

II

(Acts whose publication is not obligatory)

COMMISSION

COMMISSION RECOMMENDATION

of 8 April 1998

on interconnection in a liberalised telecommunications market

(Part 2 — Accounting separation and cost accounting)

(Text with EEA relevance)

(98/322/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 97/33/EC of the European Parliament and of the Council of 30 June 1997 on interconnection in telecommunications with regard to ensuring universal service and interoperability through the application of the principles of open network provision (ONP) ⁽¹⁾, and in particular Article 7(5) thereof,

Whereas Directive 97/33/EC gives national regulatory authorities for telecommunications (NRAs) an important role in securing adequate interconnection of networks, in accordance with Community law, taking into account recommendations laid down by the Commission so as to facilitate the development of a genuine European home market; whereas, in particular, Article 7(5) of Directive 97/33/EC requires the Commission to draw up recommendations on cost accounting systems and accounting separation;

Whereas Article 7(2) of Directive 97/33/EC requires that certain organisations notified by their NRA as having significant market power (hereinafter referred to as 'notified operators') should follow the principles of transparency and cost orientation for interconnection charges;

Whereas Article 8(2) of Directive 97/33/EC requires notified operators to keep separate accounts for, on the one

hand, their activities related to interconnection — covering both interconnection services provided internally and interconnection services provided to others — and, on the other hand, other activities, so as to identify all elements of cost and revenue, with the basis of their calculation and the detailed attribution methods used, related to their interconnection activity, including an itemised breakdown of fixed asset and structural costs;

Whereas the Commission in its recommendation 98/195/EC of 8 January 1998 ⁽²⁾ on interconnection in a liberalised telecommunications market (Part 1 — Interconnection pricing) considers that the most appropriate approach to interconnection pricing is one based on forward-looking long-run average incremental costs, since this is the most compatible with a competitive market; whereas this approach does not preclude the use of justified 'mark-ups' as a means of recovering such forward-looking joint and common costs of an efficient operator as would arise under competitive conditions;

Whereas an approach to interconnection pricing based on forward-looking long-run average incremental costs entails an accounting system based on current costs rather than historic costs; whereas the Commission has recommended Member States (in the recommendation of 8 January 1998) to set deadlines for the implementation by their notified operators of new accounting systems based on activity based costing; whereas although the bottom-up

⁽¹⁾ OJ L 199, 26. 7. 1997, p. 32.

⁽²⁾ OJ L 73, 12. 3. 1998, p. 42.

economic/engineering models are becoming highly sophisticated, they are as yet imperfect, and thus reconciliation of top-down and bottom-up approaches is advised for the foreseeable future;

Whereas Article 7(5) of Directive 97/33/EC requires NRAs to ensure that a description of the cost-accounting system, showing the main categories under which costs are grouped and the rules used for the allocation of costs to interconnection, is made available on request to interested parties; whereas allocation methods need to be displayed at a level of detail that makes clear the relationship between costs and charges of networks components and services (that is to say, usage factors); whereas the basis on which unattributable costs have been allocated between different accounts also needs to be provided; whereas compliance with the cost accounting system has to be verified by the national regulatory authority or some other competent body, independent of the telecommunications organisation and approved by the NRA; whereas a financial statement concerning compliance has to be published annually;

Whereas Articles 12(1) and 13(1) of Directive 95/62/EC of the European Parliament and of the Council of 13 December 1995 on the application of open network provision (ONP) to voice telephony⁽¹⁾ requires tariffs for use of the fixed public telephone network and the voice telephony service to follow the basic principles of cost orientation and transparency, including the implementation by notified operators of a suitable cost accounting system for this purpose; whereas contributions by interconnected-parties to 'access deficit' type schemes are only permissible when tariff constraints are imposed by NRAs on the grounds of affordability and accessibility of telephone service in accordance with Article 12(2) of Directive 95/62/EC; whereas the Commission, in its communication of 27 November 1996 on assessment criteria for national schemes for the costing and financing of universal service in telecommunications and guidelines for the Member States on operation of such schemes⁽²⁾, believes that such schemes should disappear by 1 January 2000;

Whereas Commission Directive 90/388/EEC of 28 June 1990 on competition in the markets for telecommunications services⁽³⁾, as amended by Directive 96/2/EC⁽⁴⁾, requires Member States to ensure effective competition between operators competing in the relevant markets;

whereas, in particular, transparency is required in respect of cost-accounting of operators providing both fixed networks and mobile telecommunication networks;

Whereas Article 2 of Commission Directive 95/51/EC of 18 October 1995 amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalised telecommunications services⁽⁵⁾ requires Member States to ensure accounting transparency and to prevent discriminatory behaviour where an operator having an exclusive right to provide public telecommunications network infrastructure also provides cable TV network infrastructure, and in particular to ensure the separation of financial accounts as concerns the provision of each network and its activity as provider of telecommunication services; whereas under Article 8(1) of Directive 97/33/EC notified operators which have special or exclusive rights for the provision of services in other sectors (cable or satellite TV broadcasting) are required to keep separate accounts of telecommunication activities and the others, to the extent that would be required if the telecommunications activities in question were carried out by legally independent companies or to have structural separation of telecommunication activities and other activities.

Whereas Article 8(3) of Directive 97/33/EC requires organisations providing public telecommunications networks and/or publicly available telecommunication services to supply financial information to their NRA promptly on request and to the level of detail required; whereas NRAs may publish such information as would contribute to an open and competitive market, while taking account of considerations of commercial confidentiality;

Whereas the application of the principles of this recommendation is without prejudice to the duty of the Member States and of undertakings to comply fully with the Community competition rules, taking account of the specific positions set out in the communication from the Commission on the application of the competition rules to access agreements in the telecommunications sector⁽⁶⁾;

Whereas the advisory committee set up by Article 9(1) of Council Directive 90/387/EEC⁽⁷⁾ ('the ONP Committee') has given broad support to the principles contained in this recommendation, and the Commission has taken utmost account of the views expressed,

⁽¹⁾ OJ L 321, 30. 12. 1995, p. 6.

⁽²⁾ COM(96) 608.

⁽³⁾ OJ L 192, 24. 7. 1990, p. 10.

⁽⁴⁾ OJ L 20, 26. 1. 1996, p. 59.

⁽⁵⁾ OJ L 256, 26. 10. 1995, p. 49.

⁽⁶⁾ OJ C 76, 11. 3. 1997, p. 9.

⁽⁷⁾ OJ L 192, 24. 7. 1990, p. 1.

MAKES THE FOLLOWING RECOMMENDATION:

1. This recommendation concerns the implementation of accounting separation and cost accounting systems by operators designated by their NRA as having significant market power (hereinafter referred as 'notified operators') in accordance with Article 8(2) of Directive 97/33/EC for implementation of interconnection obligations, with particular regard to the principles of transparency and cost orientation.

The purpose of accounting separation is to provide an analysis of information derived from the accounting records to reflect as closely as possible the performance of parts of the business as if they had operated as separate businesses.

2. It is recommended that NRAs require from their notified operators the disaggregation of their operating costs, capital employed and revenues, into at least the following broad business lines:

Core network (switched infrastructure)

The core network covers the provision of interconnection services, transit services and carrier's carrier services.

