UPGRADING OF COSITU

Regional Seminar on Costs and Tariffs for TAL Group member countries

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Contents

- Cost and price context
- Current COSITU model
- Future enhancements to COSITU

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- Cost models for NGN

Purposes of pricing

- To establish a linkage between supply and demand
- To generate income and cover the costs of providing services
- To provide information on services to users
- To provide a platform for competition

Pricing approaches

- Demand-oriented prices
  - What users are prepared to pay
- Cost-oriented prices
  - Based on what it costs to provide the services
  - May be imposed by regulators (regulated environment)
- Market-oriented prices
  - To compete with other operators/service providers
  - Reflect technological trends
  - May be required by business actors (shareholders) in competitive markets
  - Tariff options for different categories of users

Cost-oriented prices

- To cover the costs of providing the service
  - Ensure reasonable return for service providers
  - Benefits shared by all users
- To recognize/verify the existence of cross-subsidies between services and between users
  - So as to eliminate them
  - So as to make them explicit in some cases, e.g. universal service
- To pave the way for competition
- To prevent abuse of dominant position

Prices vs. costs

- An operator may wish to implement a retail pricing strategy which is not necessarily cost-oriented
  - Market-entry strategy
  - Development of a product line
- Regulation maintains freedom of pricing insofar as it does not undermine competition
  - No barriers to market entry for others
- It is important to identify and ensure consistency between the prices of inputs and the prices of services offered on the retail market (end user)

Principle of cost orientation

- Determine the average cost incurred by an **efficient** operator using the best available technology
  - Incorporates possible economies of scale and scope
  - Objective: To ensure that prices of inputs reflect the leading edge of production efficiency in the industry
- Two possible approaches
  - Benchmarking of input prices
    - Vary according to the features of each country/market
    - Not very reliable
  - Analysis of a regulated operator's cost structure in relation to that of an efficient operator

Cost orientation

- In order to fulfil the principle of cost orientation, regulators have to have access to relevant and accurate cost information to support their decision-making
- “Cost-oriented” cost evaluation requires skill in assessing how costs are constituted and distributed
- Complex and delicate task
- There are various proposed methodologies, e.g.
  - Based on book values and using historical costs
  - Cost estimates reconstructing networks with technologies current at the time of costing
- The method to be selected depends on the goals sought in the specific case and on the information available

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What does the COSITU software do?

- COSITU is the **ITU model** for calculating costs, tariffs and interconnection rates for telephone services
- It calculates the cost-oriented/cost-based **average cost** of a minute of call at the **national level**, for **a given operator**, and for **a given year**
- It calculates **endogenous** costs and tariffs
- Model based on fully distributed costs (FDC)
  - Cost allocation based on appropriate *drivers*
  - Suitable for use with ABC costing

Costing principles

- COSITU complies with agreed principles for cost models
- Principles
  - Transparency
  - Practicability
  - Causality
  - Reasonable contribution to common costs
  - Efficiency

Current COSITU model

- Used for fixed and mobile telephone services
  - Basic services (end user – retail)
    - Local, national, international and subregional communications
  - Transit
  - Interconnection
- Applicable for various technologies – conventional (TDM), data (IP) and hybrid
  - Telephone services use the same bandwidth (64 kbps)
  - Models suitably adjusted in the case of data networks

Modelling with COSITU

- The user can model
  - Historical, current or future (FL) costs
  - Top-down or bottom-up
  - Fully distributed (FDC) or incremental costs
- Requires external information processing
  - Preparation of current traffic, cost and tariff data
  - Network design is a pre-existing module not included in the model

Outputs of the COSITU model

- **Endogenous** costs by service
  - Only the cost components that can be managed by the operator in question
  - Includes costs of capital
- **Endogenous** tariffs
  - Endogenous costs plus additional charges levied by the government
    - Income tax
    - Universal service obligation (USO) contribution
    - Access deficit

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Cost models in the region

- Widespread use of long-range incremental cost models for interconnection services (retail traffic)
- Regulatory frameworks require the use of different models:
  - LRIC
  - LRAIC
  - TSLRIC
- It is also desirable to have models for
  - Costs based on future demand
  - Efficient company
  - Costs for NGN, broadband, IP networks, convergence
- Model to be flexed for use with various telecommunication services

