be identified. Hence, a bottom-up model built today could in principle assume that the core network for fixed networks is Next-Generation-Network (NGN)-based. The bottom-up model for mobile networks should be based on a combination of 2G and 3G employed in the access part

of the network, reflecting the anticipated situation, while the core part could be assumed to be NGN-based.

- (13) Taking account of the particular characteristics of call termination markets, the costs of termination services should be calculated on the basis of forward-looking long-run incremental costs (LRIC). In a LRIC model, all costs become variable, and since it is assumed that all assets are replaced in the long run, setting charges based on LRIC allows efficient recovery of costs. LRIC models include only those costs which are caused by the provision of a defined increment. An incremental cost approach which allocates only efficiently incurred costs that would not be sustained if the service included in the increment was no longer produced (i.e. avoidable costs) promotes efficient production and consumption and minimises potential competitive distortions. The further termination rates move away from incremental cost, the greater the competitive distortions between fixed and mobile markets and/or between operators with asymmetric market shares and traffic flows. Therefore, it is justified to apply a pure LRIC approach whereby the relevant increment is the wholesale call termination service and which includes only avoidable costs. A LRIC approach would also allow the recovery of all fixed and variable costs (as the fixed costs are assumed to become variable over the long run) which are incremental to the provision of the wholesale call termination service and would thereby facilitate efficient cost recovery.
- (14) Avoidable costs are the difference between the identified total long-run costs of an operator providing its full range of services and the identified total long-run costs of that operator providing its full range of services except for the wholesale call termination service supplied to third parties (i.e. stand-alone cost of an operator not offering termination to third parties). To ensure an appropriate attribution of the costs, a distinction needs to be made between those costs that are traffic-related, i.e. all those fixed and variable costs which rise with increased levels of traffic, and those costs that are non-traffic-related, i.e. all those costs which do not rise with increased levels of traffic. To identify the avoidable costs relevant for wholesale call termination, non-traffic-related costs should be disregarded. Then, it may be appropriate to attribute traffic-related costs firstly to other services (e.g. call origination, SMS, MMS, broadband, leased lines, etc.) with wholesale voice call termination being the final service to be taken into account. The cost allocated to the wholesale call termination service should thus be equal only to the additional cost incurred to provide the service. As a consequence, cost accounting based on a LRIC approach for wholesale call termination services in fixed and mobile markets should allow the recovery only of costs which would be avoided if a wholesale call termination service was no longer provided to third parties.
- (15) It can be seen that call termination is a service which generates benefits to both calling and called parties (if the receiver did not receive a benefit it would not accept the call), which in turn suggests that both parties have a part in the creation of costs. The use of cost causation principles to set cost-orientated prices would suggest that the creator of the costs should bear those costs. Recognising the two-sided nature of call termination markets with costs being driven by two sides, not all related costs need to be recovered via the regulated wholesale termination charge. However, for the purposes of this Recommendation, all of the avoidable costs of providing the wholesale call termination service can be recovered via the wholesale charge, i.e. all of those costs which increase in response to an increase in wholesale termination traffic.

- (16) In setting termination rates, any deviation from a single efficient cost level should be based on objective cost differences outside the control of operators. In fixed networks, no such objective cost differences outside the control of the operator have been identified. In mobile networks, *uneven spectrum assignment* may be considered an exogenous factor which results in per-unit-cost differences between mobile operators. Exogenous cost differences may arise where spectrum assignments have not taken place using market-based mechanisms but on the basis of a sequential licensing process. Where the spectrum assignment takes place through a market-based mechanism such as an auction or where there is a secondary market in place, frequency-induced cost differences become more endogenously determined and are likely to be significantly reduced or eliminated.
- (17) New entrants in mobile markets may also be subject to higher unit costs for a transitional period before having reached the minimum efficient scale. In such situations, NRAs may allow them, after having determined that there are impediments on the retail market to market entry and expansion, to recoup their higher incremental costs compared to those of a modelled operator for a transitional period of up to four years after market entry. Drawing upon the ERG Common Position, it is reasonable to envisage a timeframe of four years for phasing out asymmetries based on the estimation that in the mobile market it can be expected to take three to four years after entry to reach a market share of between 15 and 20%, thereby approaching the level of the minimum efficient scale. This is distinct to the situation for new entrants in fixed markets which have the opportunity to achieve low unit costs by focusing their networks on high-density routes in particular geographic areas and/or by renting relevant network inputs from the incumbents.
- (18) A depreciation method that reflects the economic value of an asset is the preferred approach. If, however, the development of a robust economic depreciation model is not feasible, other approaches are possible including straight-line depreciation, annuities and tilted annuities. The criterion for choosing among the alternative approaches is how closely they are likely to approximate an economic measure of depreciation. Thus, if the development of a robust economic depreciation model is not feasible, the depreciation profile of each major asset in the bottom-up model should be examined separately, and the approach which generates a depreciation profile similar to that of economic depreciation should be chosen.
- (19) With regard to efficient scale, different considerations apply in fixed and in mobile markets. The minimum efficient scale may be reached at different levels in the fixed and mobile sectors as this depends on the different regulatory and commercial environments applicable to each.
- (20) When regulating wholesale termination charges, NRAs should neither preclude nor inhibit operators from moving to alternative arrangements for the exchange of terminating traffic in the future to the extent that these arrangements are consistent with a competitive market.
- (21) A period of transition until 31 December 2012 should be considered long enough to allow NRAs to put the cost model in place and for operators to adapt their business plans accordingly while, on the other hand, recognising the pressing need to ensure that consumers derive maximum benefits in terms of efficient cost-based termination rates.

