Costing and Pricing of Mobile Services

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Pricing Mobile Network Services

When setting the pricing terms for mobile network services a number of issues have to be resolved.
Critical tasks:

Methodology for determining prices

- benchmarks
- price caps
- tying prices to other services
- **cost based models**

Chosing an appropriate cost calculation model and deciding on cost dimensions

- capture of cost data
- cost allocation
- cost valuation

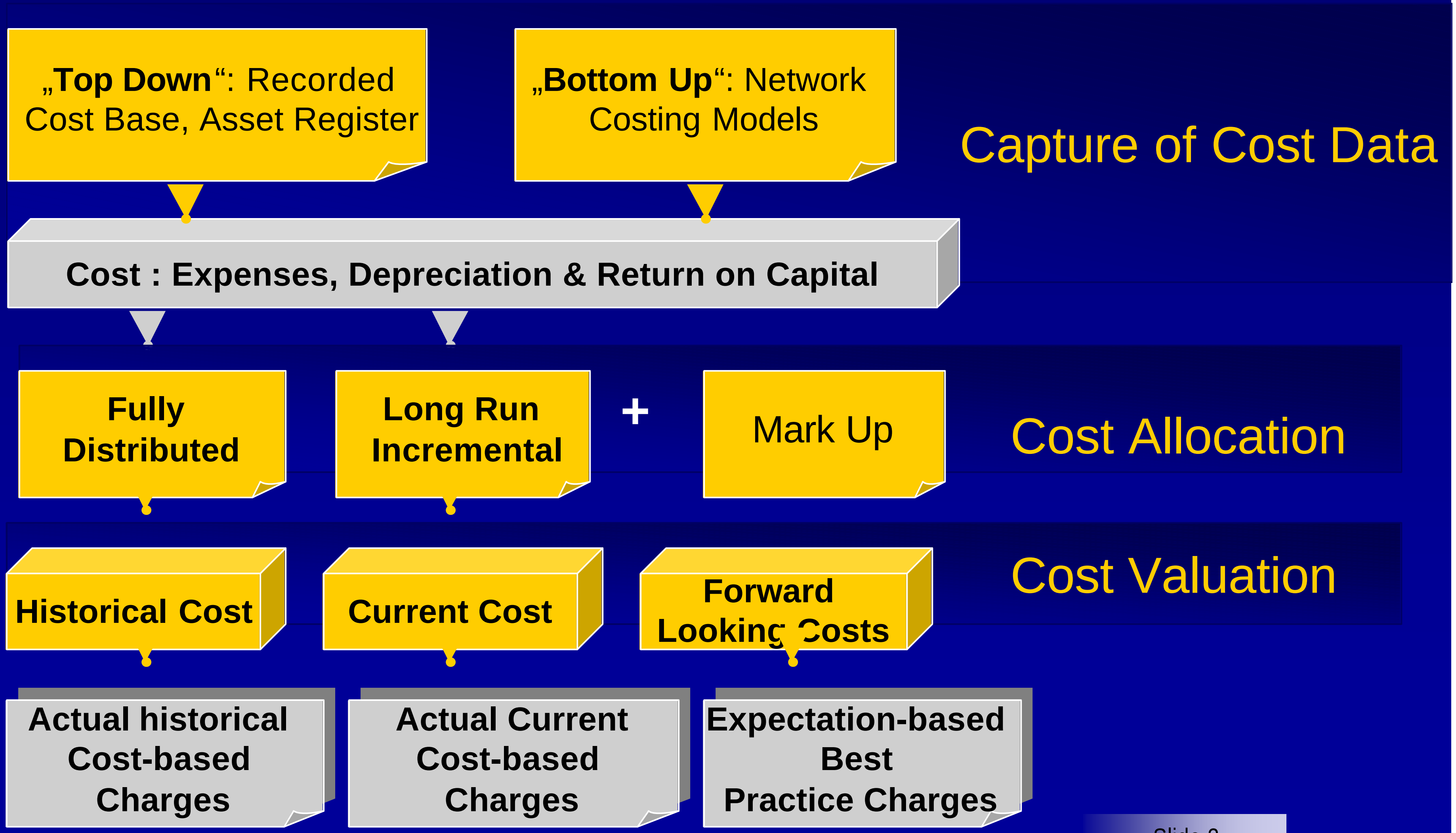
Development of a common understanding on essential input parameters