Local access network (local loop infrastructure)

The local access network covers the provision of connections to the telephony network⁽¹⁾.

Retail

The retail business covers the activities mainly related to the commercial provision of fixed telephony services and leased lines to end users. Separate accounts may be prepared for each activity within retail that is subject to regulation (such as leased lines or telephony).

Other activities

'Other activities' covers other activities provided by the notified operator which may include unregulated activities as well as other type of regulated activities. Accounts for regulated and unregulated activities need to be kept separate.

Section 1 of the Annex defines the scope of each business. Transfer charges between businesses are identified in Section 2.

⁽¹⁾ This will include those components of the network which are not traffic sensitive and are dedicated to a particular customer including, for example, the local loops and the line cards and ports located at concentrators and/or exchanges.

Further disaggregated accounts within these broad business lines may be considered appropriate by NRAs, regard being had to transparency and competitive requirements demanded by national or Community law (such as mobile, cable TV or international activities).

3. It is recommended that the allocation of costs, capital employed and revenue be done in accordance with the principle of cost causation (such as activity-based costing (ABC)).

The costing system of the notified operators need to be sufficiently detailed to permit — as far as possible — the allocation of costs to unbundled network components, in particular to determine the cost of unbundled interconnection services.

A well defined cost-allocation system will enable at least 90 % of the costs to be allocated on the basis of direct or indirect cost-causation⁽²⁾.

It is recommended that unattributable costs (the cost which can only be attributed on an arbitrary basis) be clearly identified in a specific account and be the subject of a specific treatment by the NRA (that is, they should be distributed according to the rules determined by each Member State, in accordance with the Community's competition rules and in compliance with the principles of transparency and proportionality).

It is recommended that the NRA undertakes a public consultation with market players on the adoption of sound allocation methods and on the specific treatment to be given to unattributable costs.

Section 3 of the Annex outlines the recommended principles for allocating costs, capital employed and revenues when preparing separate accounts.

Section 4 of the Annex provides guidance on the application of those principles to the calculation of operating costs, including depreciation; Section 5 does the same for the cost of capital and capital employed, and Section 6 on revenues.

4. In the recommendation of 8 January 1998, NRAs were recommended to set deadlines for their notified operators' implementation of new cost accounting systems based on current costs.

⁽²⁾ Directly attributable costs are those costs that can be directly and unambiguously related to a product or service. Indirectly attributable costs are those costs that can be apportioned to products or services on a measured non-arbitrary basis based on the relationship of the costs with directly attributable costs (i.e. using usage factors for each consuming shared resources).

It is recommended that the methodology and criteria for the evaluation of network assets at current value is fixed by the NRA after a public consultation with market players.

Evaluation of network assets at forward-looking or current value of an efficient operator, that is, at the value that would prevail if the market were vigorously competitive, is a key element of the 'current cost accounting' (CCA) methodology. This requires that the depreciation charges included in the operating costs be calculated on the basis of current valuations of equivalent assets, and consequently the reporting on the capital employed also needs to be on a current cost basis.

The Appendix of the Annex provides guidance on modern asset valuation and current cost adjustment methodologies.

5. With regard to the derivation of interconnection pricing, NRAs may require efficiency factors to be applied in recognition of the fact that the use of CCA values for the network may not fully reflect the costs of an efficient operator⁽¹⁾. To this end the 'best practice interconnection charges' as provided in the recommendation of 8 January 1998 constitute a suitable point of reference.
6. It is recommended that operators required to report accounting separation provide a profit and loss statement and balance sheet for each of the separate businesses. Transfer charges or purchases between businesses need to be clearly identified.

The recommended content and formats of the financial regulatory reports to be provided by the notified operators are indicated in Section 7 of the Annex.

For consistency, it is recommended that the financial reports of these separate regulatory accounts be consolidated into a profit and loss statement and a balance sheet for the company as a whole. A reconciliation of the separate regulatory accounts to the statutory accounts of the operator is also suggested.

7. It is recommended that NRAs make relevant accounting information from notified operators available on request to interested parties at a sufficient level of detail to ensure that there has been no undue discrimination between the provision of services internally and those provided externally, and to enable the average costs of unbundled interconnection services to be identified.

In this respect, the publication by the notified operator of sufficiently detailed cost statements showing the average cost of network components will increase transparency and raise confidence on the part of competitors, that there are no anti-competitive cross-subsidies. This is considered to be particularly important for cross-border interconnection services and international activities.

In addition, for those Member States that operate schemes to finance universal service obligations and/or access deficit contributions, it is also recommended that NRAs make available sufficient accounting information from notified operators to ensure that there is no discrimination between charges levied on other operators and those levied (implicitly) internally.

8. These accounting guidelines are concerned with regulatory reporting and they are not intended as a replacement for any statutory financial reporting that may be required in the Member State.
9. This recommendation will be reviewed by the Commission by 31 July 1999 at the latest.
10. This recommendation is addressed to the Member States.

Done at Brussels, 8 April 1998.

For the Commission

Martin BANGEMANN

Member of the Commission

⁽¹⁾ Some of the assets may be in excess of requirements or network architecture may be sub-optimal. Implementation of a bottom-up economic/engineering model will help provide information about these inefficiencies.

ANNEX

GUIDELINES ON IMPLEMENTING ACCOUNTING SEPARATION

1. Accounting separation

1.1. Local access network

Local access network provides connections to the core networks. The accounts for the local access network business will include the costs and capital employed associated with providing and maintaining these connections.

For accounting separation, the local access network business will include all the customer-dedicated components of the network including, for example, the line cards and ports located at concentrators and/or exchanges. The core network business will include all other network components.

Customer line rental will be a service provided by the retail business. The revenue from line rental provided to end users will therefore be recorded against retail. However, line rental revenue from unbundled local loops where these are made available to other market players will need to be assigned to local access network business.

Thus, the cost of providing customer lines will initially be recorded against the local access network business and there will need to be a transfer of costs to retail in order to match revenues with their associated costs. The costs transferred to retail should be net of any possible local access revenue such as line rental revenue from other market players or access deficit contributions (see Section 2.2).

1.2. Core network

The core network business provides a range of wholesale interconnection services internally and externally in order to allow the customer of one operator to communicate with customers of the same or another operator, or to access services provided by another operator. These services include the switching and conveyance of calls. In addition, the core network business may provide other services to operators, such as engineering services related to the development and maintenance of private networks and to the development of competition (e.g. number portability and carrier selection).

The accounts for the core network business will include the costs, revenues and capital employed associated with the provision of these services. The revenues of the core network business will derive principally from the sale of interconnection services to the retail business and to other operators.

If national regulation permits wholesale provision of transmission circuits, the associated revenues should be booked to the core network business.

1.3. Retail

The retail business includes all those activities involving the selling of telephony services to end-users, including line rental, leased lines, calls, payphones and the provision of directory information.

The accounts for the retail business will include the costs, revenues and capital employed associated with the provision of these services to end users. The costs allocated to retail will include transfer charges related to the use of network resources or services provided by local access network and the core network businesses, and the marketing and billing costs associated with the provision of end user services.

