



NON-BINDING ENGLISH TRANSLATION

On grounds of Decision no.113/2002 of the Prime Minister on the designation of the President of the National Regulatory Authority for Communications,

On grounds of the provisions under art.38 (1), (3) and (5), art.34 (3) as well as under art.46 (1), p11 of Government Emergency Ordinance no.79/2002 on the general regulatory framework for communications, approved, with amendments and completions, by Law no.591/2002, as well as under art.8 (1) and under art.13 (1) and (3) of Government Ordinance no.34/2002 on the access to, interconnection of, the electronic communications networks and associated facility, approved with amendments and completions by Law no.527/2002,

Considering the provisions under art.1 (7) of the ANRC President's Decision no.147/EI/2002 on the principles and prerequisites of the reference offer for interconnection with the public fixed telephony network,

THE PRESIDENT OF THE NATIONAL REGULATORY AUTHORITY FOR COMMUNICATIONS

Issues the present:

**DECISION
FOR APPROVING THE REGULATION FOR THE REALIZATION
OF THE TOP-DOWN LONG RUN INCREMENTAL COSTING MODEL
BY „ROMTELECOM” S.A.,**

Art.1. – The Regulation concerning the realisation, by “Romtelecom” S.A., of the top-down costing long run incremental costing model, as stipulated in the Annex, which forms an integral part of this decision, is approved.

Art.2. – The present decision is communicated to „Romtelecom” – S.A.

**PRESIDENT,
ION SMEEIANU**

Bucuresti, _____2003
Nr.____/EI

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ANNEX

REGULATION FOR THE REALIZATION, OF THE TOP-DOWN LONG RUN INCREMENTAL COSTING MODEL BY „ROMTELECOM“ S.A.,

1. General provisions

1.1. Object of regulation

The present regulation establishes the way in which „Romtelecom“ S.A., hereinafter referred to as the *Operator*, shall realize the top-down costing model for the calculation of the long run average incremental costs, hereinafter referred to as the Costing Model, for the activities related to interconnection of, and access to, the *Operator's* network or its associated infrastructure.

1.2. Purpose of regulation

1.2.1. The Costing Model shall ensure that calculations of total costs and incremental costs are accurate, therefore allowing the use of the model results in the process of cost orientation of tariffs.

1.2.2. The structure and documentation of the Costing Model shall be detailed and transparent enough in order to allow:

a) evaluation, checking and assessment of accounting data, of principles, hypothesis, parameters and estimations used within the model, allowing the export of all the information into an accessible format.

b) deriving a set of interim and final results, through which the Operator shall contribute to the calibration of a bottom-up costing model for the calculation of the long run incremental costs.

1.2.3. The Costing Model shall be flexible enough in order to be reconciled with a bottom-up costing model for the calculation of the long run average incremental costs to be realised by the National Regulatory Authority for Communications, hereinafter referred to as ANRC, for the purpose of deriving tariffs for the services provided by the Operator on those electronic communications markets on which it has been designated, through decision of the president of ANRC, as having significant market power, being imposed obligations for cost-orientation of tariffs. The bottom-up costing model to be realised by ANRC shall be calibrated using the top-down costing model realised by the Operator in compliance with the present regulation.

1.2.4. If not otherwise provided, the terms used in the documentation of the Costing Model shall have the meaning given to them by the legislation in force in the field of electronic communication and accounting.

1.3. Definitions

1.3.1. **Costing Model** – a costing model that uses information from the Operator's accounting records, in order to calculate the tariffs for the activities related to interconnection of, and access to, the Operator's network or to its' associated facility, on basis of long run incremental average costs associated with these activities. Because it is based on information regarding recent performances of the Operator, which can reflect both efficiencies and inefficiencies, the Costing Model shall include adjustments to eliminate structural and operational inefficiencies of the Operator.

1.3.2. **Long Run Average Incremental Cost**

a) **Long Run** – the time period in which the Operator can realize capital investments or disinvestments in order to increase or decrease its productive capacities. In the Long Run, all inputs, hence all costs vary in response to a change in the volume or in the structure of production in response to the evolution of demand.

b). **Increment** – non-minimal and finite quantity of products or services provided by the *Operator*;

c). **Incremental Cost** - Cost caused by the supplementary provision of an increment of services, or the cost saved when the increment of services is no longer provided.

d) **Average Incremental Cost** – in the long run, when the increment is represented by a large group of services, the average incremental cost is obtained by dividing the incremental cost of each service, using a common cost driver (e.g. traffic). For example, for the purpose of estimating interconnection tariffs, the increment is defined as the entire group of services provided by the Operator through its core network. These services (telephony services, leased lines, etc.) include services provided by the Operator on the retail market, as well as for other operators, on the wholesale market. The incremental costs of the network which provides this group of services are divided by the entire traffic, thus resulting the average incremental cost. The average incremental cost supposes that shared costs are attributed to services as well.