- investment prices of fixed assets
- structural parameters
- expected return on investment
- depreciation rate

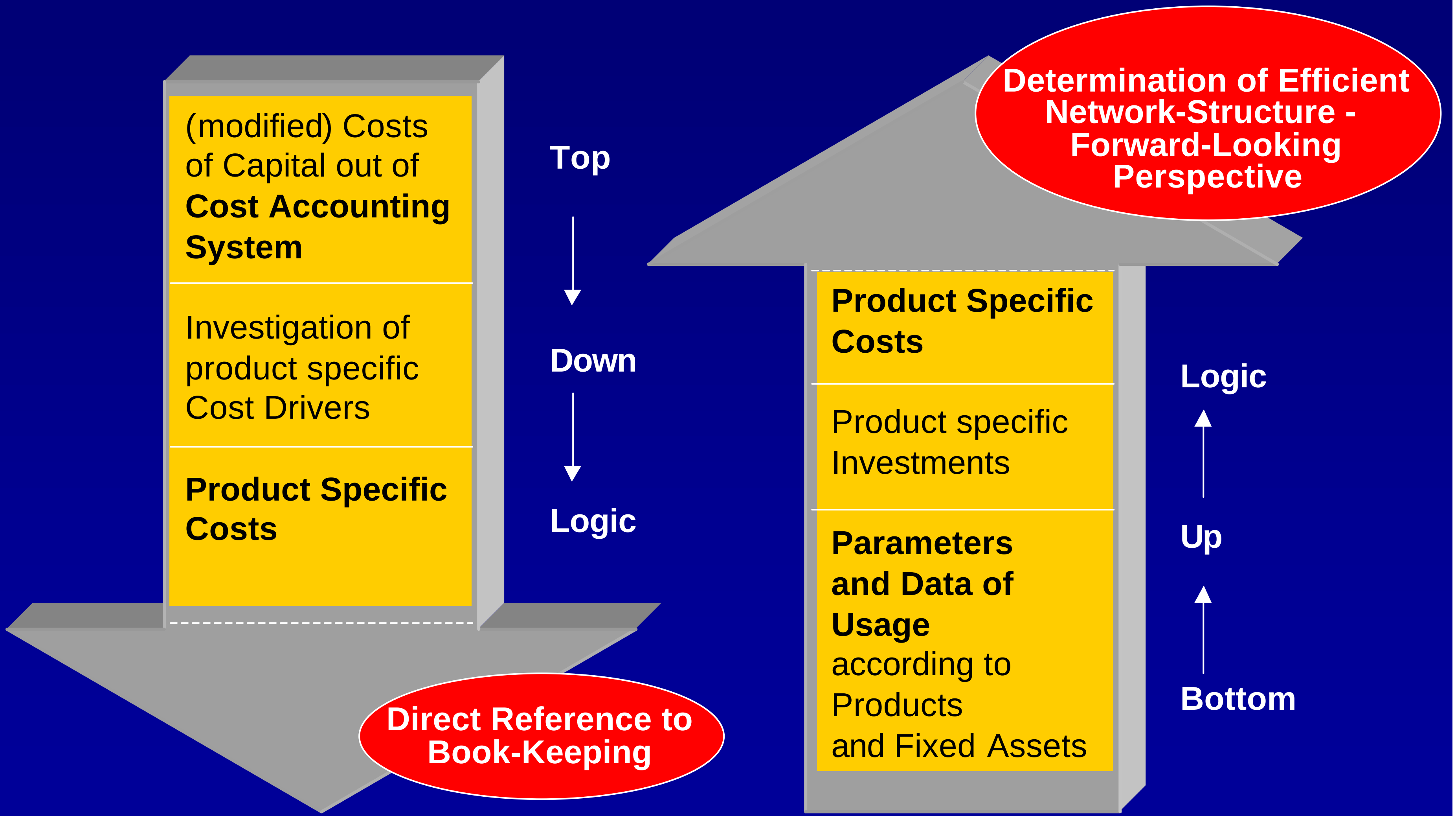
Further pricing issues

- CPP vs. RPP
- up-front fee, fixed fee and usage sensitive fees

Issues along 3 Dimensions to be Considered when Calculating the Costs of Mobile Network Services



Top-Down *versus* Bottom-Up Cost Models



Regulators usually Require a Costing Concept to be Based on the „Cost of Efficient Service Provision“:

What should it cost an operator to provide a service in a competitive market?

