



CYPRUS TELECOMMUNICATIONS AUTHORITY (CYTA)

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B. LRAIC AND ACCOUNTING SEPARATION

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B1. CONCEPTUAL FRAMEWORK

FOR THE
«LRAIC AND ACCOUNTING SEPARATION»

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I. INTRODUCTION

This document addresses the key conceptual and practical issues surrounding the definition and specification of the Long Run Average Incremental Costing (LRAIC) framework and the underlying Current Cost Accounting (CCA) revaluation of the assets. It also addresses the assumptions used for accounting separation.

II. DEFINING THE BOUNDARIES FOR THE LRAIC CALCULATION

1. METHODOLOGY

There are two alternative approaches to the calculation of LRAIC:

- Bottom-up approach: incremental costs are calculated based on an engineering model which estimates the costs of a modern equivalent network and the allocation of the associated costs; and
- Top-down approach: incremental costs are calculated based on the actual costs of the operator expressed in current cost terms, and adjusted to remove costs not incremental to the relevant services.

There are advantages and disadvantages with each approach as shown below:

Approach	Advantages	Disadvantages
Top-down	<ul style="list-style-type: none"> • Based on actual costs • Reconcilable • Articulated • Reflects real complexity/uncertainty 	<ul style="list-style-type: none"> • Usually requires confidential information
Bottom-up	<ul style="list-style-type: none"> • No/few confidentiality issues • Perfect efficiency • Transparency 	<ul style="list-style-type: none"> • May underestimate and/or omit costs • Poor modelling of opex • Danger of over optimisation

Most notably, the bottom-up approach tends to underestimate the actual costs associated with operating and maintaining the network since indirect costs are often not captured. CYTA has elected to use the top-down approach for calculating LRAIC – this approach is consistent with that adopted by operators in all EU member states. This document sets out the conceptual framework relating to the calculation of LRAIC using a top-down approach.

Forward looking costs

If LRAIC is to provide efficient price signals to the market then the result must reflect the forward looking (current costs) of building and operating a modern network. Therefore, the top-down approach to LRAIC should be based on forward looking activity and current cost accounting (CCA) standards.

Forward looking costs reflect the costs which will be incurred in the future to meet future objectives and, as such, some judgement is necessary in estimating forward looking costs. Historic costs were recorded in the past and were related to meeting historic objectives. They are

known with certainty and are typically used for financial reporting. The table below compares the uses and attributes of historic and forward looking costs.

	Historic costs	Forward looking costs
Uses	Financial reporting Assessment of past behaviour Proxy basis for future decisions	Basis for calculating LRAIC Basis for future decisions Relevant costs for a new entrant
Positives	Relatively simple Easy to produce Transparent and reconcilable Datum for accounting profit	Supports economically efficient decisions Provides absolute price floors and ceilings Establishes target costs
Negatives	Embeds economically inefficient allocation of resources Mis-states real profit	Outputs sensitive to specific chosen methodology Complex and lacks transparency / reconcilability May give volatile movements in profit over time

Forward looking costs might be expected to differ from historic costs as a result of technological change, price inflation (general and specific), and the fact that historic costs were incurred to meet past objectives and may have been excessive.

The key conceptual issues relating to current cost accounting with respect to LRAIC are set out in more detail later in this document. The CCA methodology adopted might be expected to have a material impact on the results of LRAIC and, as such, this will be an important area for CYTA.

The ‘Long Run’

The crucial issue in relation to the distinction between ‘short run’ and ‘long run’ is the variability of inputs. In the short run, many input factors have to be kept constant as it would be impractical to make instant changes (eg, network components, employees, etc.). In the long run, however, a number of these input factors can be considered as variable (such as number of employees, capital charges etc.).

The suitable duration period for ‘long run’ depends on the context of the decision under consideration. In the context of LRAIC based interconnect prices, a suitable time frame might be

in the region of 3 to 5 years¹. This allows “forward-looking” adjustments to be made to the asset base and operations, while constraining the modelling process to those changes which could reasonably be made by an efficient telecoms operator over this time frame. The 3-5 year assumption is in practice adopted widely across the EU for top-down LRAIC modelling, and has been adopted in the CYTA LRAIC model.

2. DEFINITION OF STAND-ALONE NETWORK (SAN)

The stand-alone cost of a service is defined as the cost of producing that service independently from any other outputs. So the SAC of an increment for CYTA would be the total cost of all CYTA’s products and services, less the LRAIC of all other increments taken together.