NRAs will need to consider the extent to which the retail accounts should be further disaggregated to distinguish between the costs and revenues of individual services taking into account the transparency requirements of national and Community law. Separate accounts should be prepared for each activity within retail that is subject to regulation. It would not, however, be appropriate to require separate accounts to be prepared for activities that are not subject to regulatory control⁽¹⁾.

⁽¹⁾ In principle, the extent to which separate accounts are prepared for individual retail activities may be expected to diminish over time as the provision of services becomes more competitive.

1.4. *Other activities*

Incumbent operators typically provide a wide range of other services including the rental, repair and maintenance of customer equipment. In addition, they may have interests in non-telecommunications activities (e.g. TV broadcasting). For the purposes of accounting separation, the costs, revenues and capital employed associated with these activities will be separately identified.

NRAs may consider that individual accounts should be prepared for some of these additional activities. This may be especially relevant for those incumbent operators that do not operate their mobile activities as separate businesses. It will be up to individual NRAs to specify the extent to which separate accounts for these activities will be prepared taking into account the transparency requirements of national and Community law.

2. **Transfer charges**

This section of the guidelines sets out the principles to be applied by operators in order to take account of the costs of products or services that are used internally.

A system of transfer charges should apply to services and products provided from one business (for example, local access network, core network and retail) to another.

There should be a clear rationale for the transfer charges used and each charge should be supportable. Charges should be non-discriminatory and, as discussed in Section 7, there should be transparency of transfer charges in the separate accounts.

2.1. *Measuring internal usage*

The transfer charges for internal usage should be determined as the product of usage and unit charges. The charge for internal usage should be equivalent to the charge that would be levied if the product or service were sold externally rather than internally.

For accounting separation purposes, it should be assumed that an operator's retail business pays the same interconnection charge for the same service.

2.2. *Access deficit contributions and universal service contributions*

The Interconnection Directive requires charges for interconnection to be separated from charges related to universal service, including any charges imposed as a result of operators being prevented by NRAs from rebalancing tariffs (i.e. access deficit contributions or ADCs). The Commission has indicated that tariff rebalancing should be completed by 1 January 2000 except in those Member States which have been granted an additional implementation period in accordance with the Full Competition Directive⁽¹⁾.

In those Member States that operate access deficit schemes, ADCs should be assigned to the local access network business. ADCs would be recovered from other operators and from the retail business. There should be no discrimination between ADCs charged to retail and ADCs charged to other operators.

In those Member States that operate schemes to finance universal service obligations, any contributions — both by other operators and internally — should be separately identified in the accounts. As with ADCs, there should be no discrimination between universal service contributions charged to other operators and contributions charged internally.

3. **Principles of cost allocation**

This section sets out the principles that should be followed in order to allocate costs, capital employed and revenues for the purposes of preparing separate accounts. The application of these principles to operating costs, capital employed and revenues is considered in more detail in Sections 4, 5 and 6 respectively.

⁽¹⁾ *Source:* Communication from the Commission on assessment criteria for national schemes for the costing of universal service in telecommunications and guidelines for the Member States on operation of such schemes, COM(96) 608 final, Brussels, 11 November 1996.

These principles may also be relevant to the determination of interconnection charges for unbundled interconnection services, for which purposes the costing systems of operators will need to be sufficiently detailed to permit — as far as possible — the allocation of costs to unbundled network components. There are, however, a number of additional factors — such as the relevance of costs — that may need to be taken into account when determining charges for specific interconnection services⁽¹⁾. These issues are outside the scope of these guidelines.

3.1. Principles

Accounting separation should be based on the principle of causation: that is, costs⁽²⁾ and revenues should be allocated to those services or products that cause those costs or revenues to arise. This requires the implementation of appropriate and detailed cost allocation methodologies. In practice, this requires that operators:

- review each item of cost, capital employed and revenue,
- establish the driver that caused each item to arise, and
- use the driver to allocate each item to individual businesses.

All allocations may be subject to review by NRAs.

Each item of cost and revenue must be allocated to the products and services provided by operators. In the case of revenue, it is anticipated that most, if not all, revenues can be allocated directly to those products or services to which they are related. This is not the case for costs, however, because a relatively high proportion of the costs of operators is shared between different products and services.

3.2. The methodology for the cost allocation process

Figure 1 illustrates a typical cost allocation process. It should be noted that actual allocation processes may vary depending on the entity's organisational structure and the way(s) in which financial/operating data are captured, and will be considerably more complex and involved than Figure 1 implies. It is important to note, however, that the ultimate aim of allocating costs is the same.

The process starts from information and data captured by the general ledger or other costing or financial systems operated by the company. The costing information held by these systems may be divided between operating costs, capital costs and accounting entries such as depreciation.

Costs may be attributed either directly to services or to cost pools called network components, related functions or other functions. These are defined as follows:

Services

These are the costs that can be directly identified with particular service. For these purposes, the term 'service' refers both to end-user services (e.g. the provision of payphones) and intermediate services (e.g. network services).

Network components

This pool contains the costs relating to the various components of transmission, switching and other network plant and systems. The costs will be in respect of network components that cannot be attributed directly to a particular service as they are utilised in the provision of a number of services.

Related functions

This pool contains the costs of functions necessary for the provision of services to the customer such as billing, maintenance, and customer services.

Other functions

This pool contains the costs of functions that are not related to the provision of particular services but are an important part of the operations of the company. Examples of such costs include planning, personnel and general finance.

⁽¹⁾ The nature of which may be expected to change over time in response to changing market requirements.

⁽²⁾ Including operating and capital costs.

As noted, there are a series of steps which allocate cost pools in a tiered approach to eventually allocate costs to services. These step allocations are performed using appropriate drivers. Each step is summarised below:

Step 1

The allocation of other functions across related functions, network elements and services.

Step 2

The allocation of the related function costs to services and the network elements.

Step 3

The allocation of network components to services.

