Techno-Economic Analysis of IP Multimedia Subsystem for Convergence Scenarios

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Background

- **ECOSYS** research project
- Preliminary results in **Deliverable 22**, 2/2007

- **FMC** disrupts established business structures in the telecommunications industry
- **IMS** prevents the bit-pipe business model

Objectives

- Identifying the **main services** employing IMS during 2007-2014

- Identifying the **capacity requirements** of these services

- Identifying the **IMS architecture** matching these requirements

- Estimating the **CAPEX and OPEX** required for building such architecture

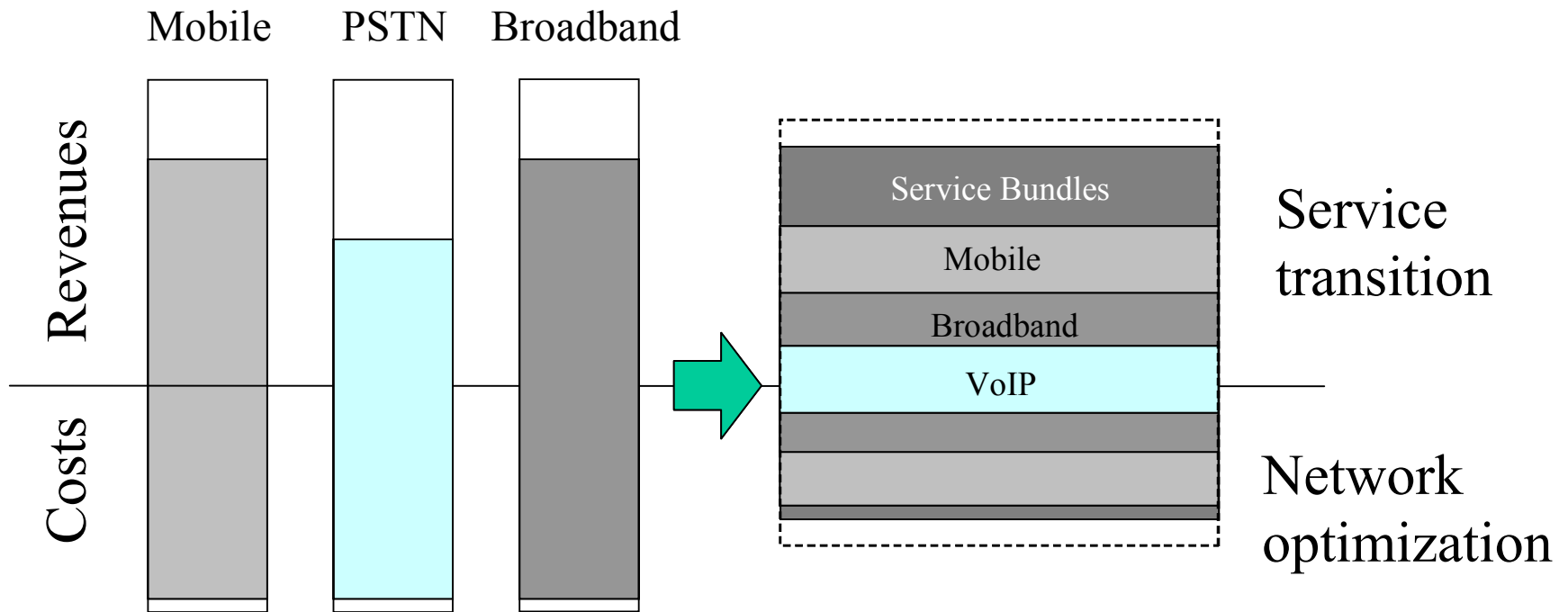- Identifying the **main sources of uncertainty** in the estimations

Methods

- Literary analysis

- Interviews: 6 professionals

- ECOSYS discussions and internal resources

- Techno-economic modelling

- Sensitivity and risk analysis

Fixed-Mobile Convergence (FMC)