Long Run Incremental Costs + **Joint and Common Costs**

Long Run Incremental Costs

capital and operating cost incurred directly as a result of producing a specific service, respectively, avoided through no longer providing the output of a defined increment

- (current) costs of efficient technology
- efficient network structure and processes
- forward-looking costs

Joint and Common Costs

cost which arise in the production of two or more services, and not being incremental to the production of any specific service**:** cost of a network management system plus the cost of acquiring, renting and operating the number of sites (less than 10% of the total costs of mobile network)

- by means of mark ups
- ensure that joint and common costs are not allocated in a disproportionate way to less competitive services.

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Pricing Mobile Network Services : Building Product Costs within a Bottom-Up Model

Identify fundamental cost drivers of mobile networks

- coverage (geographical extent of the network)

network's capa-pacity to handle

- traffic
- customers

Cost of network components

- physical items of equipment
- directly related operational / maintenance costs

Annuitisation of costs

- purchase value
- cost of capital
- price trend
- asset life
- profile of usage

Allocation of component costs to network services

- map network elements to network services via routing table
- divide annualised costs by volume

Mark ups

- operational costs
- product / supply costs
- common costs
- externalities

Pricing Services of Mobile Networks: Determining the Cost of Network Components

number of physical units of all network elements
(base station sites, transceivers, base station controller, mobile switching centre, BSC – MSC transmission, inter-switch transmission, home location register etc.)

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capital and operating costs of network elements
(installation etc.)

↓

capacity of network elements
(busy hour erlangs, call attempts etc.)

↓

unit costs of every network element
(dividing costs by traffic)

Allocation of Component Costs to Mobile Network Services: The Routing Table

Routing Table for determining costs of network services

Task

- determines the volumes through each network element
- attributes derived costs to service products

Key inputs (Call Routing Table)

- list of all call routes
- list of all route elements
- proportion of each call using a particular route

Requirements

- accurate traffic volume data (to determine size and number of network elements)
- network architecture definitions (optimal design, reliable and efficient technology, topography)

Application

- to all telecom services (Data, IP, Mobile) sharing a common infrastructure
- to assist in network dimensioning and planning

Costing Mobile Network Services : Pros and Cons of Bottom-Up LRIC Models

<u>Plus points</u>

- suited for modelling forward-looking (long run) costs
- reflects complex linkages
- offers a rather detailed view of cost structures
- no dependency on cost calculation system of the regulated firm
- effective when existing network structure is considered inefficient

<u>(perceived) minus points</u>

- risk of differences of opinion on what is an efficient network (the current one has always the advantage of being an actually existing one, even if inefficient)
- if there is disagreementg regarding forecasting and modelling assumptions (equipment design utilisations, future asset prices, future voice and data volumes) leads to high uncertainty about results
- sensitivity analyses demonstrate that, depending on the data for structural parameters, prices may vary significantly; hence potential for further disagreement (but see above)

Adopting Bottom-Up Models to Real Business

When determining assumptions and parameters for bottom-up models data of operator under regulation should be used, unless otherwise justified

Network Design	Technology	Network Dimension	Capital Cost
network design based on **actual industry practice** (scorched node approach)	use **currently** deployed modern technologies	sufficient capacity to meet present requirements **plus** reasonable allowance for future growth	**higher** interest rates and **faster** economic depreci-ation due to high risk, technical change and falling asset prices

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Pricing Mobile Network Services :
Building Product Costs within a Top-Down Model

Traditional business structure is based on functional area (sales and marketing, planning, operation etc.)

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Product cost data not available from normal accounts systems (which is cost centre based)

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Need to allocate accounts-based data fully to products and services

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After allocation, costs are contained in 1) products, 2) network elements, 3) related functions and 4) other functions

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Need to define cost pools (having many different cost sources and cost types: tax, interest, advertising etc.)