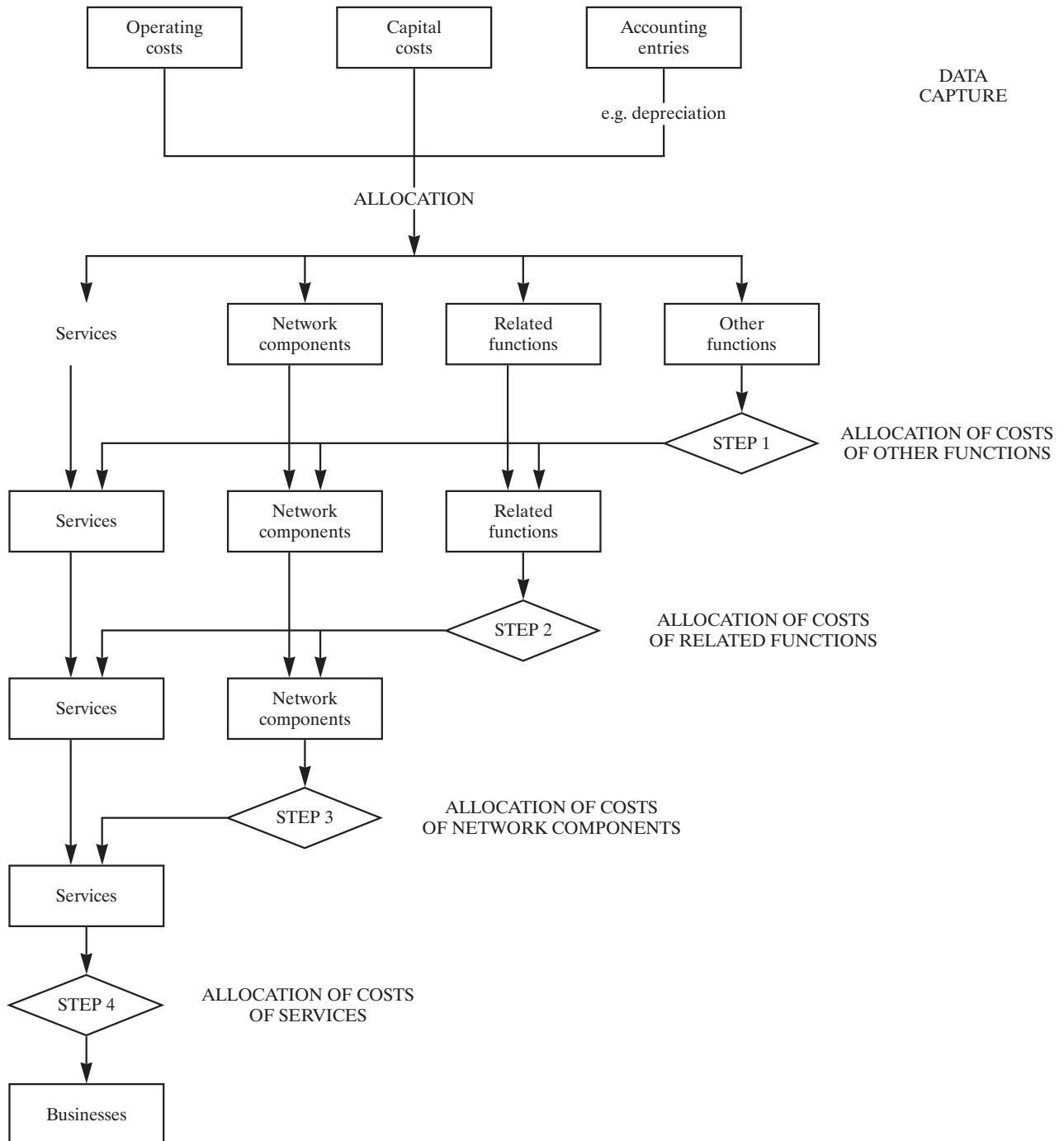
Step 4

The grouping of services into businesses (as defined for the purposes of accounting separation).

Each of the allocation steps illustrated above could involve a number of detailed sub-steps, particularly if the initial capture of cost information is at an aggregated level. Where it is possible to perform an allocation via a number of direct or indirect attributions this is preferable to allocation through a single arbitrary step.

Figure 1

A typical cost allocation process



It is anticipated that telecommunications operators will need to use sampling techniques and periodic activity reviews in order to allocate costs (including capital costs) to the services that they provide and, subsequently to the businesses defined for the purposes of accounting separation. For example, periodic analysis of the tasks undertaken by staff in customer call centres may be used to determine the amount of time spent by those staff on different tasks. This information may then be used to allocate — either directly or indirectly — the costs associated with the staff to the services provided by the operator.

4. Operating costs

This section of the guidelines considers the application of the principles described in Section 3 to the operating costs, including depreciation, of operators.

Application to operating costs

The cost allocation process outlined in the previous section relates, in principle, to both operating and capital costs. Table 4.1 below provides a summary of possible allocation and attribution methods for operating costs under the following headings:

- depreciation,
- provision, installation and maintenance costs,
- network planning and development costs,
- network management costs,
- marketing and sales costs,
- billing and collection costs,
- operator services costs,
- directory services costs,
- payments to other operators, and
- support costs.

These headings are purely illustrative and are not intended to reflect the way in which operators are expected to record costs. They are intended to provide high-level guidance only. Individual operators will need to develop cost allocation procedures specific to the way in which they currently capture and record costs, and to refine these over time, as appropriate.

The final column of Table 4.1 provides an indication of the principal businesses to which it might be expected that the majority of the operating costs in question would be allocated.

Table 4.1.

Methods of allocating operating costs (1)

Category of operating cost	Description	Method of allocation	Principal businesses
Depreciation	Depreciation	The allocation of depreciation should follow the allocation of the fixed assets to which it relates (see Section 5)	All
Provision and installation of equipment	Payroll costs Installation, contract and maintenance costs	Direct to network components/other plant where possible; otherwise allocate based on the time spent carrying out installation work Direct to network components/other plant on the basis of the plant installed or maintained where possible	Core network, local access network Core network, local access network
Maintenance and repair costs	Payroll costs Other costs	Direct to network components/other plant where possible; otherwise allocate based on the time spent carrying out installation work Direct to network components/other plant where possible	Core network, local access network Core network, local access network
Network planning and development costs	Payroll and external costs	Direct to network components/other plant where possible	Core network, local access network
Network management costs	Payroll costs Other costs	Allocate to network components/other plant on the basis of the time spent by staff to manage each type of plant Allocate to network components/other plant on the basis of the plant managed, where possible	Core network, local access network Core network, local access network
Marketing and sales costs	Payroll Cost of sales of equipment Publicity Promotions Market research Distributors fees Other costs	Direct to products and services where possible; otherwise allocate between products based on labour time Allocate to customer equipment services within 'Other activities' Direct to products and services where possible. Otherwise, for those costs where multiple services are being marketed or promoted, cost should be attributed to the related services on a reasonable basis	Retail Other activities Retail
Billing and collection costs	Payroll costs Other billing costs (including bad debts)	Direct to products and services where possible; otherwise allocate between products based on labour time Direct to products and services where possible; otherwise allocate between products based on usage (e.g. number of bills produced)	Retail (some costs to core network) Retail (some costs to core network)

Category of operating cost	Description	Method of allocation	Principal businesses
Operator services costs	Payroll costs	Direct to services where possible. The costs of staff that carry out tasks for several operator services should be allocated to the related operator services based on time spent on different tasks	Retail
Directory services costs	Payroll and other costs	Direct to products and services	Retail
Payments to other operators	Out-payments for outgoing international traffic	Direct to products and services	Retail
	Payments for interconnection agreements	Direct to products and services	Retail
Support costs	Human resources function costs	HR function costs should be allocated to the staff that are overseen by the HR function and allocated using the same basis as the payroll costs of HR staff	All
	Finance and other head office support functions	If related specifically to a product, service or business allocate accordingly	All
	Building costs and rent	Costs should be allocated in the same way as land and buildings (see Section 5)	All
	General computing/IT costs	Allocate to the applications run by the operator on the basis of the use of the computers to support each application. Costs allocated to applications can then be attributed to those products and services that they support	All

(¹) Residual unattributable costs should be identified by operators and their treatment considered separately by NRAs.

5. The cost of capital and capital employed

Article 7(2) of the Interconnection Directive requires that charges for interconnection be cost-oriented, including a reasonable return on investment. The determinants of the level of this return are:

- the cost of capital, and
- a capital value.