COSITU software might be used for …

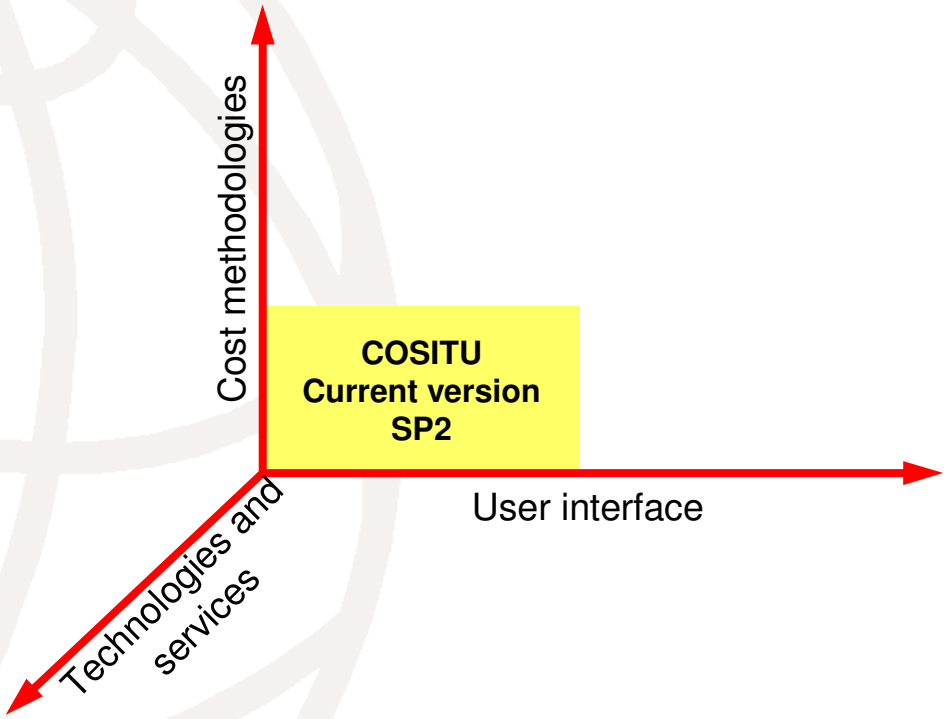
- Calculating interconnection charges
- Calculating transport charges
- Capacity (e.g. E1) and colocation costs
- Supporting the setting of regulated tariffs
- Information and benchmarking
- Estimating prices of services
- Settling disputes between enterprises
- Settling disputes between operators regarding access to essential resources

Most frequent problems with the use of COSITU

- Need for more detailed knowledge of costs in general
- Need for more in-depth training in the COSITU model
- Calculations have to be made outside the model
- Identifying the information required by the model and adjusting it for the purpose
- Availability and understanding of accounting information supplied by enterprises
- Inputting the requisite information in the model

