

FORMATION NIVEAU EXPERT EN MODELISATION DES COUTS DES RESEAUX TELECOMS POUR LES REGIONS HIPSSA

Dakar

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Session 7 – Approches de modélisation des coûts et leur rôle dans la régulation



Agenda

Objectifs de cette session



Identifier et comprendre les différents types de modèles de coûts



Les quatre types basiques des modèles de coûts

BRAINSTORM

- Que veut dire chacun des termes?
- Quelles sont les 2-3 caractéristiques de chaque type?
- Comment construire chacun de ces types?

Top-down

Bottom-up

Hybrid

Benchmarks

Modèle de coût Top-down

Caractéristiques des modèles Top Down

- OBJECTIF: établir des estimations de coûts à partir des données comptables fournies par l'opérateur historique
- Données souvent confidentielles
- Basé sur le réseau existant, inefficacités potentielles
- Coûts historiques intégrés
- Points critiques
 - Bonne séparation entre le coeur de réseau et le réseau d'accès
 - durée d'amortissement
 - taux de rendement
 - Valorisation des actifs
- Données réelles (sans hypothèses)

Source: RTR



Organigramme du modèle Top down

Step 1: Take costs from GL and determine relevant costs

Step 2: Group costs into Homogeneous Cost Categories

Step 3: Group relevant costs into network elements and common costs

Step 4: Revalue fixed assets on a current cost basis

Step 5: Calculate CCA depreciation

Step 6: Construct Cost-Volume Relationships

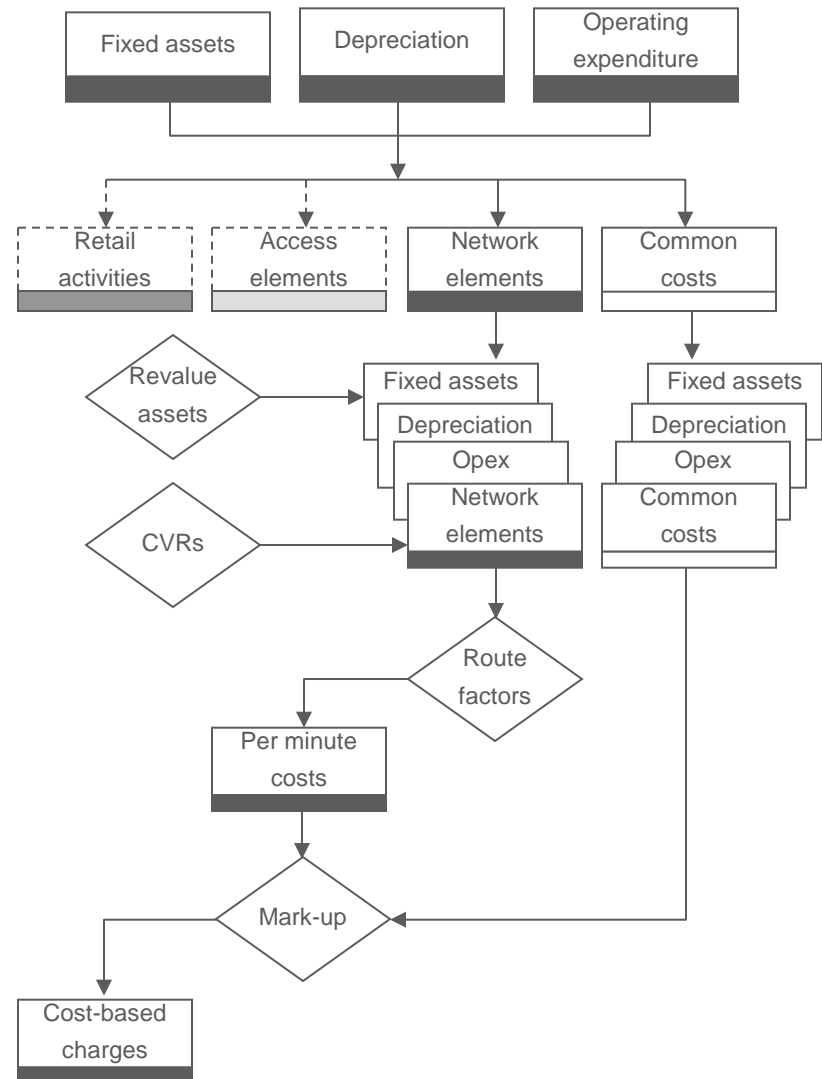
Step 7: Group operating expenditure, depreciation and NBV of fixed assets by network element. Convert to annual costs