Top-Down Models: Implementing a Suitable Cost Accounting System

Precondition

- use cost data of regulated firm

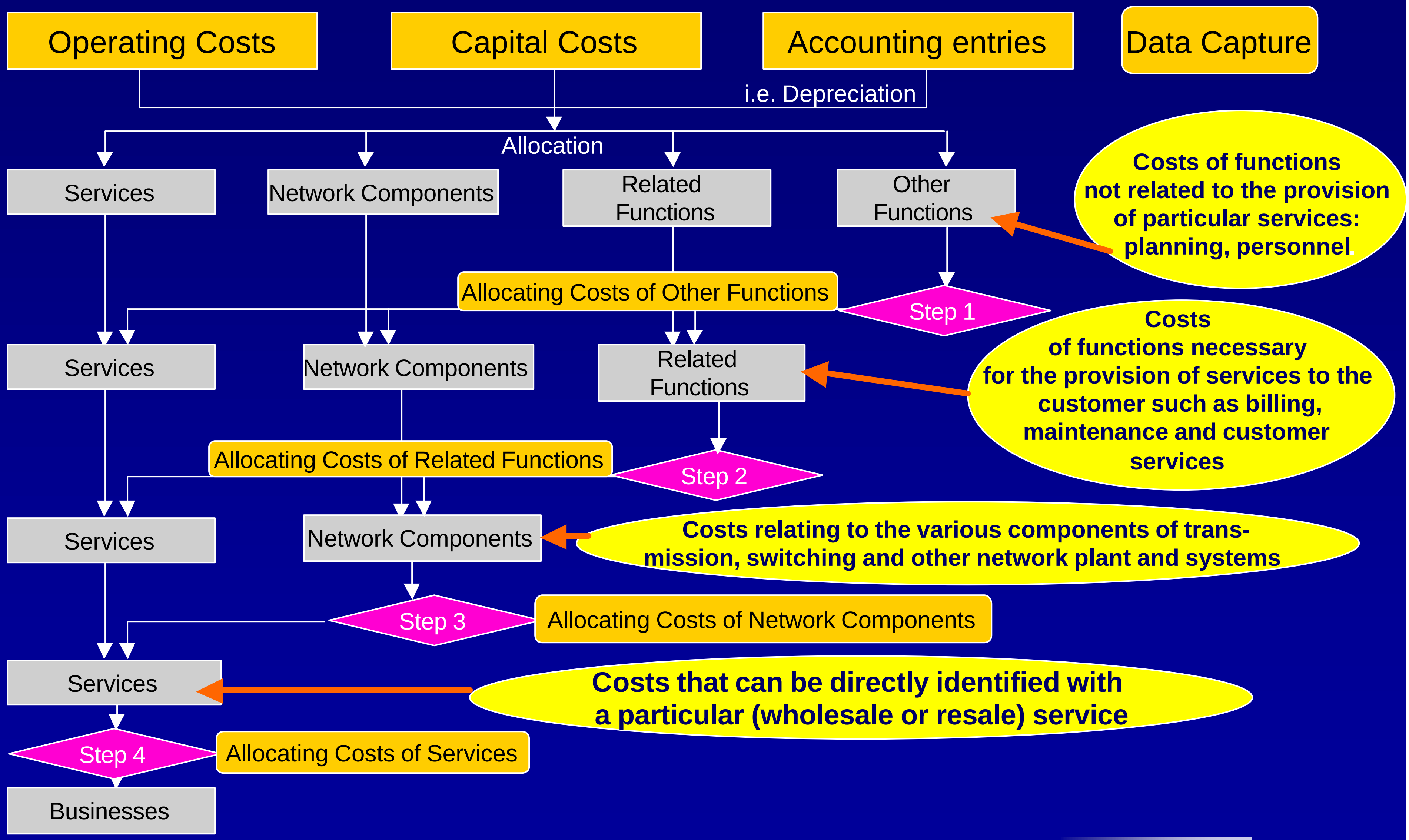
Objective

- to follow the basic principles of <u>cost orientation</u> and <u>transparency</u>
- to <u>prevent discriminatory behavior</u> such as cross-subsidization