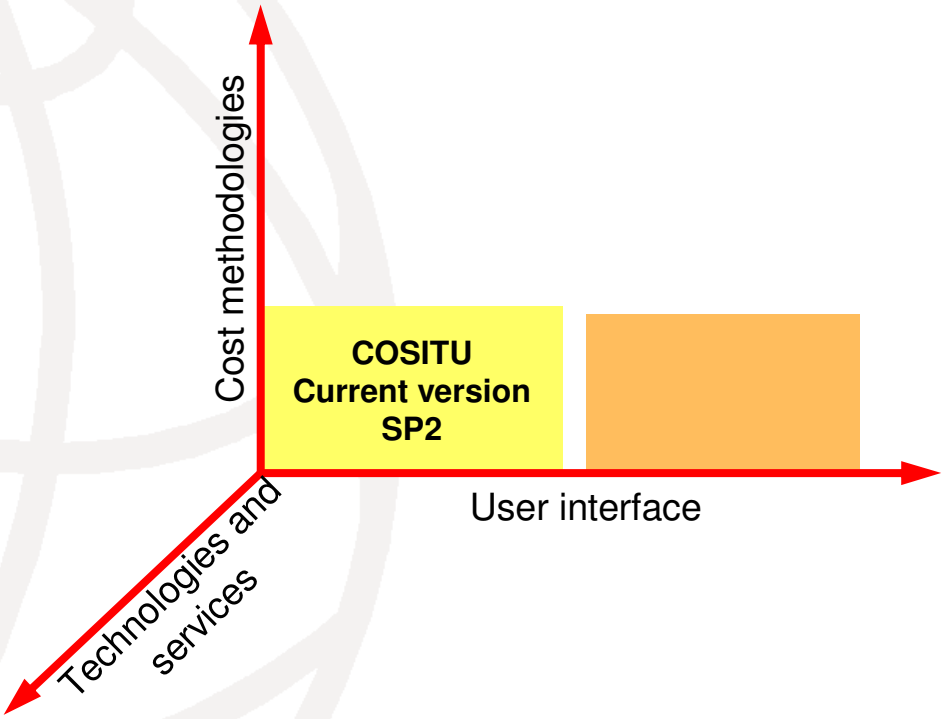
Conclusion …

- Add new dimensions to COSITU



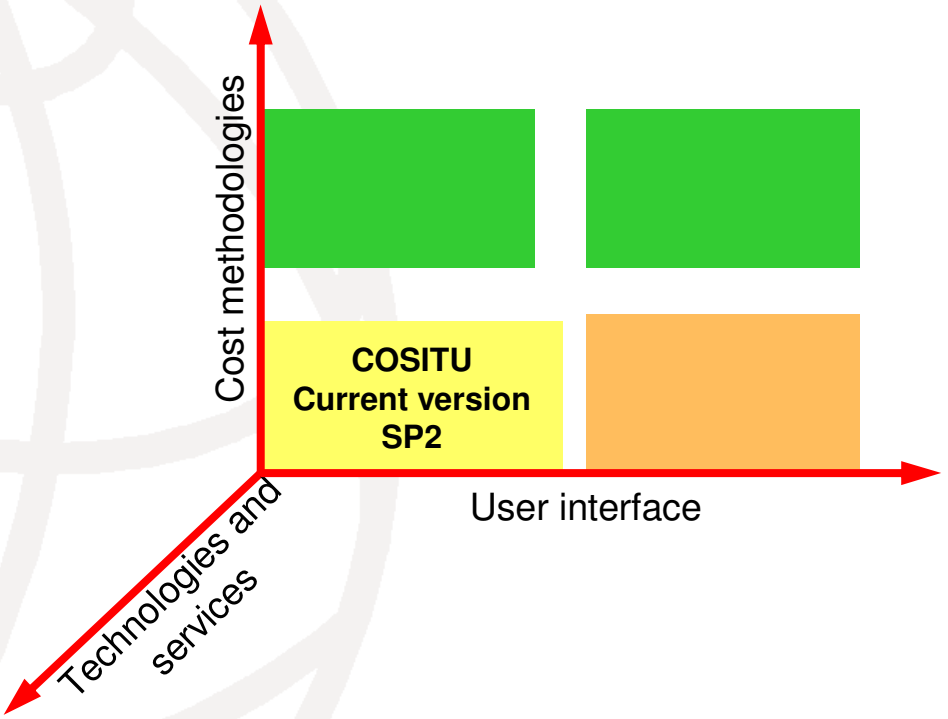
User interface

- Enhance the user interface
  - Minimize prior data processing (traffic, costs and tariffs)
  - More user-friendly data capture menus
- Incorporate templates for applications involving very common services
  - SMS, LD, LDI, switched Internet, national roaming, international roaming, etc.
- Customized templates for specific services
  - Network components
  - Routing factors