Step 8: Divide network elements by minutes of traffic using route factors

Step 9: Bundle network element minutes into standard interconnection service

Step 10: Apply mark-up to recover common costs

Step 11: Calculate charges



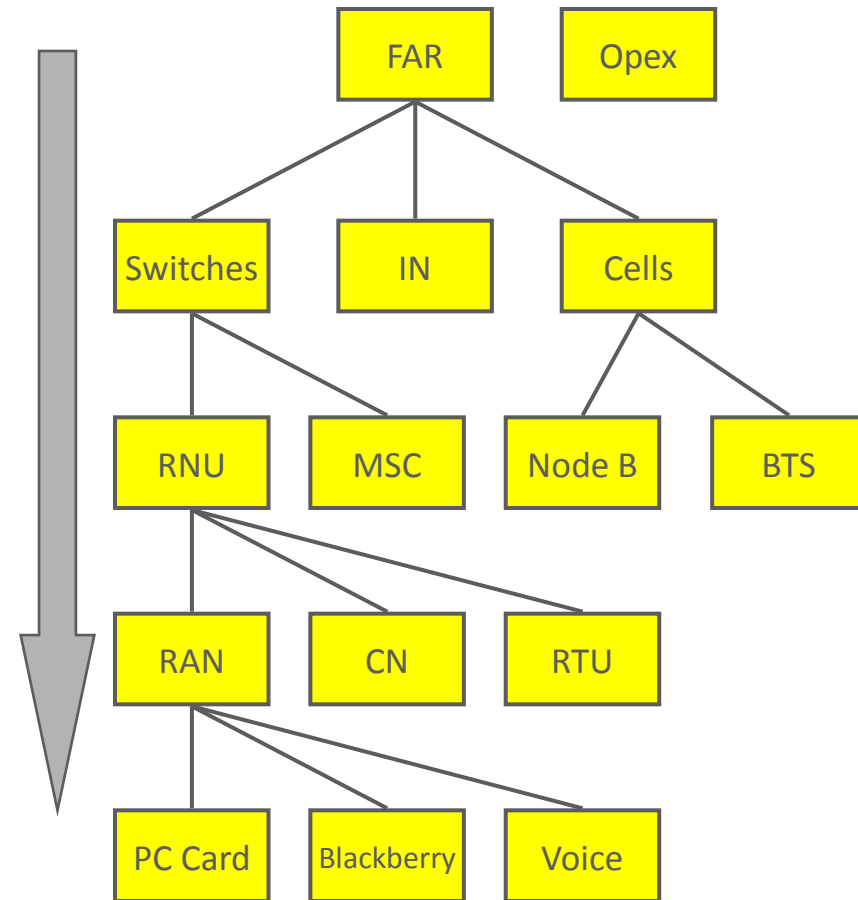
+ et – des modèles top-down

Avantages

- Takes General Ledger as the starting point, which provides a real basis for reconciliation.
- In turn, this encourages *buy-in*; often essential for a successful project.
- Asset Values can use any relevant methodology from NBV to LRIC.
- Uses “Real” sales traffic.

Inconvénients

- Value of the Network Assets may not represent the economic value.
- Depends very much on the quality of the Fixed Asset Register (FAR)



Les modèles de coûts Bottom-up

Caractéristiques

- Objectif: estimer les investissements de l'infrastructure d'un réseau efficace basé sur un modèle d'ingénierie.
- Modèle analytique pour déterminer un réseau abstrait construit dans l'état de l'art avec une topologie optimale.
- Différents degrés de liberté:
 - Approche Scorched node:
les position géographiques des répartiteurs généraux/stations de base sont maintenues.
 - Approche Scorched earth:
Les positions géographiques sont recalculées.

Source: RTR



Organigramme du modèle Bottom up

Step 1: Establish network design

Step 2: Identify and determine capital cost of network elements

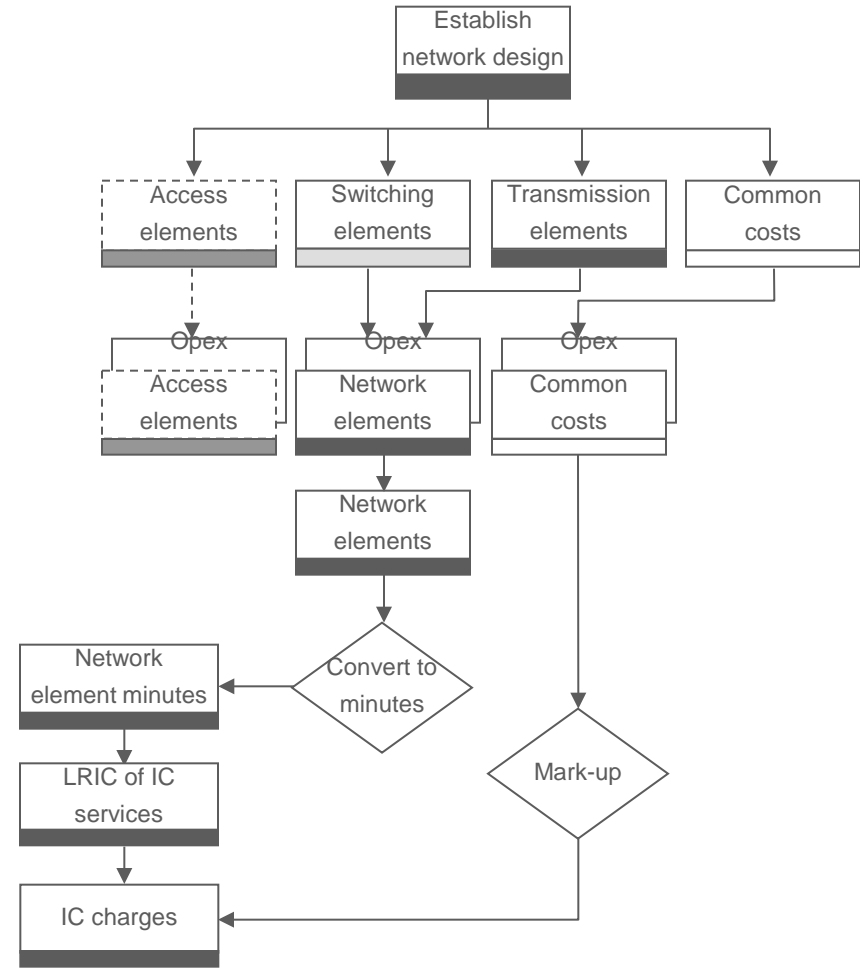
Step 3: Calculate operating expenditure

Step 4: Combine capital and operating costs into an annual costs per network element

Step 5: Divide network elements by minutes of traffic

Step 6: Bundle network element minutes to calculate LRIC of each interconnect service