- (22) For NRAs with limited resources, an additional transitional period may exceptionally be needed in order to prepare the recommended cost model. In such circumstances, if an NRA is able to demonstrate that a methodology (e.g. benchmarking) other than a bottom-up LRIC model based on current costs results in outcomes consistent with this Recommendation and generates efficient outcomes consistent with those in a competitive market, it could consider setting interim prices based on an alternative approach until 01 July 2014. Where it would be objectively disproportionate for those NRAs with limited resources to apply the recommended cost methodology after this date, such NRAs may continue to apply an alternative methodology up to the date for review of this Recommendation, unless the body established for cooperation among NRAs and the Commission, including its related working groups, provides sufficient practical support and guidance to overcome this limitation of resources and, in particular, the cost of implementing the recommended methodology. Any such outcome resulting from alternative methodologies should not exceed the average of the termination rates set by NRAs implementing the recommended cost methodology.
- (23) This Recommendation has been subject to a public consultation,

HEREBY RECOMMENDS:

- (1) When imposing price control and cost-accounting obligations in accordance with Article 13 of Directive 2002/19/EC on the operators designated by National Regulatory Authorities (NRAs) as having significant market power on the markets for wholesale voice call termination on individual public telephone networks (hereinafter referred to as “fixed and mobile termination markets”) as a result of a market analysis carried out in accordance with Article 16 of Directive 2002/21/EC, NRAs should set termination rates based on the costs incurred by an efficient operator. This implies that they would also be symmetric. In doing so, NRAs should proceed in the way set out below.
- (2) It is recommended that the evaluation of efficient costs is based on current cost and the use of a bottom-up modelling approach using long-run incremental costs (LRIC) as the relevant cost methodology.
- (3) NRAs may compare the results of the bottom-up modelling approach with those of a top-down model which uses audited data with a view to verifying and improving the robustness of the results and may make adjustments accordingly.
- (4) The cost model should be based on efficient technologies available in the timeframe considered by the model. Therefore the core part of both fixed and mobile networks could in principle be Next-Generation-Network (NGN)-based. The access part of mobile networks should also be based on a combination of 2G and 3G telephony.
- (5) The different cost categories referred to herein should be defined as follows:
- (a) “Incremental costs” are those costs that can be avoided if a specific increment is no longer provided (also known as avoidable costs);
 - (b) “Traffic-related costs” are all those fixed and variable costs which rise with increased levels of traffic.