Within the Costing Model, the cost of services within an increment shall include directly attributable costs, fixed and variable, as well as shared costs. The Costing Model shall also account for those costs common to several increments, in compliance with the provisions of the present regulation.

1.3.3. **directly attributable costs** - costs that can be directly and unambiguously allocated to a service or product provided by the Operator. Directly attributable costs are caused by the provision of a certain service within the increment, falling into two types:

a). directly attributable variable costs – their level varies proportionally with the level of output;

b). directly attributable fixed costs – their level is fixed with respect to the level of output, but are service specific (for example, depreciation and some operating expenses);

1.3.4. **shared costs** - costs of those inputs necessary to produce two or more services within the same increment, where it is not possible to directly and unambiguously identify the extent to which a specific service causes the cost. These costs shall be allocated to products or services according to the most appropriate cost driver.

1.3.5. **common costs** - costs of those inputs necessary to produce one or more services in two or more increments, where it is not possible to identify the extent to which a specific increment causes the cost. These costs shall be included in the calculation of the cost of services by use of a mark-up.

2. Description of the Costing Model

2.1. Steps in the development of the Costing Model

2.1.1. Deriving homogenous cost categories

2.1.1.1. The first step in developing the Costing Model is to group costs that have similar characteristics into individual cost categories, hereinafter referred to as homogenous cost categories.

2.1.1.2. In order to derive homogenous cost categories, one can use information from the internal accounting system or from the fully allocated costing model, realised in compliance with Regulation for the Realization, by "Romtelecom" s.a., of Accounting Separation within the Internal Cost Accounting System, approved through ANRC's President Decision no...../2003, hereinafter referred to as the Regulation for Accounting Separation.

2.1.1.3. Within this step, the Operator shall perform the following actions:

- a). capture of the accounting information from the accounting records (presented on current costs);
- b). asset valuation at current costs using the concepts of Replacement Cost and Modern Equivalent Assets;
- c). develop homogenous assets and expense categories;
- d). assess network design and identify optimization possibilities;
- e). adjustment of operating costs to eliminate the supplementary costs of inefficient use of the network;
- f). calculation of annualisation costs.

2.1.2. Allocation of directly or indirectly attributable costs and identification of common costs

The second step in developing the Costing Model consists of defining increments and the services associated to them, accompanied by the allocation to services of directly and indirectly attributable costs and the identification of common costs. The allocation process implies deriving cost drivers for each homogeneous cost categories as well as deriving the routing tables which identify the relationships between the costs of network elements and the costs of services.

Within this step, common costs are identified are accounted for in a distinct category as well.

2.1.3. Calculation of the incremental costs of services

2.1.3.1. The third step consists mainly of deriving cost-volume relationships (CVRs), which show the way in which costs change in relation to a change in volumes. Deriving cost-volume relationships will depend on the cost category to which they refer to. From one category to another, CVRs shall be estimated either using technical-economic models, or simulations realized by engineering experts, or by the use of either regression analysis or through the analysis of the processes which are at the basis of various activities.

2.1.3.2. The incremental costs of services are derived by adding or excluding an increment of services and by identifying the effect upon the total costs using CVRs.

2.1.4. Mark-up the incremental costs of services with a share of common costs

The fourth step in developing the Costing Model consists in the estimation of the mark-up for common costs to be added to the incremental costs, hence obtaining the cost of services.

2.2. Development of the Costing Model

2.2.1. The Costing Model shall be developed as much as possible on the structure of the model already implemented by the Operator in order to calculate the fully allocated current costs of services. The Operator shall develop this model in such a manner that it observes the requirements of the present regulation.

2.2.2. The Costing Model shall incorporate all the steps mentioned at par. 2.1, deriving a set of interim and final results, necessary for the estimation of the long run average incremental costs (at different aggregation levels), as well as the use of these results in the reconciliation process.

2.2.3. The Costing Model shall include an integrated software system for the calculation of the long run incremental costs, which shall be accompanied by detailed model documentation.

2.2.4. The detailed model documentation shall also include, if necessary, supplementary analyses and calculations regarding the routing factors, asset lives, cost of capital, share of overhead and indirect costs included in the individual interconnection products, forecasts of expected demand and expansion rate, statements regarding network and equipment optimisation, as well as any other information necessary for the evaluation of the Costing Model.