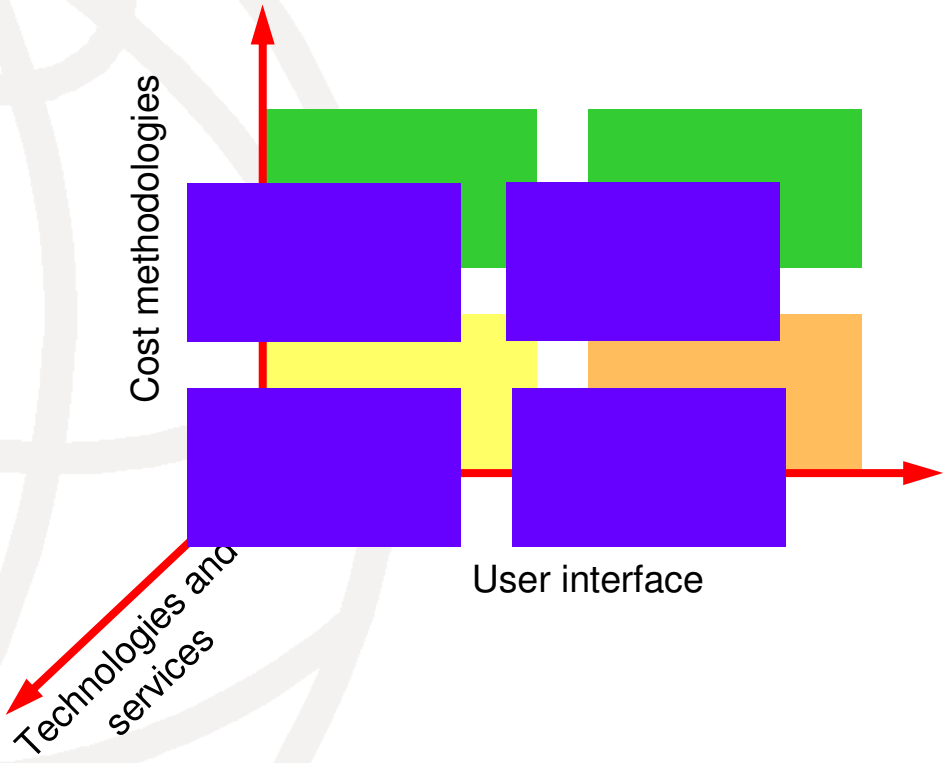
Cost methodologies

- Incorporate modules allowing direct application of different cost methodologies
  - FDC
  - Different variants of LRIC: LRIC/LRAIC, TSLRIC, TELRIC
  - Historical costs (HC), current costs (CC) or future costs (FL)
  - Others
- LRIC entails greater effort on the part of the user in constructing the models
- More detailed and sophisticated cost information



New technologies and services

- Develop models for services supported by NGN, broadband, etc.
  - Data services
  - Internet
  - Broadband
  - Services over IP networks (VoIP, IPTV)
  - Others



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Large-scale introduction of new technologies

- Significant investments
  - Example: optical fibre on the access network
  - Significant economies of scale and scope
- Desire to recover investment
  - Necessarily long-range (LR)
  - LRIC may not be sufficient
  - Mark-ups for recovering common costs
  - Cost models to offer incentive for investment

Services based on new technologies

- Identification of the most relevant services
- Actors participating in the service production chain
- Business models for the different services
- Cost structure
- Cost models for each type of service
- Price and tariff models

It is necessary to review the foundations of this new industry and the applicable economic concepts