Step 7: Mark-up to set interconnect charge



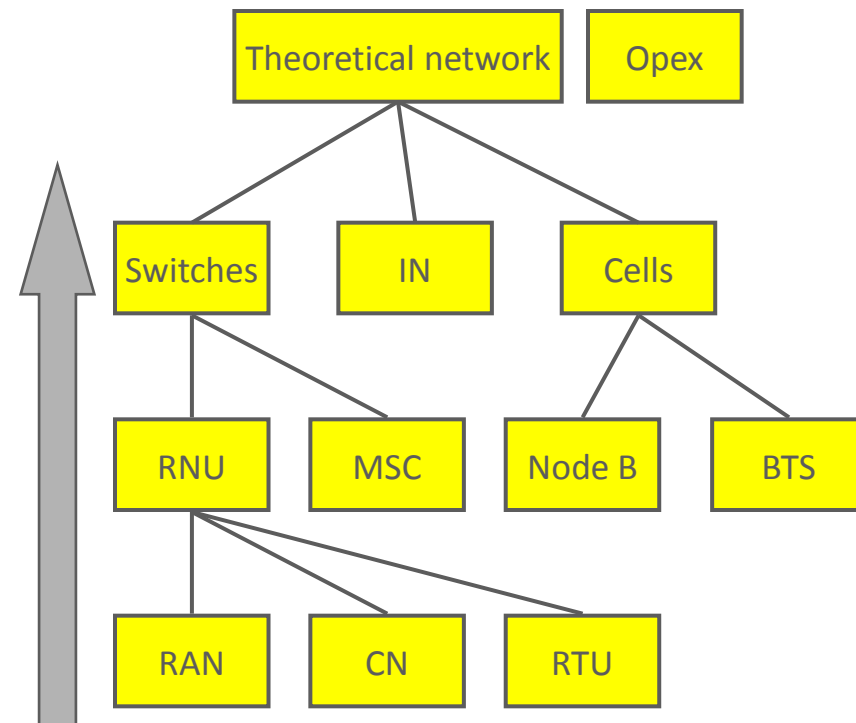
+ et – des modèles of bottom-up

■ Avantages

- Often preferred by regulator, who also allows Working Average Cost of Capital (WACC) = Interest on investment.
- Useful if there are doubts about the existing infrastructure

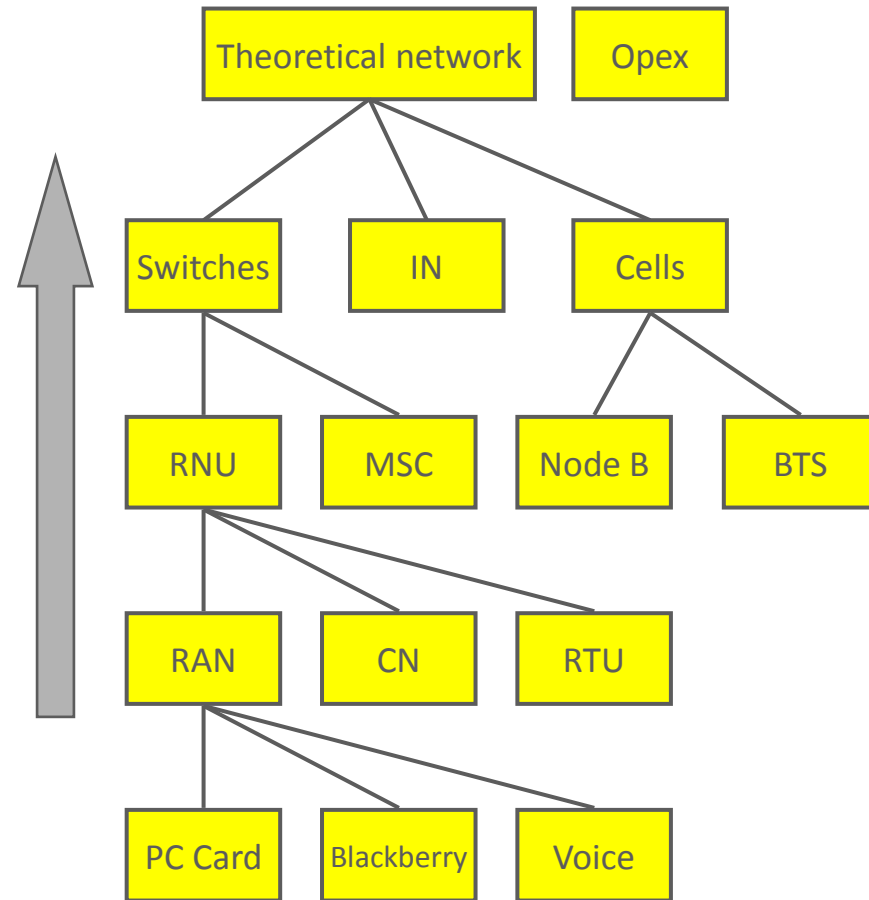
■ Inconvénients

- Harder to compare to the real organisation.
- Far more complex to implement than Top Down.
- Uses Traffic estimates.
- Results DO NOT agree with any other financial analysis.



+ et – des modèles of bottom-up (2)

- Bottom Up approach assumes we start with nothing and rebuild the network from scratch.
- “Scorched Node” Replace existing assets with Modern Equivalent Assets (MEA).
 - Advantages
 - Can use real sales data
 - Can use existing network structure
 - Disadvantages
 - Might not be suitable for very old fixed networks
- “Scorched Earth” assume a green field optimal network, with MEA.
 - Advantages
 - Useful for comparing different operators.
 - Disadvantages
 - Difficult to do
 - Results are easy to challenge as it relies on so many assumptions.