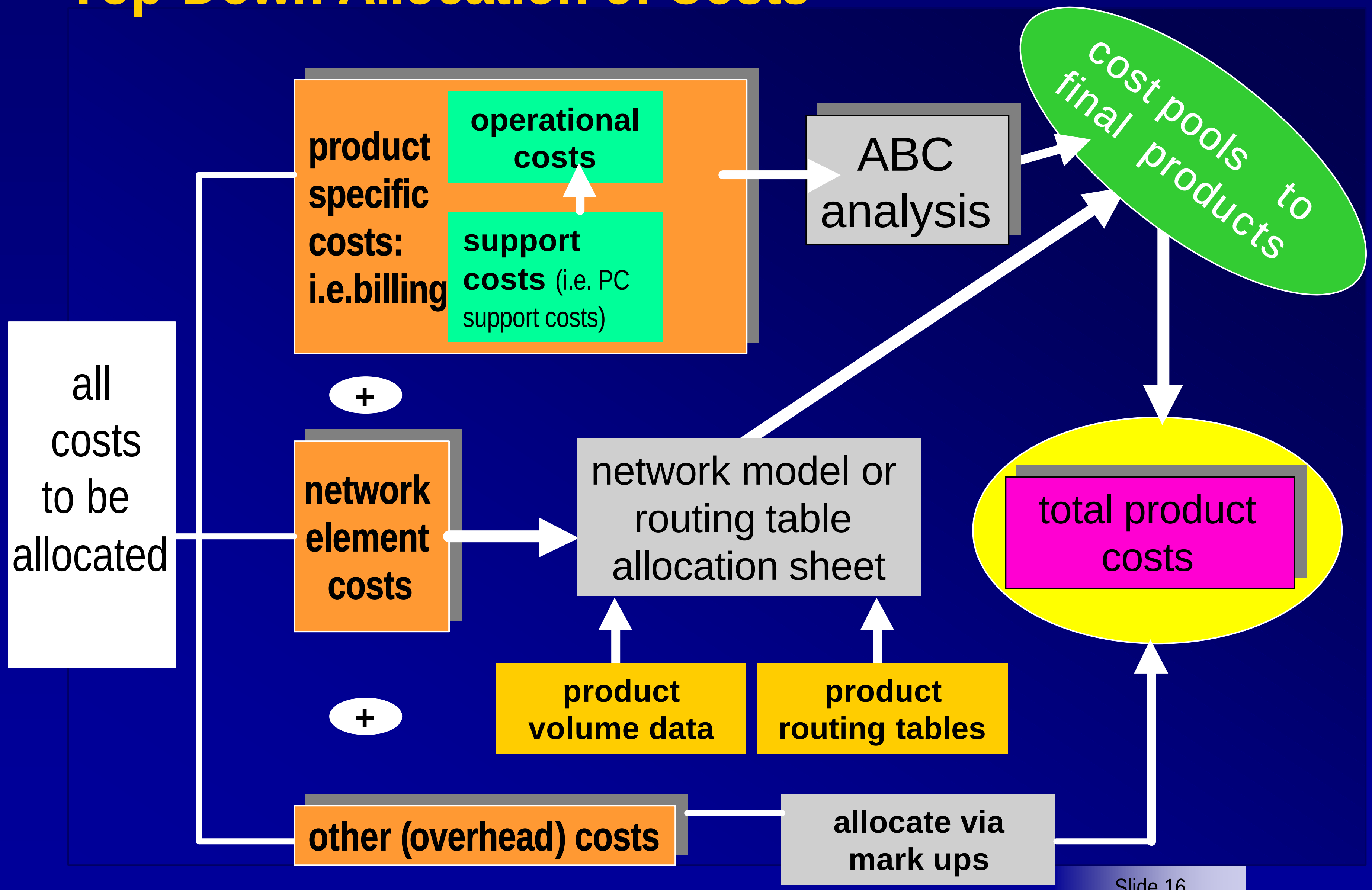
Requirements to dominant operator

- keep separate accounts of
  - telecommunication activities and other activities
  - regulated and un-regulated activities
  - each activity that is subject to regulation
- allocate costs, capital employed and revenue in accordance with principle of (direct or indirect) cost causation (i.e. ABC) (at least 90%)
- clearly identify non-attributable costs in a specific account

Accounting Separation: Allocation of Costs



Top-Down Allocation of Costs



Implementing Efficiency Considerations into Top-Down Models: From FAC to LRIC

When calculating the costs of an efficient operator with a top-down model, the following steps should be applied:

Value assets at current value: Current Cost Accounting (CCA)	Base assets on Modern Equivalent Asset (MEA)	Simulate an efficient network structure	Consider further efficiency allocations
• What do **assets** cost today?	• What **technology** would be deployed today with the same function?	• What **network design** would be the most efficient today?	• Which **costs** are not **relevant** in the long run to an efficient operator?