The calculation and setting of a cost of capital for the purpose of setting interconnection charges is outside the scope of these guidelines. However, there must be consistency between the measure of capital employed on which the cost of capital is based and the measure of capital employed reported in the separate accounts required by the Interconnection Directive.

This will enable comparison of the actual percentage returns earned by operators from their regulated activities such as interconnection with the cost of capital allowed by NRAs when reviewing charges for these activities. The need for consistency, and the implications of this for the allocation of items of capital employed, are the focus of this section.

5.1. Cost of capital

The cost of capital of operators should reflect the opportunity cost of funds invested in network components and other related assets. It conventionally reflects the following:

- the (weighted) average cost of debt for the different forms of debt held by each operator,
- the cost of equity as measured by the returns that shareholders require in order to invest in the network given the associated risks, and
- the values of debt and equity.

This information can then be used to determine the weighted average cost of capital (WACC) using the following formula:

$$\text{WACC} = r_e \cdot E/(D+E) + r_d \cdot D/(D+E)$$

where r_e is the cost of equity, r_d is the cost of debt, E is the total value of equity and D is the total value of interest-bearing debt.

The calculation of the WACC for an individual operator in total would be relatively straightforward — notwithstanding that there is scope for discussion about the precise derivation and value of inputs into the WACC formulae. However, NRAs may need to consider whether application of the global cost of capital represented by the WACC is appropriate for the regulated activities of operators. If so, the WACC in total could be used for the purpose of determining interconnection charges.

Otherwise, NRAs may take into account that different risks premiums normally apply to different activities, which could be reflected in different costs of equity ' r_e '⁽¹⁾, even if the financial structure is the same. If so, there could be a different WACC for each business line or disaggregated activity such as mobile, cable TV or international services.

5.2. The WACC and capital value

The WACC must be applied to a capital value for network components and other related assets in order to determine the return that needs to be recovered through interconnection charges. While it may be easy to identify the values of debt and equity for an operator as a whole, it is not easy to do so for each of its constituent activities. This is because decisions about debt finance are largely corporate decisions determined by

(1) Financial economics, and actual investor behaviour, teach that the cost of equity ' r_e ' is equal to the cost of risk-free debt plus a risk premium depending on the underlying activity and on the financial market used. Activities with higher competition usually carry higher risk. The cost of debt ' r_d ' also varies between activities between companies, but — for a given financial market — not as much as the cost of equity ' r_e '. As for the capital structure (E and D), it should also reflect the balance sheet of each main activity. Where there is only one main balance sheet for several activities, it is acceptable to assume the same capital structure for these activities. In this context, the cost of debt ' r_d ' can normally be assumed the same for all activities, unless they have markedly different balance sheets.

a number of factors, such as historical borrowing facilities and tax planning considerations. Hence, the debt position of the corporation may not relate specifically to the funding requirements of individual activities. An alternative approach to determining the capital value for regulated activities (such as interconnection) is therefore required.

One approach is provided by the following balance sheet identity:

Shareholders' funds (i.e. equity) + debt = net assets excluding debt⁽¹⁾.

It follows that the capital values of regulated activities can be determined by apportioning net assets or capital employed. This apportionment should be carried out on a causal basis and under current valuation methodologies.

5.3. *Capital employed*

Table 5.1 provides a summary of possible allocation methods for different items of capital employed, together with an indication of the principal businesses to which it might be expected that the majority of each item would be allocated. The application of these and, as appropriate, other methods will determine the capital values of different regulated activities, including interconnection.

The table is not intended to be an exhaustive list of items that might be classified as capital employed nor of the methods for allocating them to different activities.

⁽¹⁾ That is, fixed assets + current assets - creditors (excluding debt) provisions.

Table 5.1.

Methods of allocating capital employed (*)

Category of assets and liabilities	Description	Method of allocation	Principal businesses
Tangible assets			
<i>Primary plant</i>			
Switching equipment	Local switching equipment	Direct to access or network components where possible. Otherwise allocate to local access network services and to network components on the basis of the relevant cost of the equipment dedicated to provide customer lines and of the parts dedicated to switch traffic, respectively. Local switch network components can be allocated to products and services based on seconds of use	Core network (some costs to local access network)
	Tandem switching equipment	Direct to network components where possible, otherwise allocate based on seconds of use	Core network
	International switching equipment	Direct to network components where possible, otherwise allocate based on seconds of use	Core network
	Switching equipment for special services networks	Direct to core network components where appropriate/required by regulation or to the specific services provided by other networks — e.g. data transmission switching equipment should be allocated directly to data transmission services	Core network, other activities
	Other switching equipment	Direct to network services where possible, otherwise allocate to other switching network components on the basis of the use of the equipment	Core network
Transmission equipment	Traffic-sensitive transmission equipment	Direct to network components where possible, otherwise allocate based on the usage of circuits	Core network
	Cable and wire	Direct to access or network components where possible, otherwise allocate to components based on the amount of cable used to provide different services	Local access network, Core network
	Local loop equipment	Direct to products where possible (e.g. separately identifiable ISDN access equipment), otherwise allocate between access services based on line usage	Local access network
	Radio and satellite equipment	Direct to network components where possible, otherwise allocate based on the usage of channels	Core network

Category of assets and liabilities	Description	Method of allocation	Principal businesses
Other primary network assets	Transmission equipment for special services networks	Direct to the specific non-PSTN/non-ISDN services provided by the network — e.g. data transmission equipment directly allocated to data transmission services	Core network
	International/submarine cable	Direct to network components where possible, otherwise allocate based on usage	Core network
	Special network plant	Plant and equipment that is used solely to provide one specific service should be allocated directly to the relevant services. Examples may include: — intelligent networks equipment — data transmission equipment — multimedia equipment	Core network Other activities
	Customer premises equipment	Direct to products and services	Other activities
<i>Support plant</i>	Public payphones and related equipment	Direct to service	Retail
	Ducting	Ducting can be allocated to the cable and wire that it supports and allocated to products in the same way as cable and wire	Local access network, Core network
	Power equipment	Allocate to primary plant groups on the basis of the use of power equipment to support each plant — e.g. kilowatts per hour. Assets should then be allocated to products in the same way as the relevant primary plant groups	Local access network, core network
	Network management systems	Allocate to primary plant of the different networks provided on the basis of the use of the systems to support each plant — e.g. time spent to control local exchanges, tandem exchanges and international exchanges. Cost should be attributed to products and services in the same way as the related primary plant group	Core network
Non-network fixed assets	Land and buildings	Allocate to products, services and network components on the basis of the space occupied (i.e. floor space) to support each product, service or network component	All
	General computers	Allocate to the applications run by the operator on the basis of the use of the computers to support each application. Costs allocated to applications can then be attributed to those products and services that they support	All
	Motor vehicles	Allocate to the products and network components based on usage	All
	Furniture and office equipment	Allocate to the products and network components based on usage	All