Mobile   PSTN   Broadband

Revenues

Costs

Service Bundles

Mobile

Broadband

VoIP

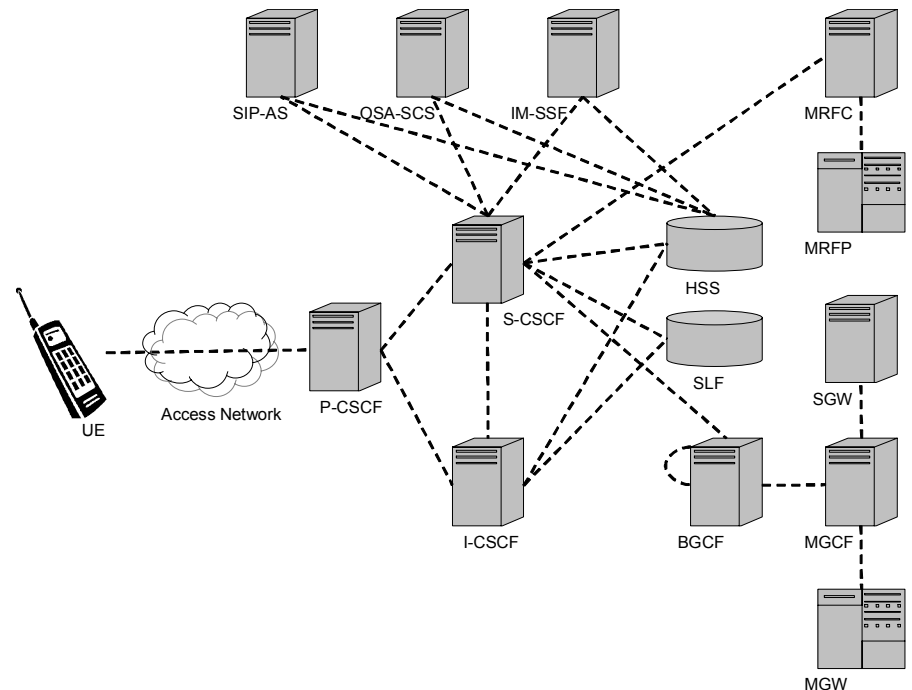Service transition

Network optimization