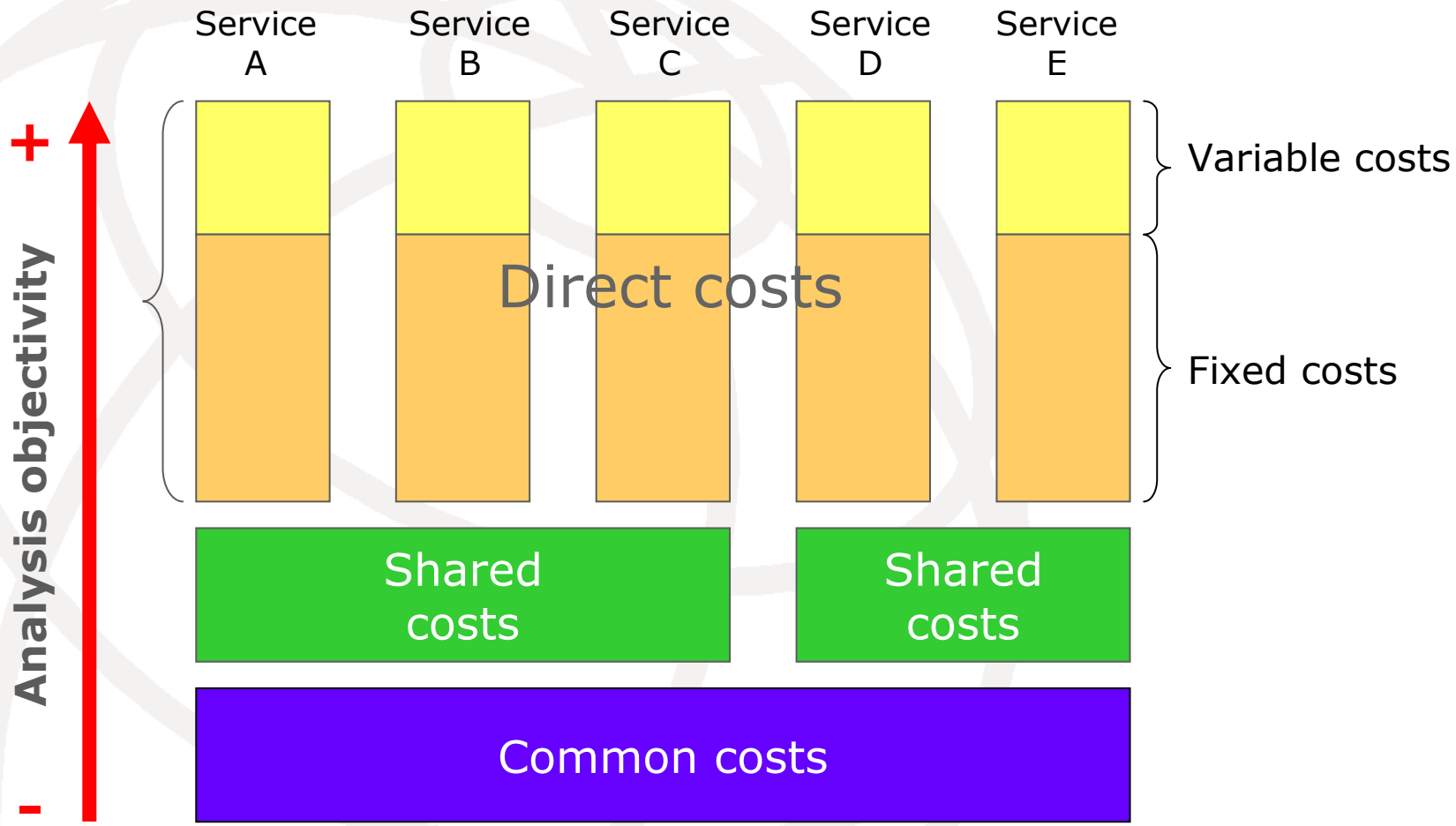
Cost structure

- Major upfront investment
- High economies of scale
- Significant impact of costs of: market research and planning studies; network and service design and implementation; operation and financing
- Fixed costs may account for a larger proportion than in conventional voice networks
  - Share of variable (traffic-sensitive) costs may be smaller than in conventional voice networks
  - Applicability of LRIC models?
- Marginal costs of network expansion are greater for coverage of areas with lower user densities

Cost models

- Must cover fixed costs and provide incentive for investment
- As infrastructure growth is “lumpy”, excess infrastructure capacity has to be factored in
- Cost models need to be developed for types of service (templates)
- Attribution of network costs
  - There are many network elements that are normally shared between several services
  - Cost is allocated in proportion to the bandwidth required to provide the service (charged hour)
  - What bandwidth concept should be used?
  - Take into account the type of service (CBR, VBR, ABR, BE), each of which uses a different type of bandwidth
  - Effects of resource capacity limits (congestion)