2.2.5. The model documentation shall be sufficiently detailed in order to allow full understanding of the content of the model, of the evaluation principles, of hypothesis and procedures used by the model.

3. Level of Detail of the Costing Model

3.1. The Operator shall limit the level of aggregation of costs, for the Costing Model to provide a detailed breakdown of costs, in order to allow validation of the accuracy and completeness of the model as well as from the point of view of its' reconciliation with the bottom-up model. The Costing Model shall identify and detail all

the cost categories in such a manner that each cost category has only one cost driver. For example, the traffic-sensitive portion of a local switch consists of both ports and processors, and therefore its costs depend on call minutes and call attempts. Therefore, there shall be two cost categories, the costs of ports and the costs of processors, instead of a single cost category measuring the cost of the traffic-sensitive portion of local switches.

3.2. The structure of the Costing Model shall allow identification and changing of the treatment of each cost category, as well as the adjustment of principal parameters, in order to optimize the model. The Costing Model shall allow the identification and adjustment of model inputs and assumptions, in order to eliminate the supplementary costs generated by the structural and operational inefficiencies of the *Operator*.

3.3. The Costing Model shall allocate different cost categories by network elements, deriving the costs of telephony services provided through the PSTN network, of leased lines, as well as of other services.

4. Modelled Services and Increments

4.1. Modelled Services

The Costing Model shall consider all the services offered by the *Operator* through its access and core networks, provided that they are included in the main increments. Services associated with the Core and Access Increments shall be split into three main categories:

- a). telephony services offered using the PSTN network;
- b). leased lines services;
- c). other services.

4.1.1. Telephony services provided through the PSTN network

Telephony services provided using the PSTN network include the totality of standard call services, which originate or terminate in the *Operator's* network. The Costing Model shall include at least the telephony services included in the Statement Regarding the Costs of Services to be elaborated in conformity with p.4.3.1. within the Regulation for Accounting Separation.

4.1.2. Leased lines services

4.1.2.1. The Costing Model shall group leased lines services provided by the *Operator* into two categories:

- a). leased lines sold on the wholesale market;
- b). leased lines sold on the retail market.

4.1.2.2. The cost of leased lines sold on the wholesale market shall be calculated distinctively depending on capacity, technology and network level. As a consequence, leased lines sold on the wholesale market shall be split into four segments, depending on the hierarchy in the network layer:

- a). leased lines at the national transmission network layer;
- b). leased lines at the regional transmission network layer;

- c). leased lines at the local transmission network layer;
- d). leased lines at the access network layer (local loop).

4.1.2.3. The cost of leased lines sold on the retail market shall be calculated distinctly depending on capacity and technology.

4.1.3. Other services

4.1.3.1. The Costing Model shall classify other services using the access/core networks into types of services (paying particular attention to data services), such as VPN, services using packet-switching technologies, etc.

4.1.3.2. The costs of these services shall be included in Access/Core Increments, depending on the network components used for the provision of these services.

4.2. The Increments of the Costing Model

4.2.1. Selecting the Increments

4.2.1.1. In order to calculate the costs of these services using the Costing Model, the Operator shall use two main increments:

- a). the increment associated with the access network, hereinafter referred to as the Access Increment
- b). the increment associated with the core network, hereinafter referred to as the Core Increment

4.2.1.2. Selecting these two large increments minimizes the share of common costs and hence, allocation on an arbitrary basis.

4.2.2. Defining the main increments

The costs of the Core Increment depend on the volume of traffic and on the number of calls, while the costs of the Access Increment depend on the number of terminal points (number of lines).

4.2.2.1. Core Increment

4.2.2.1.1. The Core Increment shall include the costs of all services provided by the Operator through its core network, notwithstanding they are provided on the retail market or on the wholesale market.

4.2.2.1.2. Assets within the Core Increment shall include the following categories:

- a). concentrators, excepting line cards;
- b). traffic-sensitive portion of local exchanges (processors, switching blocks and ports);
- c). single transit and double transit exchanges;
- d). transmission links between the exchanges;
- e). leased-line specific cross-connect equipment;
- f). radio equipment in the core network;

- g). optical fibre and trenching between all levels of exchanges;
- h). signalling equipment.

4.2.2.2. Access Increment

4.2.2.2.1. The Access Increment shall include the costs of all services provided by the Operator through its' access network, notwithstanding they are provided on the retail market or towards other operators on the wholesale market.

4.2.2.2.2. The Access Increment shall include the costs associated with the cables, trenches and ducts for the provision of subscribers' lines, between the line termination equipment and the line cards within concentrators/exchanges, as well as the costs associated with the provision of other types of telephony lines, such as public pay phones.