Category of assets and liabilities	Description	Method of allocation	Principal businesses
Intangible fixed assets	Intangible fixed assets	Direct to products where possible. Any residual or unattributable assets will need to be allocated on an arbitrary basis, to be agreed with the NRA	All
Working capital	Fixed asset investments:	Direct to 'Other activities'	Other activities
	Pure financial investments	Direct to 'Other activities'	Other activities
	Investments in unrelated activities	Direct to the service to which the investments are related, otherwise allocate based on usage	All
	Other investments	Direct to businesses where possible, otherwise allocate based on the operational requirements of each business	All
	Short-term investments (including cash at bank and in hand)	Stocks should be allocated directly to products and services	All
	Stocks	Trade debtors may be allocated to products and services based on billing system information where possible. Unattributable balances will need to be allocated on an arbitrary basis, to be agreed with the NRA	All
	Trade debtors/receivables	Other debtors/receivables should be apportioned to products and services if possible. Unattributable balances will need to be allocated on an arbitrary basis, to be agreed with the NRA	All
	Other debtors/receivables	Trade creditors should be allocated directly to products and services if possible. Unattributable trade creditors will need to be allocated on an arbitrary basis, to be agreed with the NRA	All
	Trade creditors	Direct to the activities that give rise to the provisions in question	All
	Long term provisions	No allocation required. Instead average liabilities should be taken into account when considering the operational cash requirements of each business (see 'Short-term investments')	All
	Liabilities for taxation and dividends		All

(¹) Residual unattributable costs should be specifically identified by operators and their treatment considered separately by NRAs.

For price-setting purposes, NRAs and operators will be concerned with average capital employed during any period rather than with capital employed at a single point in time such as the financial year end. This is because a 'snap-shot' at any point in time may not be representative of the average level of capital employed by operators. Specifically, working capital balances at a single point in time may not be representative of average working capital requirements over an extended period. The separate accounts of operators should therefore show average capital employed, rather than year-end balances (see Section 7).

5.4. *The need for consistency in the treatment of working capital*

Table 5.1 proposes one approach to the treatment of working capital in the calculation of capital employed. There are, however, other approaches which may be equally valid. In practice, there are two principles that ought to be applied when considering the treatment of individual items of working capital for the purposes of separate accounting⁽¹⁾. They are as follows:

- there should be consistency between the treatment of assets and their associated costs and revenues, and
- inclusion or exclusion of individual items ought, in principle, to have a corresponding impact on the WACC. These two effects (i.e. the decision to include or exclude items and the corresponding adjustment to the WACC) offset each other in terms of their overall effect on the absolute return required by operators.

6. Revenue

Section 3 set out some principles for the allocation and attribution of costs and revenues to the products and services offered by operators. In this section the application of these principles to revenue is considered.

6.1. *Revenue from core telephony activities*

It is expected that revenues from the provision of core telephony products and services can be directly allocated to the products and services to which they relate based on accounting records and billing system information. In those cases where direct allocation based on accounting records or billing system data is not possible, revenues should be attributed on the basis of causation.

The allocation of revenues from core telephony services between local access network, core network and retail for a fixed telephone network is summarised below⁽²⁾.

Connection charges

Charges for establishing new connections to the fixed telephone network (other than for establishing a point of interconnect — see interconnection charges below) should be assigned to retail.

Customer line rental charges

Line rental charges should be assigned to retail.

Revenues from leased lines

Revenue from leased lines should be allocated to retail.

Revenues from line rental to other operators

Where provided to other market players, revenue from line rental of unbundled local loops should be assigned to local access network.

Access deficit contributions

In those Member States that operate access deficit schemes, access deficit contributions should be allocated to local access network.

⁽¹⁾ The Arthur Andersen report on accounting separation in the context of ONP provides further guidance on the application of these principles to the treatment of fixed asset investments, short-term investments, long-term provisions, and liabilities for taxation and dividends. These are potentially contentious areas which must be seen in the context of sound accounting practices within each Member State and, therefore, they are outside the scope of these guidelines.

⁽²⁾ The same principles can be applied by analogy to other networks.

Universal service contributions

In those Member States that operate schemes to finance universal service obligations, contributions from other operators should be allocated to retail. In addition, there should be an explanatory note to the accounts demonstrating that there is no discrimination between the contributions charged to other operators and those charged (implicitly) internally.

Interconnection charges

Interconnection charges, including the one-off costs of establishing a point of interconnect and volume-related charges, should be allocated to core network.

Call charges

Revenue from call charges should be allocated to the appropriate service within the retail business.

Equipment rentals and sales

Revenue from the rental and sale of equipment such as telephones and facsimile machines should be allocated to the appropriate services within 'other activities'.

Revenue from advertising in directories

Revenue received from advertising in directories should be allocated to a directory services account in 'other activities'.

Engineering services/consultancy

Revenue from engineering services/consultancy other than for interconnection should be allocated to 'other activities'.

6.2. *Other revenue*

Operators may also generate income from non-telephony services. In accordance with the principle of causation these should be allocated to the activities to which they relate.

One example would be revenue from sub-letting parts of properties used by the core telephony businesses, the revenue from which could be treated in a number of ways. Options include:

- treating the revenue as revenues for the business sub-letting the accommodation, and
- recording the revenue under 'other activities'.

No one approach is necessarily better than the others that may be available. However, it is important that the revenues from non-core activities and the costs associated with them are treated consistently. Failure to do so would lead to the profits of one business being understated and the profits of another overstated.

Income from fixed asset investments

Income from fixed asset investments should be allocated in the same way as the investments to which they relate. Given the approach adopted in Section 5 to the allocation of pure financial investments and investments in unrelated activities the income from these investments would be allocated to 'other activities'. Income from fixed asset investments should only be allocated to local access network, core network or retail if the related investments are allocated in this way.

Income from short-term investments

The same principles apply to income received from short-term investments. The income should be allocated to the business to which the associated investment is allocated.

7. Reporting requirements

This section of the guidelines sets out the information that operators should prepare for the purposes of accounting separation and consider the extent to which it should be published.

7.1. *Suggested accounts*

Separate accounts for the local access network, core network and retail activities of operators should be prepared with information relating to 'Other activities' summarised in a single set of accounts⁽¹⁾.

The following information should be prepared for each set of accounts:

- a profit and loss statement, and
- balance sheet information in a form that is consistent with the measure of capital employed used for price-setting purposes.

Operator's retail activities include both regulated and unregulated activities. Separate accounts for each regulated activity should be prepared. NRAs will need to determine the retail activities for which separate accounts should be prepared taking into account the transparency requirements of national and Community law.

It would not be appropriate to require operators to reveal detailed financial information about their unregulated activities that they would not otherwise be required to reveal for statutory reporting purposes. Such information may be regarded as commercially confidential. Information relating to such activities should instead be shown in total and reported as 'retail — other activities'.

7.2. *Content of reports*

A suggested profit and loss account and balance sheet for core network for the purposes of accounting separation are shown in Figure 7.1 at the end of this section. Suggested formats for local access network, retail and other activities are shown in Figures 7.2, 7.3 and 7.4 respectively.

All accounts should make explicit any transfer charges to or from other businesses. For example, charges paid by the operator's own retail activity for interconnection services should be clearly shown as a cost in the retail accounts and as a revenue item in the core network accounts.

The accounts should also make explicit any differences between the costs allocated to different activities by the operator and the costs that the NRA allowed for the purpose of determining charges. This will provide transparency about the extent of costs excluded by the NRA for charging purposes and about the reasons for their exclusion.

7.3. *Basis of the preparation*

Separate accounts should be prepared on a current cost basis. The Appendix provides guidance on the application of current cost accounting concepts.