Cost components



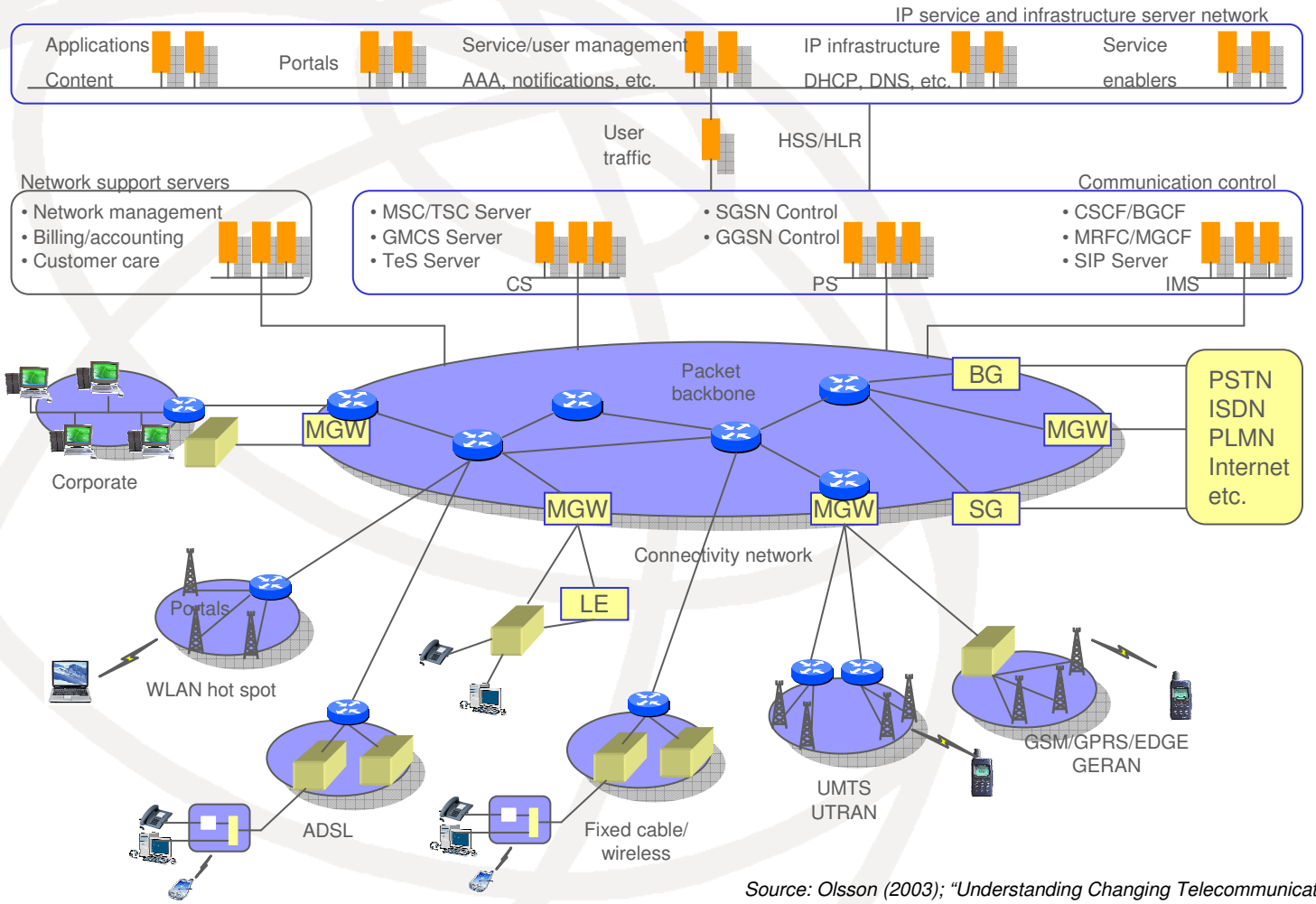
Fixed, variable, shared and common costs

- Direct costs (directly attributable to a service)
  - Fixed and variable
  - Distributed according to routing and traffic factors for the service
  - Specific to the service
- Shared costs for a family of services
  - Depend on defined **drivers**
- Costs can be classified according to their specific type
- Relevance is crucial in respect of shared and common costs

Cost components

- Investments in network elements
- Operating and running costs of the business
- Identifiable direct and indirect costs
- Other common costs
- Cost distribution
  - Definition of *drivers* for assigning costs to services
  - In accordance with ABC, according to intensity and frequency?
  - Based on network usage (traffic)?
  - Number of times network components are used?