Source: CELTIC-ECOSYS, 2006. Deliverable 22: Final results on economics of converged network and service environment.
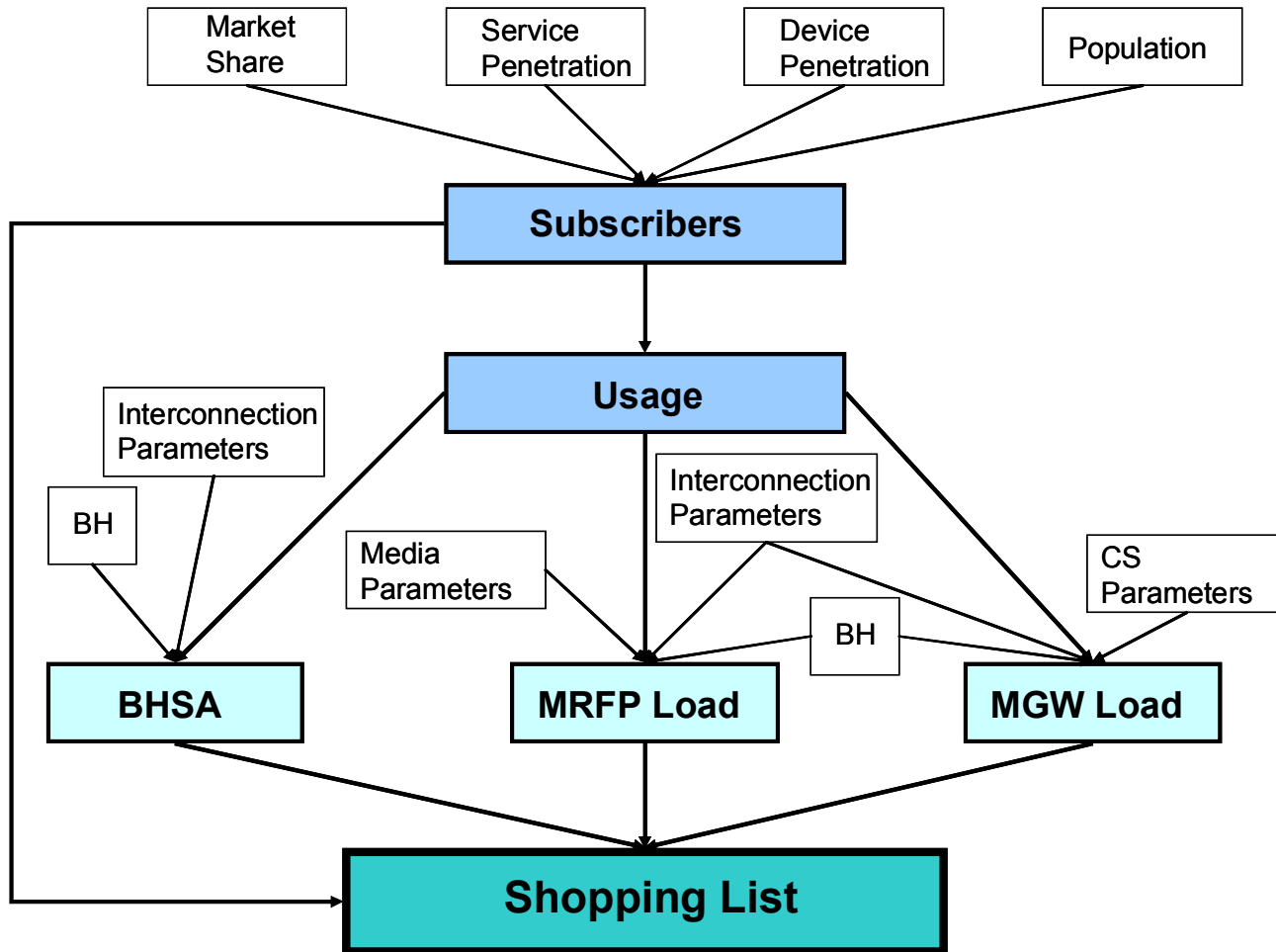
IP Multimedia Subsystem (IMS)