7.4. *Audit requirements*

As set out in Article 8 of the Interconnection Directive, the separate accounts prepared by operators must be subject to independent audit in accordance with the relevant rules of national legislation.

7.5. *Other information*

The following information should also be prepared as part of accounting separation:

- a statement of accounting policies used in the preparation of the accounts,
- a reconciliation of the separate accounts to the statutory accounts of the operator,

⁽¹⁾ If, as discussed in Section 1, NRAs require that separate sets of accounts should be prepared for certain 'other activities', reports should also be prepared for these. This would reduce the scope of activities included in the 'other activities' accounts.

- a matrix summarising the total transfer charges between different accounts. This matrix will make explicit the total charges from, for example, core network to retail and will be an input into the reconciliation of the separate accounts to the statutory accounts,
- a statement describing the basis on which unattributable costs have been allocated between different accounts⁽¹⁾,
- information about the cost allocation methodologies employed in order to prepare separate accounts. This should be at a level of detail that makes clear the relationship between costs and interconnection charges,
- a statement showing the average cost of network components, and
- in those Member States that operate schemes to finance universal service obligations, an explanatory note demonstrating that there is no discrimination between charges level on other operators and those levied (implicitly) internally.

The format in which the above information should be presented is for operators to determine in consultation with their NRA.

The Interconnection Directive also requires that operators provide interconnection to other operators under the same terms and conditions as they provide for their own services (i.e. internally) or those of their subsidiaries or partners. For these purposes, operators will need to provide information to their NRA demonstrating that there has been no undue discrimination between the provision of services internally and those provided externally. It is for each NRA to consider how this information should be provided and the process by which such information will be validated.

7.6. *Publication of information*

Publication of information required in the Interconnection Directive serves a number of purposes including the following:

- makes transparent the relationship between interconnection charges and costs,
- provides transparency about the interconnection charges paid by the operator's own Retail activities and assurance that there was no undue discrimination between internal and external provision of interconnection services, and
- helps to establish confidence in the interconnection regime.

NRAs should encourage publication of as much of the above information as possible.

Information that is proven to be commercially confidential should not be published.

There will inevitably be changes in the cost allocation methods used by operators, particularly for those operators that have not historically been required to prepare separate accounts. Accordingly, NRAs should consider the extent to which the above information is published in the first year after adoption of the Interconnection Directive. The cost allocation methodologies employed by operators should be published immediately.

⁽¹⁾ Best practice is to allocate unattributable costs in the ex post financial reports in the same way as they were allocated for the purposes of price setting.

Figure 7.1.

Suggested reporting formats for the core network business

(a) Profit and loss

	Current year	Prior year	
Turnover			
from retail			
from other operators			
Total turnover	_____	_____	①
Operating costs			
CCA adjustments			
Total operating costs	_____	_____	②
Return	_____	_____	③ = ① - ②

The calculation of the return must be consistent with the basis on which the cost of capital is calculated. Therefore, if — as envisaged in the main body of the guidelines — a pre-tax and pre-interest WACC is used, the return shown in the accounts should be equivalent to profit before interest and tax.

(b) Balance sheet information

	Current year	Prior year	
Fixed assets			
Tangible fixed assets			
Intangible fixed assets			
Investments			
Total fixed assets	_____	_____	①
Current assets			
Stocks			
Debtors			
Investments			
Cash at bank and in hand			
Total current assets	_____	_____	②
Creditors			③
Provisions for liabilities and charges			④
Mean capital employed	_____	_____	⑤ = ① + ② - ③ - ④

All entries in the 'balance sheet' should be prepared on a current cost basis. They should be average values for the year to which they relate. Where possible and material the average values shown should be weighted averages. If information is not available, a simple average of opening and closing balances may initially be used.

(c) *Return on capital employed*

	Current year	Prior year
Return		①
Mean capital employed		②
Return on mean capital employed (%)		③ = ① / ②

Figure 7.2.

Suggested reporting formats for the local access network business

(a) *Profit and loss*

	Current year	Prior year	
Turnover			
Transfer charges to retail			
From other operators (if any)			
Total turnover			①
Operating costs			
CCA adjustments			
Total operating costs			②
Return (excluding ADCs, if any)			③ = ① - ②
ADCs (if any)			
from other operators			
from retail			
Total ADCs			④
Return (including ADCs, if any)			⑤ = ③ + ④

(b) *Balance sheet information*

As for core network.

(c) *Return on capital employed*

As for core network.

Figure 7.3.

Suggested reporting formats for the retail business

(a) Profit and loss

	Current year	Prior year	
Turnover:			
Connection charges			
Rental charges			
Call charges			
Other turnover			
Total turnover			①
Operating costs:			
Operating costs specific to retail			
Transfer charges from core network			
Transfer charge from local access network			
ADCs paid to local access network (if any)			
CCA adjustments			
Total operating costs			②
Return (excluding universal service contributions, if any)			③ = ① - ②
Universal service contributions from other oper- ators (if any) ⁽¹⁾			④
Return (including universal service contributions, if any)			⑤ = ③ + ④

The same formats would apply to separate regulated activities within retail.

(b) Balance sheet information

As for core network.

(c) Return on capital employed

As for core network.

⁽¹⁾ Universal service contributions applied internally would net off to zero and are therefore not shown in the profit and loss for retail.

Figure 7.4.

Suggested reporting formats for 'other activities'

(a) Profit and loss

	Current year	Prior year	
Turnover	_____	_____	①
Operating costs	_____	_____	②
Return			③ = ① - ②

As discussed in the main body of the guidelines there may be a case for disaggregating 'other activities' in order to provide greater transparency of the performance of specific activities. It will be up to individual NRAs to specify the extent to which separate accounts for these activities will be prepared.

(b) Balance sheet information

As for core network.

(c) Return on capital employed

As for core network.

*Appendix***Current cost accounting****1. Calculation of current cost asset values**

A key element of the current cost methodology is the valuation of assets. Assets could be valued according to the following considerations and decision rules:

Net replacement cost

The net replacement cost is the cost of replacing the asset with another asset of similar characteristics and age.

A key element of this formula is the calculation of the replacement cost of the asset. Replacement cost can simply be the cost today of replacing the asset with an identical one. However, when technology is changing rapidly, the existing asset may no longer be replaceable (e.g. it is no longer manufactured). In this case it is necessary to calculate the modern equivalent asset ('MEA') value which is the value of an asset with the same level of capacity and functionality as the existing asset. The issues relating to the calculation of MEA values for telecommunications operators are considered further below.

Deprival value

Deprival value ('DV') represents the recoverable value of the asset to the organisation; that is, the higher of the economic value the asset is likely to generate or the net realisable value ('NRV') of the asset if it were sold.

Economic value

Economic value ('EV') is a measure of the value of an asset based on the net present value of future cash flows.

The valuation rules can be summarised as follows:

- if $EV > NRV$, the company will keep the asset in its current use,
- if $NRV > EV$, the company will sell the asset now as the proceeds from the sale would exceed the economic value that it would be expected to generate from its continued use.

Therefore the deprival value or recoverable amount of the asset is the higher of EV and NRV. The current cost therefore is the lower of its deprival value and the net replacement cost. That is, the lower of the amount the company could recover from the asset and the cost to the company to replace the asset with an identical one.