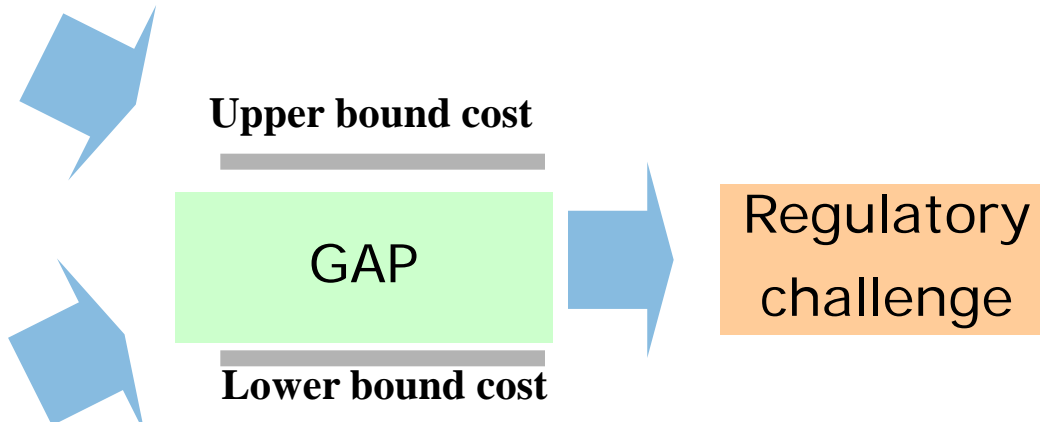


Ecart entre les résultats top down et bottom up

Range of costing approaches

Top down

- Uses existing historic cost accounting data



Bottom up

- Investment cost calculated by a theoretical model

Source: RTR

Réduire l'écart– Modèles Hybrides

- Hybrid models seek to close the gap between top-down and bottom-up results
- They can start at either end, adding functionality from the other side:
- Start from top-down:
 - Revalue assets on a modern equivalent assets (MEA) basis
 - Recalculate depreciation on an economic basis (or proxy for economic depreciation)
- Start from bottom-up:
 - Calibrate total network investment and direct operating expenditure from accounting data
 - Derive mark-ups for common costs from actual opex



Vue d'ensemble des trois types de modèles de coûts

Top-down models

Good at:

- Accurately capturing total historical costs

Poor at:

- Transparency
- Dis-aggregation
- Efficiency

Bottom-up models

Good at:

- Transparency
- Efficiency
- Future projections

Poor at:

- Ensuring cost recovery
- Estimating opex

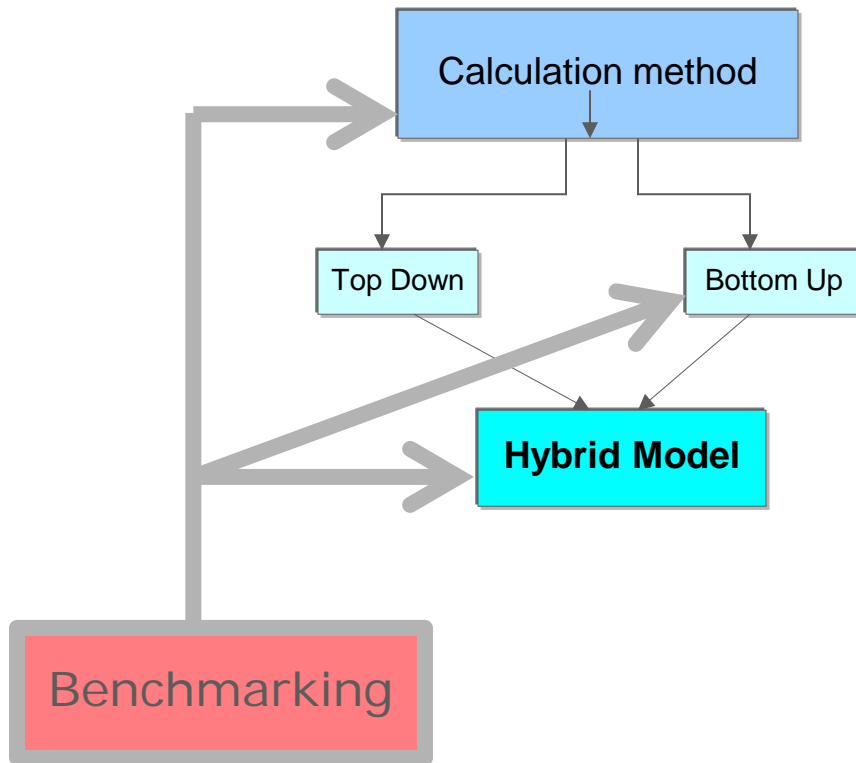
Hybrid models

Combine good points of each approach:

- Accurately capturing total costs (with efficiency adjustments)
- Transparency
- Future projections



La place du benchmarking?