4.2.2.2.3. Assets within the Access Increment include the following categories:

- a). the final drop wire to the customer's premises, as well as the cables between the line cards and the line termination equipments, together with all the associated infrastructure;
- b). radio systems associated with the local loop;
- c). line cards;
- d). main distribution frame;
- e). other assets.

5. Fixed Assets Valuation

5.1. Current Cost Accounting

5.1.1. Within the Costing Model, assets shall be evaluated at current costs, using the Net Replacement Cost method.

5.1.2. The Operator shall include in the model documentation a detailed description of methods used for restating assets' values on a current costs basis, for purposes of including their value in the Costing Model.

5.2. Replacement Cost

5.2.1. Replacement cost measures the cost of replacing the existing asset with another asset of similar performance characteristics. Gross asset values shall be evaluated using the replacement cost, calculated either at the current market value of the assets, either at the value of a modern equivalent asset, in case of assets which can no longer be found on the market.

5.2.2. If the replacement cost is evaluated using assets existing on the market, and which make use of the same technology, then the replacement cost shall be the actual market value of these assets. Any adjustment (indexation) of this value shall be fully justified. The model documentation shall also describe the relationships between assets prices and quantities bought. For the Operator to identify the actual market value, he shall take into account all the commercial discounts he is expecting to benefit from while buying these assets.

5.2.3. If the replacement cost is evaluated using modern equivalent assets (MEA), then it shall be adjusted in order to reflect the differences between existing assets and MEA assets, as for quality, productivity and asset lives. For example, the MEA for PDH and SDH equipments in the core network shall be SDH equipments. The values for PDH equipment shall include the value of SDH equipment, less the value resulted from the differences in performance characteristics and quality of services (less maintenance costs and increased capacities for organising the network). Operating costs of the Operator shall be adjusted in order to reflect the operating costs associated with MEA. Differences in operating costs can appear due to differences in the costs of maintenance, of organising the network, as well as in the indirect costs associated with MEA.

5.2.4. In each case, the asset existing on the market, and which is the basis for the valuation process, shall be capable to provide the same services as the evaluated asset, at least in the same qualitative parameters and at the lowest cost possible. The market is considered to be the international market of telecommunication equipments.

5.3. Evaluating the main categories of fixed assets

5.3.1. Access network

5.3.1.1. Copper cables

5.3.1.1.1. The costs of the copper cables include the cost of the cable itself, jointing costs, installation costs and various indirect costs.

5.3.1.1.2. Cable shall be valued on the basis of the quantity of the cable required for the existing level of demand, allowing for a reasonable planning margin, corresponding to the forecast level of demand.

5.3.1.1.3. Evaluation of the copper cables is a two step process. The first step involves selecting a statistically representative sample of routes for the Operator's access network as a whole and for particular geo-types within that network. The next step is to estimate each of the individual items of cost on the selected sample of routes. The estimates are then applied to the whole network to provide a gross asset valuation for all copper in the access network.

5.3.1.1.4. The Operator shall justify the ratio of its actual number of pairs to the number of lines, in various parts of its network and in different geo-types.

5.3.1.2. Optical fibre

Within the Costing Model, optical fibre valuation is similar to copper cables valuation. The use of optical fibre in the access network shall be economically justified by the Operator. If the use of optical fibre cannot be justified, then the MEA for that optical fibre shall be copper and the asset shall be valued accordingly.

5.3.1.3. Radio waves

The Operator shall justify the use of radio in the access network. If the use of radio waves is not economically justified, then the MEA shall be copper and the asset shall be valued accordingly.

5.3.1.4. Line cards

The costs of the line cards shall be included exclusively in the costs driven by the provision of services through the access network, because these costs are directly driven by the number of subscribers. Therefore, the cost driver is the number of subscribers. Line cards are evaluated on types of line cards, the total cost being derived by multiplying the cost of each type by the number of subscribers associated to that type of line card.

5.3.1.5. Trenching costs

5.3.1.5.1. Trenching costs shall reflect mainly the costs that would be involved by the present development of a modern network. Therefore, the costs generated in the past with network development shall be adjusted in order to reflect the actual values.

5.3.1.5.2. Because of the existing differences between access and core networks (differences in the lengths of cables and in their capacities), per km trenching cost may differ, even for the same type of terrain.

5.3.1.5.3. The Costing Model shall identify trenching costs for different terrain types, within each of the main increments. The model documentation shall explain the rationale for differences in these costs in different parts of the network.

5.3.2. Core Network

5.3.2.1. Switching equipment

5.3.2.1.1. Switching equipment comprises concentrators, local exchanges, tandem exchanges and ATM/IP switches for data traffic. The valuation shall identify separately the cost of each of these items, distinguishing, where appropriate, between the values of different makes of switches.