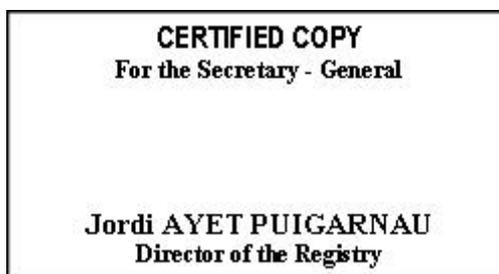
- (6) Within the LRIC model, the relevant increment should be defined as the wholesale voice call termination service provided to third parties. This implies that in evaluating the incremental costs NRAs should establish the difference between the total long-run cost of an operator providing its full range of services and the total long-run costs of this operator in the absence of the wholesale call termination service being provided to third parties. A distinction needs to be made between traffic-related costs and non-traffic-related costs, whereby the latter costs should be disregarded for the purpose of calculating wholesale termination rates. The recommended approach to identifying the relevant incremental cost would be to attribute traffic-related costs firstly to services other than wholesale voice call termination, with finally only the residual traffic-related costs being allocated to the wholesale voice call termination service. This implies that only those costs which would be avoided if a wholesale voice call termination service were no longer provided to third parties should be allocated to the regulated voice call termination services. Principles for calculating the wholesale voice call termination service increment in fixed and mobile termination networks respectively are further elaborated in the Annex.
- (7) The recommended approach for asset depreciation is economic depreciation wherever feasible.
- (8) When deciding on the appropriate efficient scale of the modelled operator, NRAs should take into account the principles for defining the appropriate efficient scale in fixed and mobile termination networks as set out in the Annex.
- (9) Any determination of efficient cost levels which deviates from the principles set out above should be justified by objective cost differences which are outside the control of the operators concerned. Such objective cost differences may emerge in mobile termination markets due to uneven spectrum assignments. To the extent that additional spectrum acquired to provide wholesale call termination is included in the cost model, NRAs should review any objective cost differences regularly, taking into account *inter alia* whether on a forward-looking basis additional spectrum is likely to be made available through market-based assignment processes which might erode any cost differences arising from existing assignments or whether this relative cost disadvantage decreases over time as the volumes of the later entrants increase.
- (10) In case it can be demonstrated that a new mobile entrant operating below the minimum efficient scale incurs higher per-unit incremental costs than the modelled operator, after having determined that there are impediments on the retail market to market entry and expansion, the NRAs may allow these higher costs to be recouped during a transitional period via regulated termination rates. Any such period should not exceed four years after market entry.
- (11) This Recommendation is without prejudice to previous regulatory decisions taken by NRAs in respect of the matters raised herein. Notwithstanding this, NRAs should ensure that termination rates are implemented at a cost-efficient, symmetric level by 31 December 2012, subject to any objective cost differences identified in accordance with points (9) and (10).
- (12) In exceptional circumstances where an NRA is not in a position, in particular due to limited resources, to finalise the recommended cost model in a timely manner and where it is able to demonstrate that a methodology other than a bottom-up LRIC

model based on current costs results in outcomes consistent with this Recommendation and generates efficient outcomes consistent with those in a competitive market, it could consider setting interim prices based on an alternative approach until 01 July 2014. Where it would be objectively disproportionate for those NRAs with limited resources to apply the recommended cost methodology after this date, such NRAs may continue to apply an alternative methodology up to the date for review of this Recommendation, unless the body established for cooperation among NRAs and the Commission, including its related working groups, provides sufficient practical support and guidance to overcome this limitation of resources and, in particular, the cost of implementing the recommended methodology. Any such outcome resulting from alternative methodologies should not exceed the average of the termination rates set by NRAs implementing the recommended cost methodology.

- (13) This Recommendation will be reviewed not later than four years after the date of application.
- (14) This Recommendation is addressed to the Member States.

Done at Brussels, 7.5.2009.

For the Commission
Viviane REDING
Member of the Commission



ANNEX

Principles for the calculation of wholesale termination rates in fixed networks

The relevant incremental costs (i.e. avoidable costs) of the wholesale call termination service are the difference between the total long-run costs of an operator providing its full range of services and the total long-run costs of that operator not providing a wholesale call termination service to third parties.

A distinction needs to be made between traffic-related costs and non-traffic-related costs to ensure the appropriate attribution of those costs. The non-traffic-related costs should be disregarded for the purpose of calculating wholesale termination rates. From the traffic-related costs only those costs which would be avoided in the absence of a wholesale call termination service being provided should be allocated to the relevant termination increment. These avoidable costs may be calculated by allocating traffic-related costs first to services other than wholesale call termination (e.g. call origination, data services, IPTV, etc.) with only the residual traffic-related costs being allocated to the wholesale voice call termination service.

The default demarcation point between traffic- and non-traffic-related costs is typically where the first point of traffic concentration occurs. In a PSTN network this is normally deemed to be the upstream side of the line card in the (remote) concentrator. The broadband NGN equivalent is the line card in the DSLAM/MSAN⁵. Where the DSLAM/MSAN is located in a street cabinet, then it needs to be considered whether the former loop between the cabinet and the exchange/MDF is a shared medium and should be treated as part of the traffic-sensitive cost category, in which case the traffic-/non-traffic-related demarcation point will be located in the street cabinet. If dedicated capacity is allocated to the voice call termination service irrespective of the technology deployed, then the demarcation point remains at the level of the (remote) concentrator.