2. Modern equivalent asset valuation issues

The adoption of CCA methodologies in telecommunications is complicated by the rate of technological change in the industry. This has implications in both identifying suitable replacement costs for old technology assets and ensuring the assets exhibit the same levels of functionality and capability.

Examples of technological issues for telecommunications operators include:

- copper versus fibre cables,
- analogue versus digital switches, and
- PDH transmission technology versus SDH technology.

The new technologies are usually far superior to the old technologies in terms of functionality and efficiency. However, since MEA values are required to reflect assets of equivalent capacity and functionality, it is necessary to make adjustments to the current purchase price and also the related operating costs — for example, the new asset may require less maintenance.

3. Current cost accounting adjustments

There are two alternative approaches to CCA. The approaches differ in their approach to 'capital maintenance'. That is, the manner in which the capital of the company is viewed when determining profit.

Capital can either be viewed in operational terms (i.e. as the company's capacity to produce goods and services) or in financial terms (i.e. as the value of shareholder's equity interest). These are known as operating capital maintenance and financial capital maintenance concepts respectively:

- operating capital maintenance ('OCM') considers the operating capability of the company. Proponents of OCM assert that capital maintenance under this approach requires the company to have as much operating capability — or productive capacity — at the end of the period as at the beginning⁽¹⁾,
- financial capital maintenance ('FCM') considers the financial capital of the company is maintained in current price terms. Capital is assumed to be maintained if shareholders' funds at the end of the period are maintained in real terms at the same level as at the beginning of the period⁽²⁾.

3.1. *The main adjustments under OCM*

As set out above, this concept is concerned with the maintenance of the productive capacity of the operator. One of the signification adjustments relates to the revaluation of fixed assets to current cost. Due to this revaluation additional adjustments are then required to restate depreciation amounts. These are identified below.

Revaluation of fixed assets

Under OCM the gross book value of assets is revalued to take account of specific price changes in the price of assets and changes in technology.

One way of calculating the current cost of assets is to apply specific price indices to the existing gross book value of assets. These may be derived from the company's procurement department. Alternatively, modern equivalent asset ('MEA') valuation methods may be used. These base the value of assets on the current cost of modern equivalent assets subject to cost 'abatements'. These abatements are discussed further below.

Supplementary depreciation

The depreciation charge for the year is calculated on the basis of the new asset valuations. This ensures that the current cost of fixed assets consumed during the year is charged against revenue. For each asset, or group of assets, the OCM depreciation charge — assuming straight line depreciation — can be derived by dividing the gross replacement cost by asset life.

Supplementary depreciation is the difference between historical cost depreciation and current cost depreciation charge. It may be positive or negative depending on whether the value of assets is rising or falling. It is a charge against profits in the profit and loss account.

Illustration of these concepts

The tables below illustrate the above concepts for an asset purchased for ECU 10 000. The assumed life of the asset is four years. For simplicity, it is assumed that the asset is depreciated on a straight line basis. In Table 1 it is assumed that the cost of replacing the asset falls by 10 % per annum. Table 2, on the other hand, assumes that the cost of replacement increases by 5 % per annum.

Table 1

Replacement cost falling by 10 % per annum

Year	Current Cost	Depreciation					
		Current cost	Historical	Supplementary	Cumulative	'Required'	Backlog
0	10 000						
1	9 000	2 250,00	2 500,00	(250,00)	2 250,00	2 250,00	Nil
2	8 100	2 025,00	2 500,00	(475,00)	4 275,00	4 050,00	(225,00)
3	7 290	1 822,50	2 500,00	(677,50)	5 872,50	5 467,50	(405,00)
4	6 561	1 640,25	2 500,00	(859,75)	7 107,75	6 561,00	(546,75)

⁽¹⁾ In efficient terms and in a long-run approach.

⁽²⁾ For the capital as employed by an efficient operator.

Table 2

Replacement cost rising by 5 % per annum

Year	Current Cost	Depreciation					
		Current cost	Historical	Supplementary	Cumulative	'Required'	Backlog
0	10 000,00						
1	10 500,00	2 625,00	2 500,00	125,00	2 625,00	2 625,00	Nil
2	11 025,00	2 756,25	2 500,00	256,25	5 381,25	5 512,50	131,25
3	11 576,25	2 894,06	2 500,00	394,06	8 406,56	8 682,19	275,63
4	12 155,06	3 038,77	2 500,00	538,77	11 720,96	12 155,06	434,10

Derivation/explanation:

- current cost is the gross replacement cost of the asset,
- current cost depreciation is derived as the gross replacement cost divided by the asset life,
- historical cost depreciation is the original acquisition cost divided by the asset life,
- supplementary depreciation is the additional depreciation charged as a result of revaluing the asset (it can also be derived as current cost depreciation less historical cost depreciation),
- cumulative depreciation is the sum of cumulative current cost depreciation as at the end of the previous period, backlog depreciation for the previous period and current cost depreciation for the current period. This is equivalent to required depreciation at the end of the previous plus current cost depreciation for the current period,
- 'Required' depreciation is the cumulative depreciation that would have been charged given the current cost of the asset
 - put another way, it is the difference between the gross and net replacement cost of the asset, and
- backlog depreciation is the difference between required depreciation and cumulative depreciation.

3.2. Further adjustments under financial capital maintenance (FCM)

Under FCM there are similar adjustments to be made as in the OCM concept concerning the revaluation of fixed assets and supplementary depreciation. However, under FCM some of the treatments in terms of profit and loss need to be further adjusted to take into account of holding gains or losses that arise due to the effect of asset-specific inflation on the current cost value of assets and the effect of general inflation on shareholders' funds⁽¹⁾.

4. Which capital maintenance concept?

The above discussion has set out the main adjustments required to historical cost accounts in order to derive current cost information using OCM and FCM. It has been included to reflect the fact that the transition to LRAIC from fully allocated historical costs as the basis for determining interconnection charges requires that assets are valued at their market value (or current cost). The use of current cost information is therefore a key aspect in helping to determine appropriate interconnection charges and special attention should be provided to the choice of capital maintenance as employed by an efficient operator⁽²⁾.

⁽¹⁾ The Arthur Andersen report on accounting separation in the context of ONP provides further guidance on the accounting adjustments to be provided under financial maintenance concept.

⁽²⁾ Subject to the level of investment in assets being efficient.

If OCM was used to determine charges, the revenue requirement ⁽¹⁾ would be derived as the sum of operating costs, historical cost depreciation, supplementary depreciation and a return on net assets. Under FCM, the revenue requirement would be the sum of operating costs, historical cost depreciation, supplementary depreciation and a return on net assets less holding gains/losses plus the adjustment to shareholders' funds. Required revenue therefore differs depending on the capital maintenance concept used.

The use of the OCM concept may systematically incorporate insufficient or excess returns into the level of allowed revenue (depending, respectively, on whether asset-specific inflation was expected to be lower than or higher than general inflation). This is not a desirable feature of any regulatory regime, as it would not provide appropriate investment incentives. Therefore FCM is the preferred capital maintenance concept.

⁽¹⁾ Defined as the level of revenue required in order to earn a reasonable return.