5.3.2.1.2. In order to determine the cost of switching equipment, the Operator shall consider the optimisation requirements, expressed at par. 6 and the current cost valuation principles, expressed at par. 5.2.

5.3.2.1.3. There are two cost drivers at the switching equipment level:

- a). call duration (e.g. exchange ports)
- b). call attempts (e.g. processing capacity).

The costs with ports and with processing capacity shall be quantified distinctively by the Operator.

5.3.2.1.4. A significant part of switching equipment costs consists of software. Since software applications are regularly updated and optimised, this suggests that it may be appropriate to value them at current costs and to derive separate asset lifetimes and separate cost-volume relationships for software and hardware. In case of several repetitive software upgrades, only the cost of the last upgrade shall be accounted for.

5.3.2.1.5. The Operator shall provide information regarding the lifetimes used for the switching equipment and, where appropriate, justify applying the same asset lifetime to hardware and software.

5.3.2.2. Transmission equipment

5.3.2.2.1. Transmission equipment comprises multiplexers, regenerators and cross-connects.

5.3.2.2.2. The Costing Model shall disclose the values for each of these classes of equipment separately.

5.3.2.2.3. The Costing Model shall use SDH equipments as the MEA for PDH equipments.

5.3.2.2.4. The documentation of the Costing Model shall justify the number and structure of cross-connects attributed to PSTN and to leased lines.

5.3.2.3. Optical fibre

5.3.2.3.1. The documentation of the Costing Model shall provide:

- a). the relevant costs inclusive of installation costs of different size cables;
- b). data showing the past and the expected evolution of demand for optical fibre on ranges of routes.

5.3.2.3.2. The Operator shall justify current installation practices for optical fibre in the core network. If no justification can be provided for excess optical fibre, it shall have no valuation within the Costing Model.

5.3.2.4. Trenching Costs

The principles stated at par. 5.3.1.5. shall be applied to the trenching costs associated with the core network.

5.3.3. Indirect Network Costs

5.3.3.1. Land and buildings

5.3.3.1.1. Land and buildings valuation shall use the market values determined by an independent authorized evaluator, as an exception to the current cost principle expressed at par.5.2.

5.3.3.1.2. Land and buildings shall be classified, by destination, into two classes:

- a). specialized land and buildings, used only for telecommunication specific activities
- b). general-purpose land and buildings

5.3.3.1.3. The Costing Model shall use market values to value the general-purpose land and buildings.

5.3.3.1.4. The market values may need to be adjusted for specialized land and buildings, in order to include in the Costing Model solely the costs of the spaces needed for an efficient activity. No value shall be attached to vacant space, except where it can be shown that it is economically rational to maintain this vacant space. Also, the costs

of the collocation spaces shall not be included in the Costing Model because they belong to increments excluded from the Costing Model, being recovered through direct billing of the interconnected operators.

5.3.3.1.5. Valuation of the specialized land and buildings shall consider the specific costs for improvements made for assuring the functioning and operating conditions of the network equipments, costs for which market values make no allowance.

5.3.3.2. Power equipment and air conditioning

Power and air conditioning equipments shall be valued on distinct categories at their absolute value (current un-indexed value for each equipment type, multiplied by the number of equipments).

5.3.3.3. Indirect interconnection costs

Interconnection specific costs may include the costs of an interconnection billing system and capitalised planning costs. These costs shall be included in the Costing Model solely when their level and appearance are justified from the efficiency perspective. Documentation shall be provided for the sources and drivers of interconnection specific costs, as well as evidence that these have been efficiently incurred.

5.3.3.4. Other fixed assets generating indirect costs

This category includes motor vehicles, computers and office equipments. For valuation, these assets shall be sub-divided into reasonable homogeneous classes, within the Costing Model, so that the valuation of the entire homogeneous class can be possible.

5.3.4. The Operator shall realize detailed calculations in order to justify the value of own-works capitalised in the assets values.

5.4. Annualisation Methodologies

5.4.1. Annualisation Criteria

5.4.1.1. Annualisation charges are calculated as the sum of the annual cost of capital and depreciation.

5.4.1.2. Annual cost of capital is calculated as the mean capital employed in the equipment across the financial exercise multiplied by the weighted average cost of capital. The mean capital employed in the equipment across the financial exercise is calculated as the arithmetic average between the gross values of the fixed asset from the beginning and the end of the financial exercise.