Looking towards an NGN network

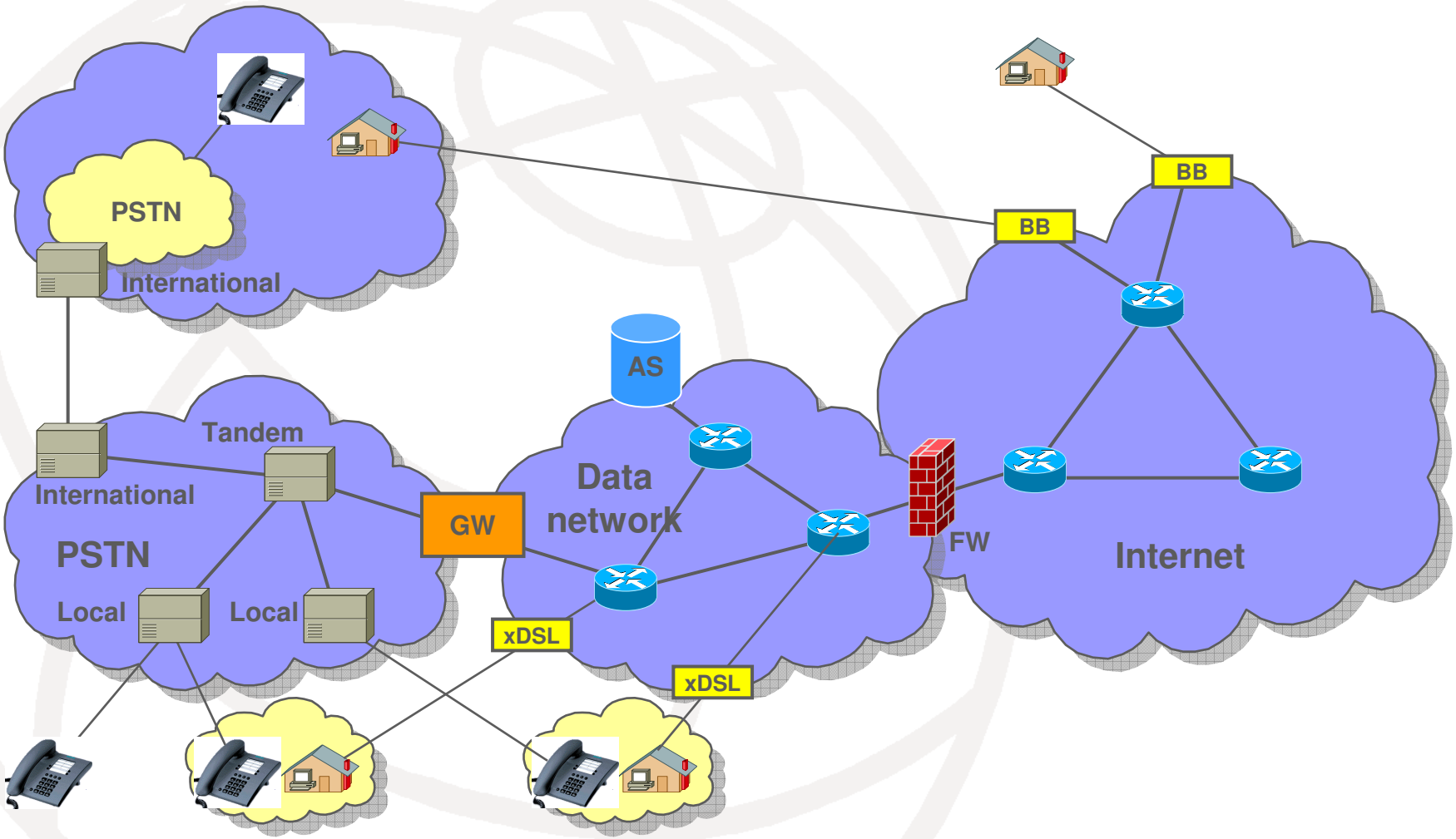


Source: Olsson (2003); "Understanding Changing Telecommunications"