There are many levels at which benchmarking can contribute to regulatory pricing:

- Total calculation – no need to model
- To test or provide input data for BU Model
- To provide data for a Hybrid Model
- To test other data and calculations

Benchmarking comme un outil de modélisation des coûts

Benchmarking is often used to:

- **verify data in top-down models**
- **supply input assumptions in bottom-up models**

- **Top down modelling**
 - Cost allocation rules
 - Routing factors
 - Efficiency adjustments (hybrid)
- **Bottom up modelling**
 - Unit asset prices, price trends and asset lives
 - Installation and operating expenditure
 - WACC
 - Mark-ups

Benchmarking as a proxy cost model

Benchmarking can also be used as a proxy cost model:

- As an alternative to other methods
- To cross-check results obtained from other methods

- Establishes an estimate of cost-based prices by comparison of similar service prices in other countries
- Choosing the benchmark set is critical
 - consider the comparability with the home country
 - make sure that the charges being compared are themselves cost-based



+ et – du benchmarking

■ Avantages

- can be implemented quickly and with minimal development cost
- compares to actual practice
- useful for setting initial costs and to check the output of models

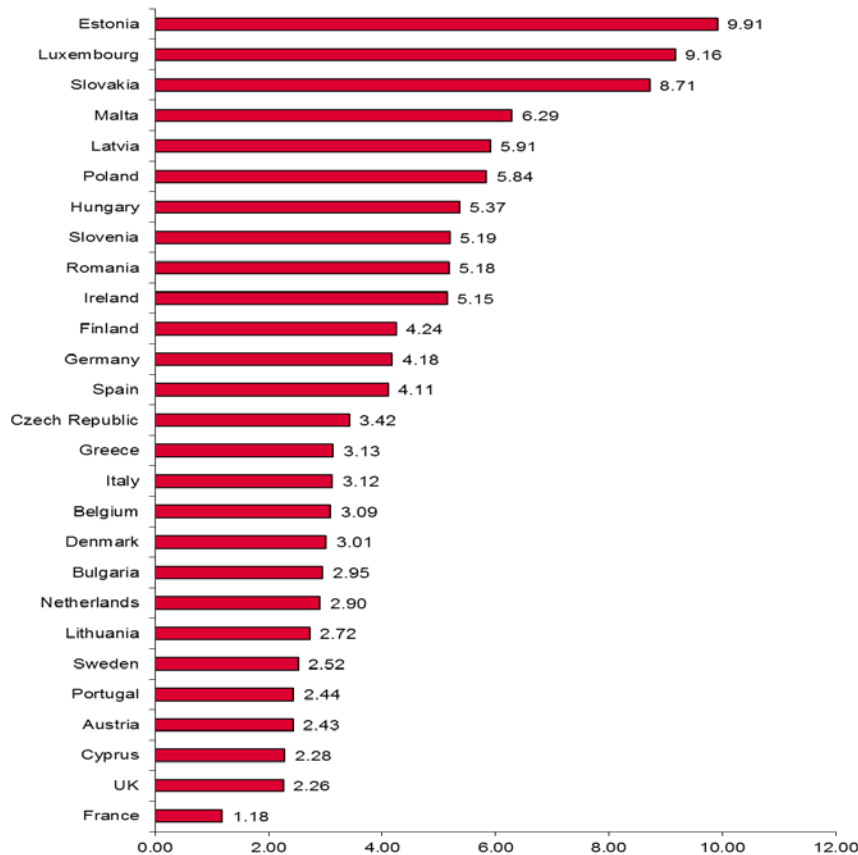
■ Inconvénients

- difficult to take into account the variations in operating conditions of the other countries
- choice of the benchmark set is often contentious
- does not directly examine local cost considerations



Un benchmark typique

Average mobile termination charges, calling party pays, EU 27, USD cents (PPP)