5.4.1.3. The following principles shall be observed when choosing an appropriate method for deriving annualisation costs:

- a) Accuracy - An accurate annualisation charge shall have a depreciation profile which (accurately) reflects the expected levels and forecasted changes in replacement cost, operating costs, output levels and asset productivity.
- b) Consistency - Consistency requires that annualisation charges shall be set in such a way that there are no arbitrage opportunities available for purchasing assets at certain stages of their lives. For example, where the output produced by a certain asset is constant, consistency requires that the sum of the annualisation charges and operating costs of an asset purchased in Year N will be the same in Year N+1 as if the asset had been purchased in Year N+1.
- c) Tractability - Tractability means that there is sufficient information for the Operator to apply the chosen approach.

5.4.2. Economic Depreciation

5.4.2.1. Theoretically, economic depreciation is the optimal annualisation method which observes the accuracy and consistency principles. The disadvantage of this method consists in the lack of information needed in order to apply this method. In consequence, for practical reasons, several alternative methods for deriving annualisation costs can be used (linear depreciation, accelerated depreciation, regressive depreciation, and annuity method).

5.4.2.2. Economic depreciation can be calculated as the estimated NPV of cash flows at the end of a given year less the estimated NPV of cash flows at the start of the year.

5.4.2.3. The net present value depends on a variety of factors, such as: current and future output demand, the asset's output, operating costs, the asset's life and the cost of capital. The depreciation profile will depend on how the factors determining an asset's value are expected to change over time.

5.4.2.4. Within the Costing Model, the Operator shall use either economic depreciation or an alternative method, depending on which best approximates indicative estimates of economic depreciation.

5.4.2.5. The Operator shall keep a distinct recording for fully depreciated assets in use, according to its' statutory accounting, which will contain all the information necessary for the identification and calculation of the extent of these assets by asset class and vintage.

5.5. Cost of Capital

Within the Costing Model, the cost of capital shall be determined based on the methodology stated in Regulation for Accounting Separation. The documentation of the Costing Model shall contain a detailed description of the methodology for the calculation of the cost of capital, inclusive the presentation of assumptions and parameters underlying the calculation.

6. Network Structure and Optimisation

Developing the Costing Model implies deciding upon major strategic options regarding the technology to be used and the network architecture. The forward-looking character of the model implies the use of optimum technological solutions, which ensures maximum efficiency of Operator's activities. The Costing Model shall use the scorched node approach, realising network optimisation while keeping the existing nodes.

6.1. The Costing Model shall include the costs associated with the existent mix of technologies. These costs shall be adjusted in order to reflect the costs generated by efficient technological solutions, appropriate to the real conditions of the Operator's activities and in accordance with long term development strategy adopted by the Operator.

6.2. From the efficiency point of view, the analysis of the technologies used shall be separately realized on three categories:

- a). switching technologies
- b). transport technologies
- c). access technologies.

6.3. The Costing Model documentation shall detail all the adjustments in order to eliminate the structural inefficiencies and shall present the effects of these adjustments. These adjustments may consist of:

- a). full digitalisation of the network, by eliminating the analogue switches, in compliance with the strategic decisions for future development of the network;
- b). eliminate the excess capacity as compared to the actual and forecast level of demand, taking into account the objective conditions which may lead to excess capacity (modularity, quality and security of services, growth requirements, etc.);
- c). any other measures taken in order to eliminate the effects of structural inefficiencies of the Operator.

6.4. The Operator shall identify the level of usage for switches, transmission and signalling equipments, justifying the efficiency with which these are used. The Costing Model shall be flexible enough to allow adjustments in the network structure, caused by inefficient levels of usage.

7. Treatment of Operating Expenses

7.1. The Costing Model shall examine operating expenses at a sufficiently disaggregated level, to ensure that they are assigned to the correct increment. Only expenses caused by the Operators' wholesale activities associated with the Access and Core Increments shall be directly assigned to the increments. If an expense category is commonly related to both wholesale services and retail services, all these services being included in the same increment, and if there are no means for objective allocation, then this expense category shall be attributed to direct costs by way of a mark-up.

7.2. Operating expenses for activities associated with the Access or Core increments include acquisition, installation, maintenance and operation of equipments and of the network. Operating expenses comprise the following categories: transport,

accommodation, finance, research and development, computing, human resources, general management and indirect interconnection costs.

7.3. The Costing Model shall use the information regarding the operating expenses from the statutory accounts of the Operator. The information shall be adjusted in order to exclude the costs generated by the inefficiency of the Operator's activity. Reasons for inefficient operating expenses are:

a). use of assets which cause higher operating expenses than those caused by using Modern Equivalent Assets;

b). existence of inefficient operational processes and procedures;

c). existence of other excessive expenses (labour, materials, services etc.), even given efficient technologies and processes.