- Key technology in FMC

- 3GPP, ETSI, IETF etc.

- Protocols: SIP, Diameter etc.

- Session concept

- Benefits:
  - centralized QoS & AAA
  - evolved charging
  - rapid service deployment

- Criticism:
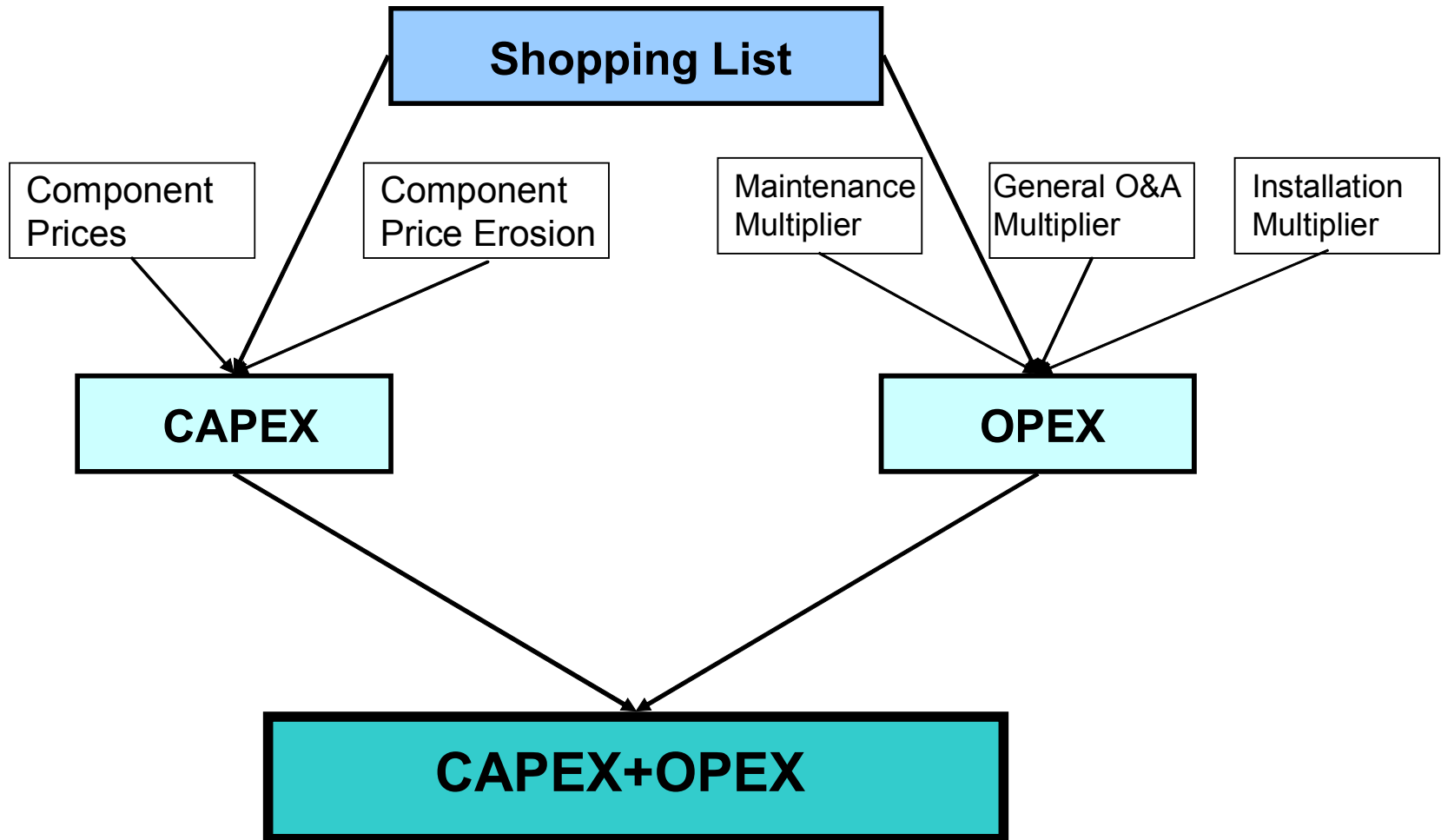 - Internet Monetization Scheme
  - complexity

Techno-Economic Analysis

Operators

Suppliers

Standardisation body

Other

Component database

Cost evolution

OA&M class

Volume class

User inputs

Services

Architectures

Radio model

Operators

Surveys

Market size + Tariffs + Policy

Game theory

Year n

...

Year 2

Year 1

Revenues

Investments

Cash flows

Profits

Financial model

Decision index calculation

NPV, IRR, payback period

Real options

Source: CELTIC-ECOSYS, 2006.
Deliverable 16: Report on techno-economic methodology.

Dimensioning

Cost Classification

Shopping List

Component Prices

Component Price Erosion

Maintenance Multiplier

General O&A Multiplier

Installation Multiplier

CAPEX

OPEX

CAPEX+OPEX

Scenarios

- ## Rapid-Large
  - reduced IMS services adoption

- ## UMA-Large
  - UMA for seamless CS interconnection until 2009

- ## Rapid-Small
  - reduced IMS services adoption
  - voice call services deployed in 2009

- ## UMA-Small
  - UMA for seamless CS interconnection until 2009
  - only voice call services in 2007 and in 2008

Results

- **Deploying IMS with UMA** results in higher costs but possibly also in higher revenues than deployment without it.

- **Cautious deployment of services** results in a better business case than rapid deployment.

- **Central signalling processing and CS-PS interconnection** are the main sources of cost in IMS deployments.

- **Mobile IMS device penetration** correlates most to the sensitivity of the model, followed by concentration of traffic during the busy hour, voice call amount and interconnection rate.

Conclusions

An incumbent operator has four ways to go:

- **continuing** with the current business model

- implementing IMS **cautiously**

- transforming their networks **rapidly** into FMC with IMS

- adopting the **bit-pipe** business model

Future Work

- definitive service **usage** framework

- service **pricing** and **revenue** streams

- **interoperability** and **roaming** issues

- efficiency and performance of the IMS **architecture**

- more complex and realistic **component cost** allocation function

- IMS **service development** issues