So in order to define the increments which will be used for the purpose of calculating incremental costs it is first necessary to define the stand-alone network. This is the starting point for the calculation of LRAIC, which is calculated on an avoided cost basis by removing increments from the SAN.

The principles followed in our choice of stand-alone network are that it should focus on the services relevant to inland call conveyance and termination, and exclude additional services which are not relevant, or which may over-complicate the system and reduce its transparency.

The current project is addressing two distinct areas: fixed interconnection and mobile interconnection. As such, we define two separate stand-alone networks, one for fixed and one for mobile.

We define the fixed stand-alone network for CYTA as the inland PSTN services and inland leased line services which are provided over the Core and Access network. As it is a requirement to produce LRAIC costs for some operator-assisted services, the network needed to provide these services is also included (see later section for the list of services). The stand-alone network excludes all other services provided by CYTA such as retail activities, value added services (VAS) international and data services excluding those provided over PSTN (e.g. fax, ISDN). These excluded services are referred to as ‘the rest’.

This approach has been used in many EU member states, including the UK, Ireland and Greece.

We define the mobile stand-alone network for CYTA as the GSM voice network needed to deliver national mobile voice and SMS services, both post and pre-paid. We exclude other services such as international, GPRS, 3G and retail activities. Again, these excluded services are referred to as ‘the rest’.

3. DEFINITION OF INCREMENTS

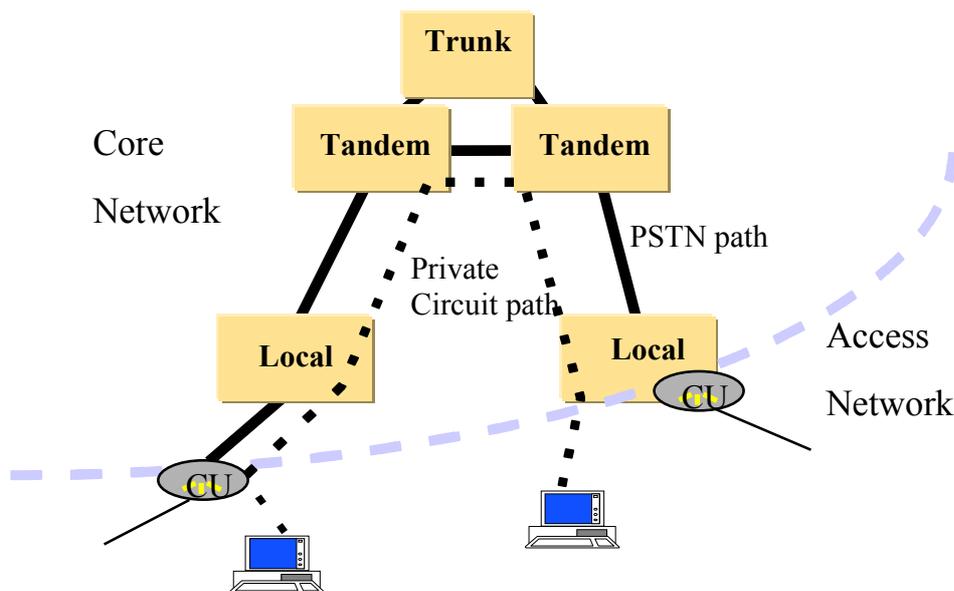
The increment is the set of products or services over which the costs are being measured.

Both the mobile and fixed stand-alone networks will be sub-divided into increments for the purposes of calculating LRAIC. The specification of the required increments is one of the key areas in defining a framework within which to calculate Long-Run Incremental Costs.

¹ The BT methodology assumes 3 years

Fixed network

We define the main increments within the fixed SAN as the Core network and the Access network. The Core network comprises all the traffic sensitive elements of the inland PSTN and the inter-exchange segments of those inland leased lines included within the SAN. The Access network is defined as the local loop, the non-traffic sensitive elements of the local exchange or RSU, and customer-ends of inland leased lines. The figure below provides a simplified illustration of the split between Core and Access.



Mobile network

It is considered inappropriate to model coverage costs as a separate increment from traffic – related costs. It should also be noted that the business-line definitions specified by the Cyprus legislation for accounting separation suggest that, for consistency, the increment for mobile should be based on the entire network, without a separately defined coverage increment. Therefore, the mobile network is modeled as a single increment, comprising all the traffic, subscriber and coverage-related network elements needed to deliver the mobile voice services.