Following the approach outlined above, examples of costs which would be included in the termination service increment would include additional network capacity needed to transport additional wholesale termination traffic (e.g. additional network infrastructure to the extent that it is driven by the need to increase capacity for the purposes of carrying the additional wholesale termination traffic) as well as additional wholesale commercial costs directly related to the provision of the wholesale termination service to third parties.

To determine the efficient scale of an operator for the purposes of the cost model, NRAs should take into account that in fixed networks operators have the opportunity to build their networks in particular geographic areas and to focus on high-density routes and/or to rent relevant network inputs from the incumbents. When defining the single efficient scale for the modelled operator, NRAs should therefore take into account the need to promote efficient entry while also recognising that under certain conditions smaller operators can produce at low unit costs in smaller geographic areas. Furthermore, smaller operators that cannot match the largest operators' scale advantages over broader geographic areas can be assumed to purchase wholesale inputs rather than self-provide termination services.

⁵ Digital Subscriber Line Access Multiplexer/Multi-Service Access Node.

Principles for the calculation of wholesale termination rates in mobile networks

The relevant incremental costs (i.e. avoidable costs) of the wholesale call termination service are the difference between the total long-run costs of an operator providing its full range of services and the total long-run costs of an operator not providing a wholesale call termination service to third parties.

A distinction needs to be made between traffic-related costs and non-traffic-related costs to ensure the appropriate attribution of those costs. The non-traffic-related costs should be disregarded for the purpose of calculating wholesale termination rates. From the traffic-related costs only those costs which would be avoided in the absence of a wholesale call termination service being provided should be allocated to the relevant termination increment. These avoidable costs may be calculated by allocating traffic-related costs first to services other than wholesale call termination (e.g. call origination, SMS, MMS, etc.) with only the residual traffic-related costs being allocated to the wholesale voice call termination service.

The costs of the handset and the SIM card are not traffic-related and should be excluded from any costing model for wholesale voice call termination services.

Coverage can be best described as the capability or option to make a single call from any point in the network at a point in time, and capacity represents the additional network costs which are necessary to carry increasing levels of traffic. The need to provide such coverage to subscribers will cause non-traffic-related costs to be incurred which should not be attributed to the wholesale call termination increment. Investments in mature mobile markets are more driven by capacity increases and by the development of new services and this should be reflected in the cost model. The incremental cost of wholesale voice call termination services should therefore exclude coverage costs but should include additional capacity costs to the extent that they are caused by the provision of wholesale voice call termination services.

The costs of spectrum usage (the authorisation to retain and use spectrum frequencies) incurred in providing retail services to network subscribers are initially driven by the number of subscribers and thus are not traffic-driven and should not be calculated as part of the wholesale call termination service increment. The costs of acquiring additional spectrum to increase capacity (above the minimum necessary to provide retail services to subscribers) for the purposes of carrying additional traffic resulting from the provision of a wholesale voice call termination service should be included on the basis of forward-looking opportunity costs, where possible.

Following the approach outlined above, examples of costs which would be included in the termination service increment would include additional network capacity needed to transport additional wholesale traffic (e.g. additional network infrastructure to the extent that it is driven by the need to increase capacity for the purposes of carrying the additional wholesale traffic). Such network-related costs could include additional Mobile Switching Centres (MSCs) or backbone infrastructure directly required to carry the terminating traffic for third parties. Furthermore, where certain network elements are shared for the purposes of supplying origination and termination services, such as cell sites or Base Transceiver Stations (BTS), these network elements will be included in the termination cost model to the extent that they are needed because of the additional capacity necessary to carry terminating traffic by third parties. In addition, the additional spectrum costs and wholesale commercial costs directly related to the provision of the wholesale termination service to third parties would also be taken into account. This implies that coverage costs, unavoidable business overhead costs and retail commercial costs are not included.

To determine the minimum efficient scale for the purposes of the cost model, and taking account of market share developments in a number of EU Member States, the recommended approach is to set that scale at 20% market share. It may be expected that mobile operators, having entered the market, would strive to maximise efficiency and revenues and thus be in a position to achieve a minimum market share of 20%. In case an NRA can prove that the market conditions in the territory of that Member State would imply a different minimum efficient scale, it could deviate from the recommended approach.