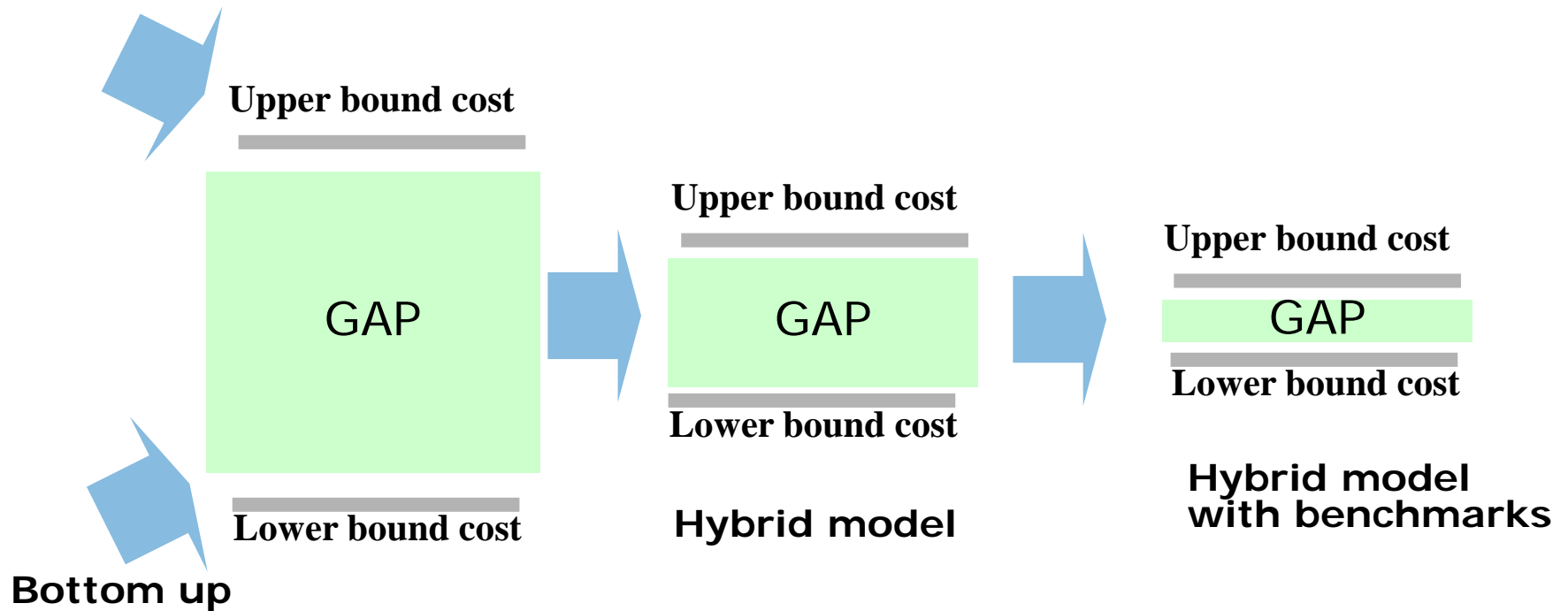
Source: Ovum

- Range 1.18 to 9.91cpm
- Some use pure LRIC some use LRAIC
- Variations in scale of country, urbanisation, mobile penetration, GDP, wage rates – all of which affect unit costs
- How might the benchmark be set:
 - Average
 - Median
 - Average of lowest quartile
 - Average of 10 most similar countries
 - etc



Relation entre les types de modèles de coûts

Top down

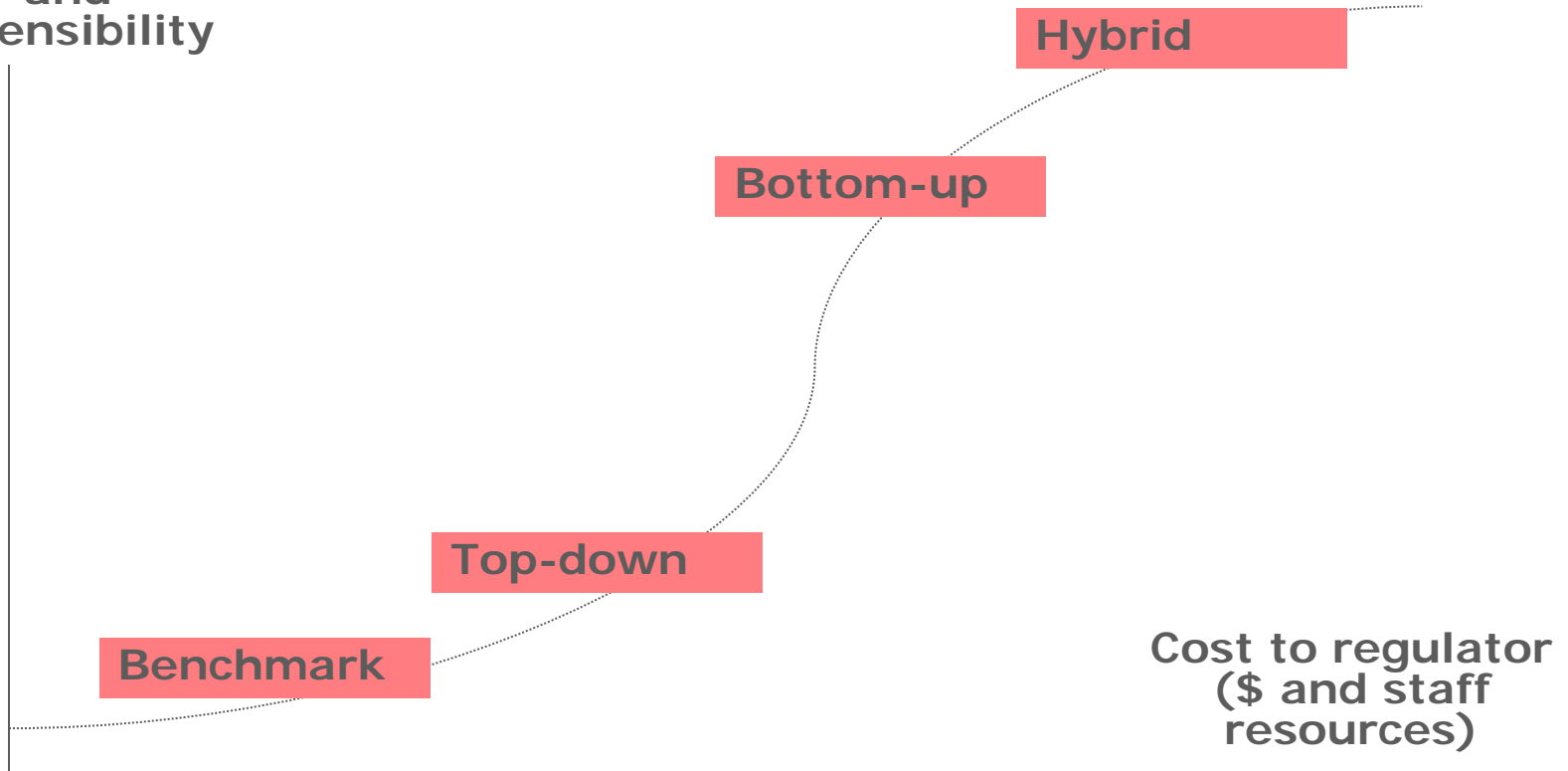


Comment appliquer les différentes techniques de modélisation pour une régulation efficace?