7.4. The current costs assets valuation (using replacement costs) excludes the inefficient operating costs mentioned at par 7.3. (a), based on the procedures stated at par. 5.2. The Operator shall identify and exclude the effects of inefficiency mentioned at par. 7.3. (b) and (c), by using international benchmark or by developing theoretical cost models which value the efficient level of operating expenses. The model documentation shall provide supporting information regarding the level of operating costs and evidence that the operating costs are based on efficient operating practices and technologies, underlying the nature and level of each adjustment of operating costs realised in order to exclude the expenses driven by the Operators' inefficiency.

8. Costs Allocation Process

The allocation methodology for operating expenses within the Costing Model shall be the same as the allocation methodology used for accounting separation. Therefore, the methodology for allocation of the cost categories to services shall be realised in compliance with the allocation principles stated in regulation for Accounting Separation and will be consistent from a cost category to another.

The allocation process assumes both deriving cost drivers for each homogenous cost category as well as elaborating the routing tables for identifying the relationships between costs of network elements and costs of services.

The documentation of the Costing Model shall present the detailed methodology for the allocation of costs of activities to products and/or services, including cost drivers and how cost drivers relate to operating expenses for each activity.

8.1. Deriving cost drivers and measuring volumes

8.1.1. Within the allocation process, indirectly attributable costs shall be apportioned to network elements using cost drivers. The Costing Model shall determine the extent in which increments, services and network elements generate a specific category of operating expenses. In this way, homogenous cost categories are allocated to increments, services or network elements depending on the volume of associated cost driver.

8.1.2. The volumes of the cost drivers for the main categories of fixed assets within the modelled increments shall be determined as follows:

- a). Trenching and ducts** - the volume of trenching and duct can be measured in kilometres with separate measures required according to whether duct is in the Access or Core or in the other increments;
- b). Copper and fibre cable** – where cable is in the access network, the Costing Model shall use as relevant volume measures subscriber lines, and where cable is in the core network, traffic shall be used as relevant volume measure;
- c). Local exchanges** – the Costing Model shall use separate volume measures, and therefore separate cost-volume relationships, for concentrators, ports and processors, and if necessary for each equipment manufacturer. Also, when some of these components present several cost drivers, the Operator shall determine different cost-volume relationships in correspondence with each cost driver. In addition, where software and hardware lifetimes differ significantly, separate cost-volume relationships are required for each of these;
- d). Tandem exchanges** - the method used for deriving the volumes for single and double tandem exchanges is the same as for local exchanges;
- e). Transmission Equipment** - while a single volume measure can be derived for all transmission equipment, problems arise in measuring the respective volume usage by different services and increments (PSTN, leased lines and other services). In order to measure respective volume usage of PSTN and leased lines, PSTN minutes will be converted into Mbit equivalents. Further adjustments are required to take account of differentials in the intensity of usage.

8.2. Elaborating routing tables

8.2.1. The routing tables identify the relationships between the costs of network elements and the costs of services. The routing factors identify the usage of network components by services provided by the Operator through the core network, identifying the average frequency with which services use different network elements within standard routing patterns, as well as the average probability for the use of these standard routing patterns.

8.2.2. The Costing Model shall identify, for each service, routing factors or, in their absence, a consistent alternative measure of how each service uses the core network.

8.2.3. The Costing Model shall contain routing tables at least for the following network components:

- a) concentrators;
- b) processors within local exchanges;
- c) transit exchanges;
- d) national/international exchanges;
- e) transmission links between concentrators and local exchanges;
- f) transmission links between local exchanges;
- g) transmission links between local exchanges and transit exchanges;
- h) transmission links between transit exchanges;
- i) transmission links between transit exchanges and national/international exchanges;
- j) signalling equipment.

9. Deriving the incremental cost of modelled services

Incremental costs are derived by adding or excluding an increment of services and through identifying the effect on homogenous cost categories, using cost-volume relationships.

Incremental costs shall be calculated for each of the homogenous cost categories separately. In each case, it is necessary to measure the volume of the cost driver associated with an increment for that particular cost category and on the basis of the estimated CVRs, the reduction in cost if that increment were no longer provided or the increase in cost if that increment were provided in surplus will be derived.

9.1. Cost - volume relationships

9.1.1. Cost-volume relationships represent the base for the estimation of the incremental cost. Cost-volume relationships are derived on the basis of the level of usage and show the way in which costs change in relation to a change in volumes of the cost drivers. The Costing Model shall estimate cost-volume relationships for each cost category.