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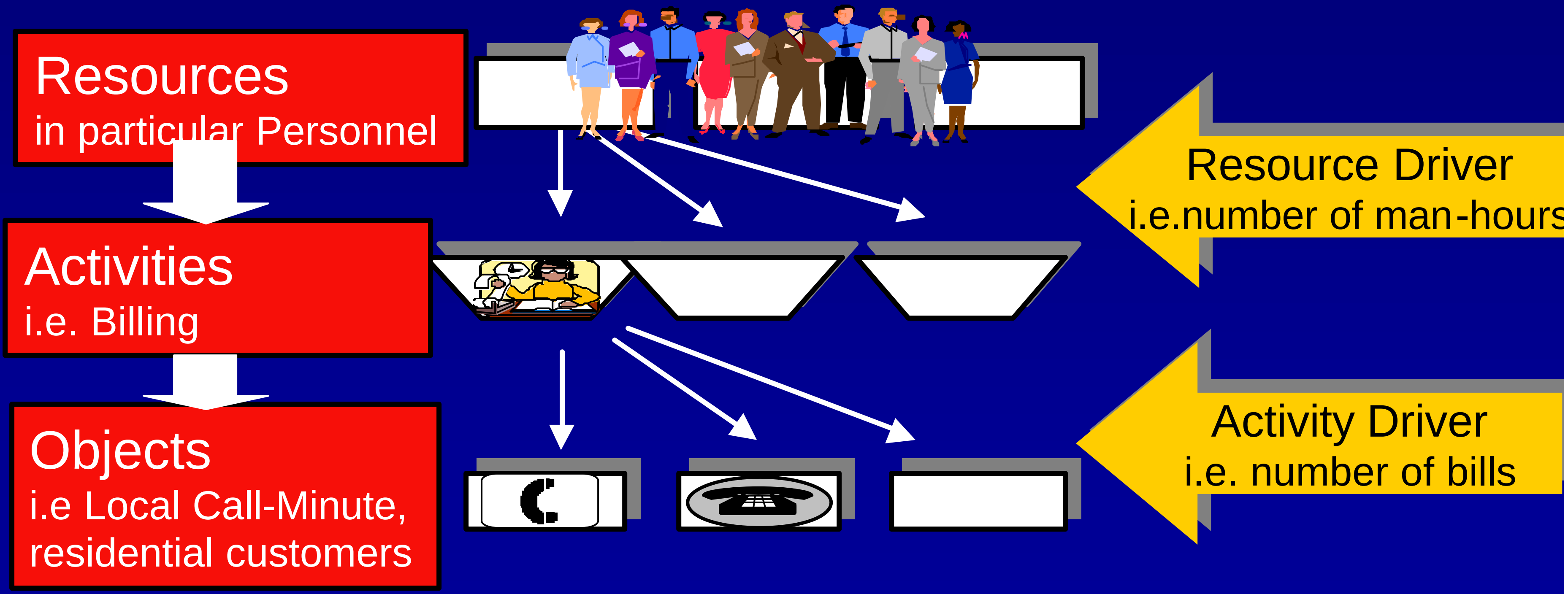
Activity Based Costing principles are fundamental to any cost model - top-down or bottom-up

The ABC-Model attributes primarily human resources to activities and finally to services



➔ **As to cost assignment the focus is on <u>why</u> and <u>what</u> consumes costs, rather than how to allocate costs**

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Pricing Issues

- Up-front *vs.* fixed fee per month *vs.* usage-dependent fee
- CPP *vs.* RPP payment structures
- Argument of network externality in favor of CPP payment structure

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Concluding Remarks

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1. To enhance the robustness of (imperfect and sophisticated) bottom-up LRIC-models the results need to be confronted with top-down, accounting based models

2. Best approach to apply both models when fixing prices for mobile calls
   - bottom-up models to establish lower boundary
   - top-down models to generate a price ceiling

3. For pricing structure, issue of CPP vs. RPP need to be resolved