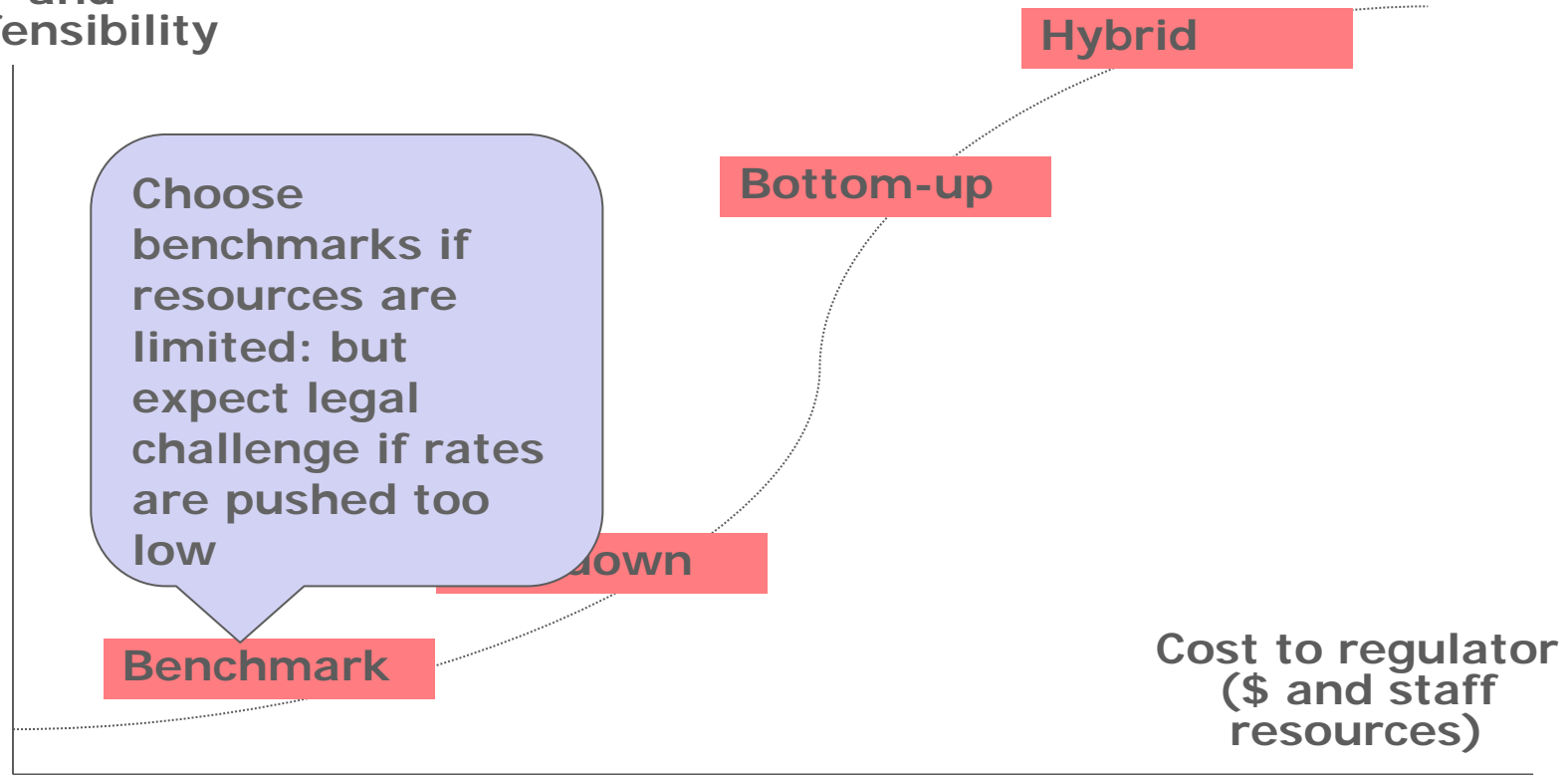
Le meilleur choix est le choix pratique

Effectiveness
and
defensibility



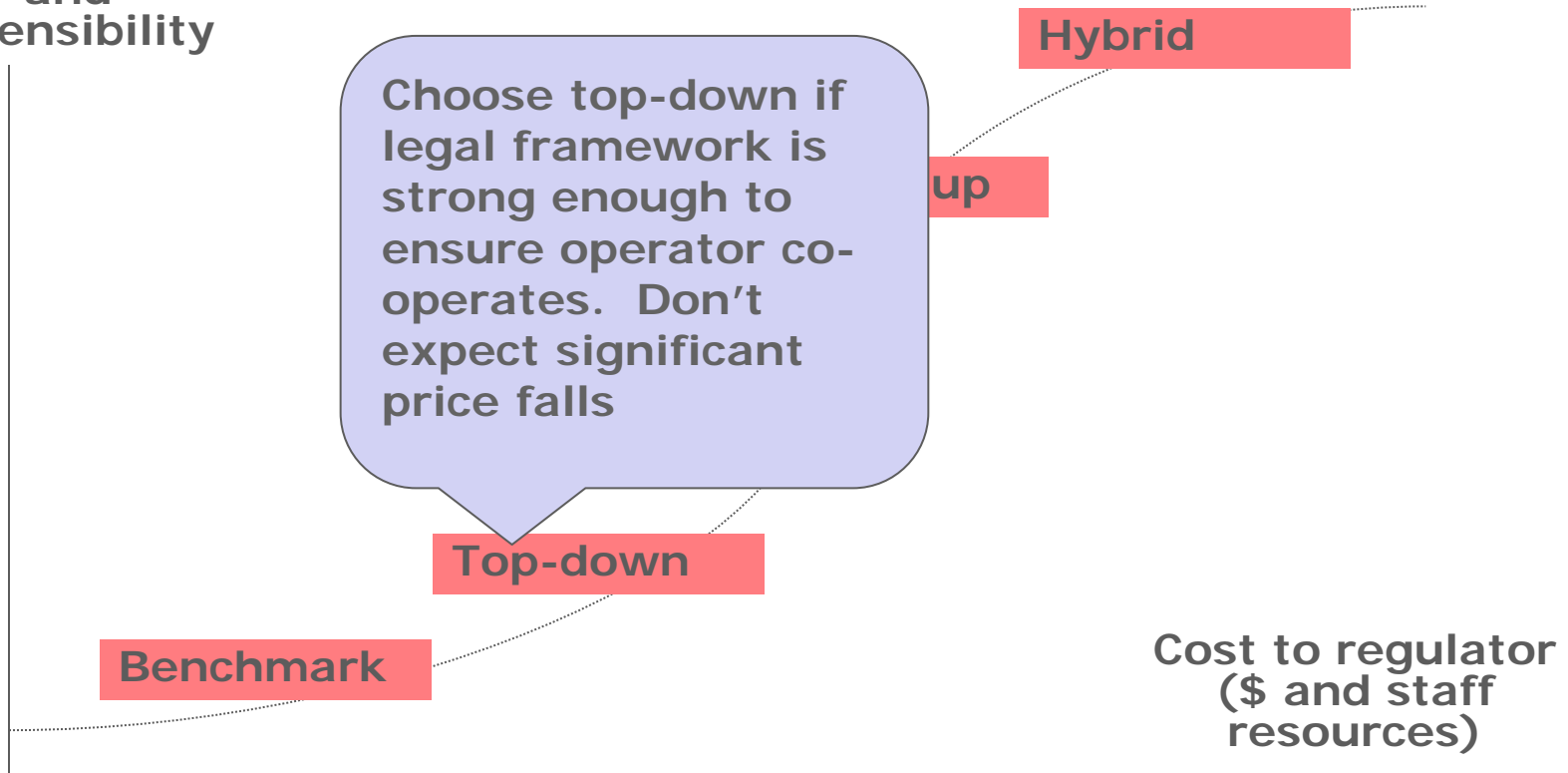