9.1.2. In order to estimate cost-volume relationships, the Operator can develop engineering models, consult with experts or use regression analysis. The appropriate approach depends primarily on the types of costs being examined.

9.1.3. The model documentation shall explain how the cost-volume relationship was calculated for each cost category, including a description of how CVRs have been derived, their shape, and their cost driver. When the Operator uses other data than those from his own accounts in order to estimate CVRs, the model documentation shall provide consolidated statements of these data as well as indication of the sources of these data.

9.1.4. Where a class of assets has multiple cost drivers, separate cost-volume relationships shall be developed for each of the cost drivers.

9.2. Assigning costs to services

9.2.1. Having determined the incremental cost, the next step is to calculate the costs of each of the services within an increment. The costs of these services are determined by complete allocation of the costs of the increment between the services that are included in that increment. In this way, the total costs assigned to various services within the increment shall correspond with the total cost of that increment.

9.2.2. For shared costs, such as trenching costs, the allocation through identifying the cost volume generated by each service is no longer possible. In this case, the Costing Model shall use some other weighting factor (such as Mbit/s).

10. General Costing Issues

10.1. Treatment of common costs

In order to derive the fully allocated costs of services¹, a mark-up for common costs shall be added to incremental costs, using Equi-Proportionate Mark-Up method (EPMU). The use of an alternative method shall be justified and explained in the model documentation. The model documentation shall present as well the calculation procedure and the way in which the mark-up is applied to incremental costs.

10.2. Relevant costs

The Costing Model shall include only relevant costs. Relevant costs include those cost categories incurred by a hypothetically efficient new entrant operator. Exceptional and extraordinary items shall not be considered relevant costs, and therefore shall not be accounted for within the Costing Model.

11. Costing Model Functionality

11.1. Transparency

11.1.1. The Costing Model shall meet the following conditions:

- a) shall indicate how it is related and how can be reconciled with other accounting models developed by the Operator, with the separated financial statements realised in compliance with the Regulation for Accounting Separation and with the primary accounting documents;
- b) the model documentation shall provide indications regarding the information sources (both internal and external sources) and the ways in which these information have been collected and used within the model;
- c) shall allow identification of the assumptions and variables used in order to obtain growth rates, routing factors, volumes, asset lives, utilization rates, replacement costs, etc.

11.1.2. In order to review the Costing Model, the Operator shall ensure the availability of information regarding the costs associated with increments and components at the disaggregation level of homogenous cost category. The Operator shall disclose, upon request from ANRC, supplementary information regarding each cost category at the disaggregation level of primary accounting data.

11.1.3. The Costing Model shall identify those costs which can be directly attributed to services. Shared costs shall be allocated to different services at the most disaggregated possible level (homogenous cost category level is the most disaggregated level). Allocation keys used within this process shall be clearly identifiable.

11.2. Major outputs in the Costing Model

¹ These costs are also referred to as “LRIC+ costs”. In practice, these costs should be equivalent to those costs derived within the fully allocated costs (FAC) model at current costs, to which efficiency adjustments have been made.

11.2.1. The model documentation shall describe the method used to determine the costs of increments and the costs of associated services. The Costing Model shall disclose the cost of services provided on markets on which the Operator has been designated as having significant market power (based on the Decision of ANRC President) and for which the obligation for cost orientation has been imposed. The Costing Model shall identify the costs of the Operator's services associated with the core and access networks.

11.2.2. Within the core network, the Costing Model will need to show the costs for each network element, as well as the cost per call minute for each service associated with the modelled increments.

11.2.3. The Costing Model shall present the costs of the access network on a per subscriber basis.

11.2.4. The Costing Model shall show the costs of one-off services such as the cost of installing interconnection points and the one off-costs associated with the provision of interconnection links.

11.2.5. The Costing Model shall present, within the cost structures, the proportion of costs that are shared with other services within the increments as well as the proportion of common costs.

12. Final provisions

12.1. The Operator shall submit to ANRC until 31 March 2004 the documentation of the Costing Model, which will contain at least the specifications requested by the present regulation.

12.2. Until 30 June 2004, the Operator shall develop and implement the Costing Model in a manner which will allow the calculation of the tariffs included in the Reference Interconnection Offer and the reconciliation with a bottom-up model.

12.3. Failure to comply with the deadline stipulated at p.12.2, the tariffs for the services provided by the Operator on the electronic communications markets on which it has been designated, though ANRC President Decision, as having significant power, being imposed cost orientation of tariffs, shall be calculated on the basis of the bottom-up model results, developed by ANRC. The so-determined tariffs shall be revised, as the case may be, following the conclusion of the reconciliation process between the bottom-up model and the Costing Model.