4. DEFINITION OF SERVICES

Basic services

- Fixed Termination – Single Transit
- Fixed Termination – Double Transit
- Mobile Termination
- Voice Mail Termination
- Fixed Transit
- Interconnection Links
- Fixed Carrier Selection / Preselection
- Mobile Carrier Selection / Preselection

III. KEY ASSUMPTIONS RELATING TO CURRENT COST ACCOUNTING

1. CHOICE OF CAPITAL MAINTENANCE CONCEPT

There are two concepts for treating capital maintenance in the context of current cost accounting. Operating capital maintenance (OCM) and Financial capital maintenance (FCM).

Under the OCM concept, profit is determined after charging the current cost of maintaining the operating assets of the company. This requires adjustments to be made to the historical cost operating profit, in the areas of fixed assets and inventory. Under OCM, price changes due to revaluation of the assets are capital adjustments, and are therefore shown as movements in the current cost reserve, not as changes in the profit & loss account.

The FCM concept measures whether a company's shareholder funds have been maintained in real terms, and profit is assessed using the following method:

- Shareholder's funds are calculated at the beginning of the year based on current cost asset values.
- These amounts are restated at the reporting date (end of year) by adjusting the values by a general index of price changes.
- This value is then compared with the shareholders' funds at the reporting date based on current cost asset values. If shareholders' funds are greater, then a real-terms profit has been made.

The main difference compared with OCM is that changes in the current cost of assets is reflected in the profit and loss account.

It should be noted that the EU have recommended that current costs calculated for the purpose of determining forward-looking interconnection prices should be derived via the FCM method. We will therefore adopt this method for the current project.

2. CALCULATION OF NET REPLACEMENT COST – CHOICE OF DEPRECIATION METHOD

It is important that the accounting treatment in the profit and loss account should be consistent with that used in the balance sheet. This implies that the depreciation charge in the P&L should be based on the carrying amount of the asset in the balance sheet, whether a historical or current cost amount. Under CCA, therefore, it is necessary to depreciate the revalued asset, and this will give rise to a depreciation adjustment from the historical amount, known as the supplementary depreciation.

A consequence of this approach is that the total CCA depreciation over the life of the asset, formed from the sum of supplementary and historic depreciation, will not equal the replacement cost of the asset at the end of its life. A further adjustment is therefore needed, known as the backlog depreciation. Under FCM, backlog depreciation also forms a charge on the P&L account.

The asset lives to be used in the CCA revaluation will, be consistent with those presently used in the historical accounts, and the depreciation method used (eg, straight line) will also be consistent.

There are two methods by which CCA depreciation may be calculated:

- Ratio method – the NRC is derived using the formula:

$$\text{NRC} = \text{GRC} \times \text{NBV} / \text{GBV}$$

This method is simple to implement, and works effectively providing that the levels of recent additions are relatively low, and volumes of the asset are stable.

- Roll-forward method – the depreciation charge is calculated according to the formula:

$$\text{CCA depreciation} = (\text{GRC}_{\text{open}} + \text{GRC}_{\text{close}}) / (\text{GBV}_{\text{open}} + \text{GBV}_{\text{close}}) \times \text{historic depreciation}$$

This method is more widely applicable, including where there are high levels of additions. It is however more complicated to calculate.

During Phase 2 we will identify which of these two calculation methods to apply to which asset class.

3. VALUATION METHOD

Three different methods will be used in the revaluation of the assets:

- **Historic cost** – can be used as a proxy for the current cost of an asset where it is unlikely that this would give a materially different result, typically where the asset is of low value or of short life, and for additions during the year.
- **Indexation** – is appropriate for assets where there has been little technological change, and the capitalised costs would have to be incurred again if the asset were to be replaced. The indices to be used will, where possible, be asset-specific, and based on real prices paid by CYTA. Where a suitable specific index is not available, then a more general index may be used as a proxy.
- **Absolute valuation** – involves using physical quantities of assets and their current unit prices. This method typically needs good information on quantities. This method is used where there has been significant technological change, and a modern equivalent asset (MEA) is used as the basis for the valuation.

During Phase 2 of this project, we will identify the most appropriate of the above methods to use, considering the technological change, financial and engineering data available in each case.

IV. ASSUMPTIONS TO BE CONSIDERED

1. NETWORK RELATED ASSUMPTIONS

1.1 Network topology

The current network structure of CYTA reflects the historical pattern of network development and, as such, may not reflect the optimal network architecture if the network were to be designed from scratch given current market needs and modern technology. As LRAIC involves calculating the avoidable costs of removing incremental volumes from the stand-alone network, it is necessary to consider how the design of the network might be affected if the network had to support lower volumes.