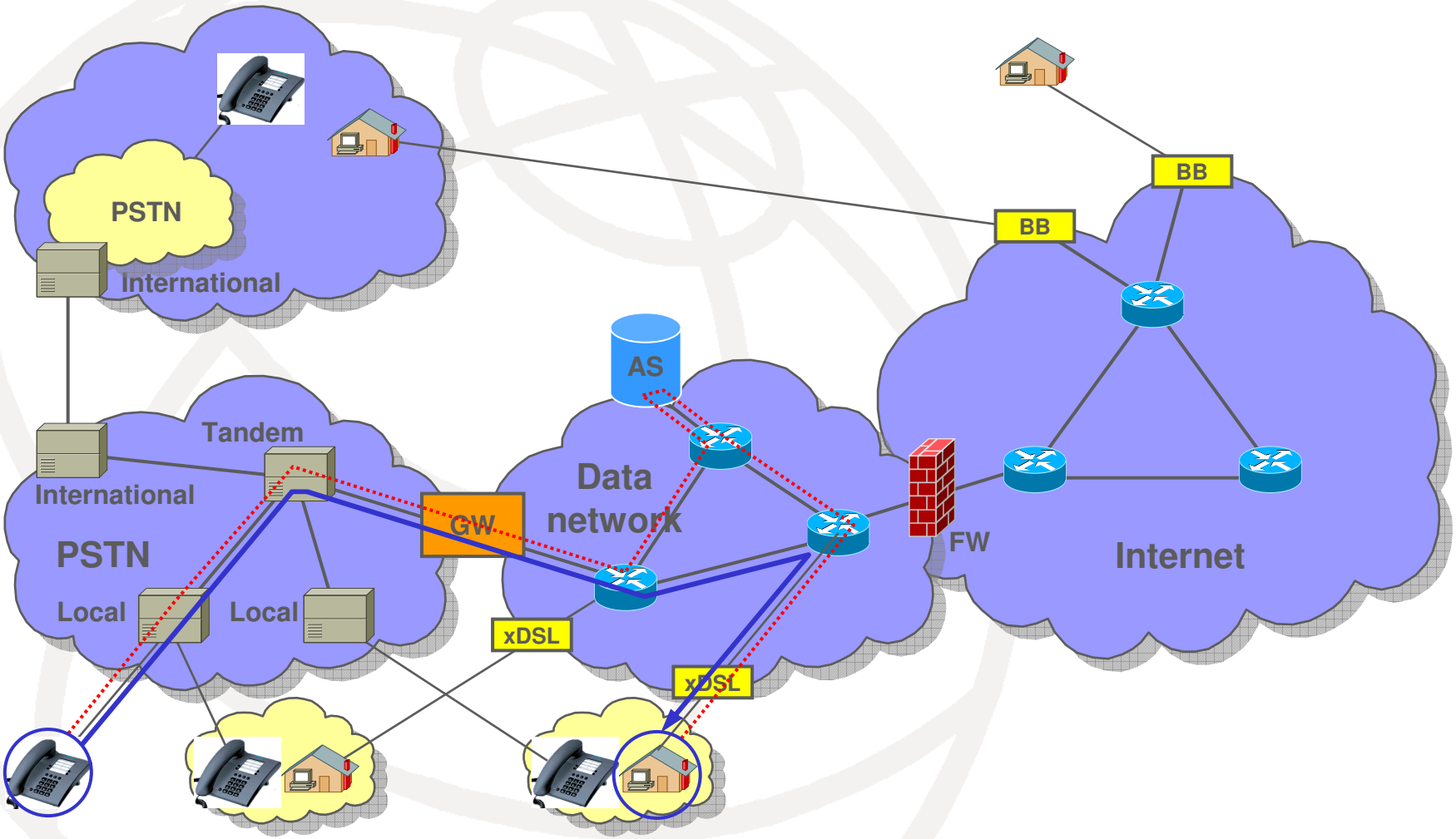
Distribution of network element costs

- NGN networks are increasingly complex
  - Hence more complex cost structure of services
- Only detailed cost models give a proper insight into the cost structure of services
- It is important to describe cost models
  - that identify network elements using routing factors
  - reflecting intensity of use (traffic) and frequency for each service implemented
- A routing factor is the number of times a given element is used by a service

Example: Network architecture for VoIP services



Telephone-to-PC calls



Routing factors

	Network elements							
	Circuit-switched			Packet-switched			Mobile	
F-to-F voice	X	X	X					
F-to-M voice	X	X					X	X
PC-to-PC voice	X			X	X	X		
Broadband Internet	X			X	X			
VoIP F-to-F	X	X			X	X		
Mobile Internet				X	X		X	X

In summary …

- Costs of services comprise
  - Network usage costs stemming from costs of network elements
  - Marketing and support costs
    - Specific
    - Common
  - Appropriate shares (relevance) of associated shared costs
  - Cost of capital
- In the cost modelling process, one judgement has to be exercised on which costs to include in the model, according to the goal sought

Thank you for your attention!