There are two broad approaches:

- The scorched node assumption assumes the current network structure (in terms of the number and location of nodes) is maintained, even with lower traffic levels.
- The scorched earth assumption assumes that the whole network could be redesigned from scratch with the optimal number and location of nodes required to deliver the lower volumes.

We will adopt the scorched node approach for the LRAIC calculations for the following reasons:

- The scorched node assumption has been used in top-down and bottom-up modelling by other operators and regulators, including BT and Ofcom in the UK.
- Assuming a different network architecture is extremely complex and introduces considerable arbitrariness.
- Estimation of the correct level of indirect costs under the scorched earth assumption is complex and can lead to inaccuracies.

2. COST RELATED ASSUMPTIONS

2.1 Increment specific fixed costs (ISFC)

Increment specific fixed costs are defined as the fixed costs associated with the production of an ‘increment’, and which are not shared between any other increments. As such, these costs are avoided if the increment is no longer produced. As a result, ISFC must be included within the LRAIC calculation.

2.2 Recovery of fixed common and joint costs (FCJC)

While LRAIC includes all direct variable and increment specific fixed costs, there may also be some fixed common and joint costs associated with the production of the increment which are not accounted for within the LRAIC calculation itself. Fixed common costs and joint costs are defined as follows:

Fixed common costs (FCC) are the fixed costs associated with the production of two or more services, which cannot be avoided unless production of all services to which they are common is stopped. Fixed common costs are fixed with respect to volume.

Joint costs (JC) are costs associated with the production of two or more separable outputs in fixed proportions irrespective of volume. Joint costs are variable with respect to volume.

In order to allow the incumbent operator to recover all costs involved in the provision of a service, the FCJC may be allocated between services in relation to their respective LRAIC (including increment specific fixed costs)². This is known as the “markup”, and is divided between services on the basis of their already allocated cost.

² This concept of equal mark-ups has been adopted by a number of regulatory authorities, including Ofcom in the UK.

V. FRAMEWORK FOR ACCOUNTING SEPARATION

1. ACCOUNTING SEPARATED FINANCIAL STATEMENTS

INTRODUCTION AND LEGAL FRAMEWORK

Accounting separation refers to the preparation of separate ‘sets of financial statements’ for different business lines, and its objective is to provide transparency over the interaction and transactions between those lines.

The requirement to prepare accounting separated financial statement stems from the European and Cyprus regulations, imposed on telecommunication organizations with Significant Market Power (SMP).

The liberalization of telecommunication services has been effected as from 1 January 2003. The Telecommunications Regulator exercising the authority granted by Law (19(I) of 2002) has issued a set of regulations (657-9/2002) which among other matters they deal with the issue of Accounting Separation (AS).

More specifically in Part III of regulations ΚΔΠ 658/2002 (issued on 31/12/2002), the regulator sets in detail the requirements for the implementation of AS, which outline:

- Definition of business lines
- Content of AS financial statements
- Basis of preparation
- Additional disclosure requirements

The implementation of AS is obligatory for ‘Required providers’. The Required providers are identified separately for the Fixed and Mobile networks. CYTA has been defined as a Required provider for both networks.

2. DEFINITION OF BUSINESS LINES

CYTA will adhere to the definition of business lines as per the regulations, for both the fixed and the mobile networks, as follows:

2.1 FIXED NETWORK

The fixed network is segregated into four business lines:

- *Core Network*

Providing Internal and external interconnection, transit services through the network backbone

- *Access Network*

Providing and supporting access to the core network through the local loop and / or other medium

- **Retail**

Covering the activities relating to the provision, to the end users, of fixed telephony services, leased lines, catalogue services etc. The regulations explicitly state that additional separation may be requested for any further breakdown in the AS of services that are subject to regulation. For the time being no such – categorization of the Retail activity have been defined.

- **Other**

All other services including: selling and repairing terminal equipment and non-telecommunication related activities.

2.2 MOBILE NETWORK

The Required provider for the mobile network should report separately on the following business lines:

- **Network**

Providing termination, transit and other services through the network.

- **Retail**

Includes the activities relating to the provision, to the end users of mobile telephony services.

- **Other**

All other services.

3. IMPLEMENTING THE ACCOUNTING SEPARATION

For the implementation of the AS, the information inputted in and extracted from the costing model will be used.

3.1 FULLY ALLOCATED COST

The main core of the AS Model will be the *Fully Allocated Cost Model*.

3.2 LABELING

All elements (network elements, cost items, products, services etc) must be labelled relative to the business line to which they belong (NETWORK-ACCESS-RETAIL-OTHER).

3.3 CAUSALITY

The principle of causality is of prime concern in the allocation of costs and capital employed.