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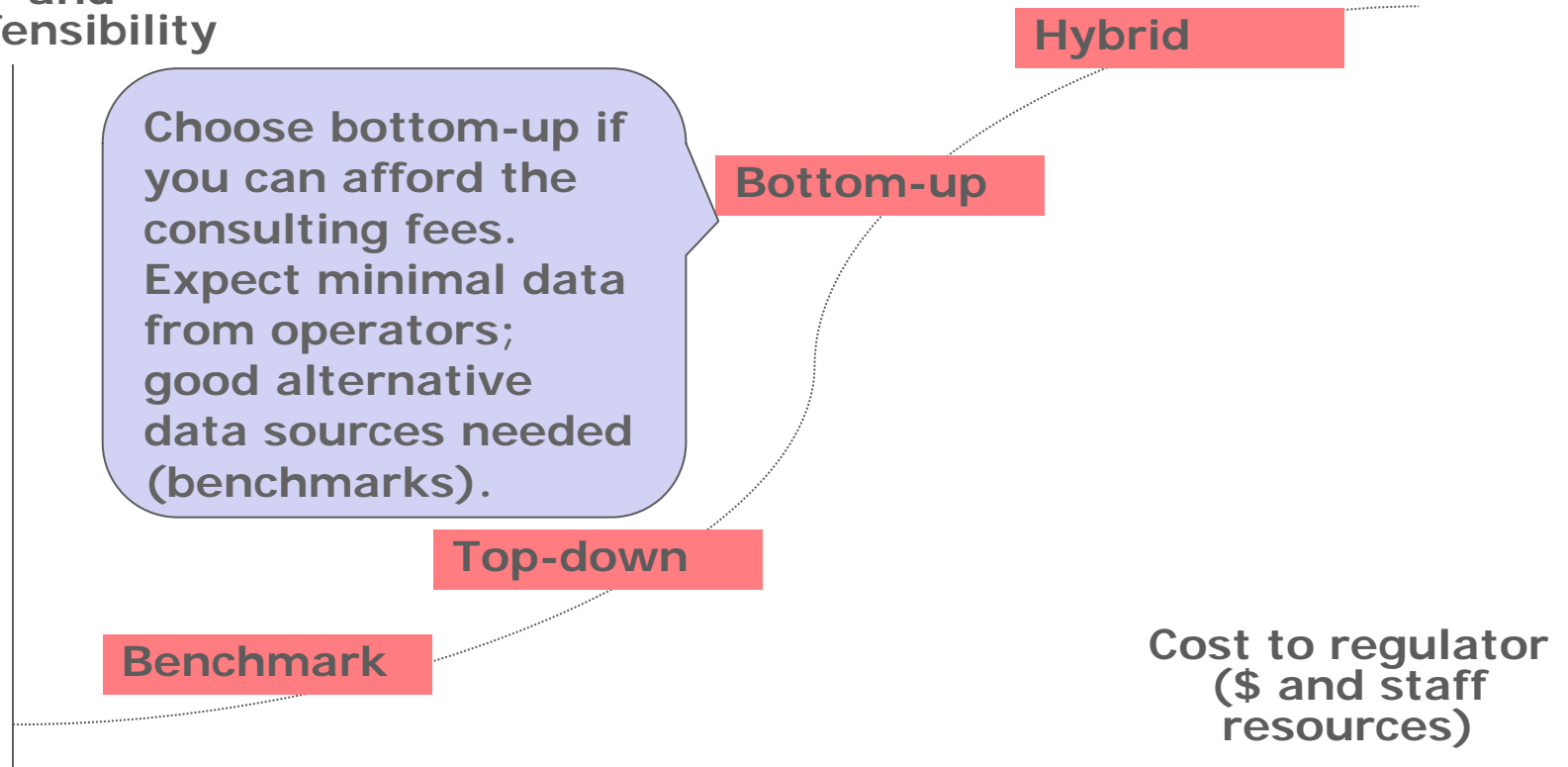
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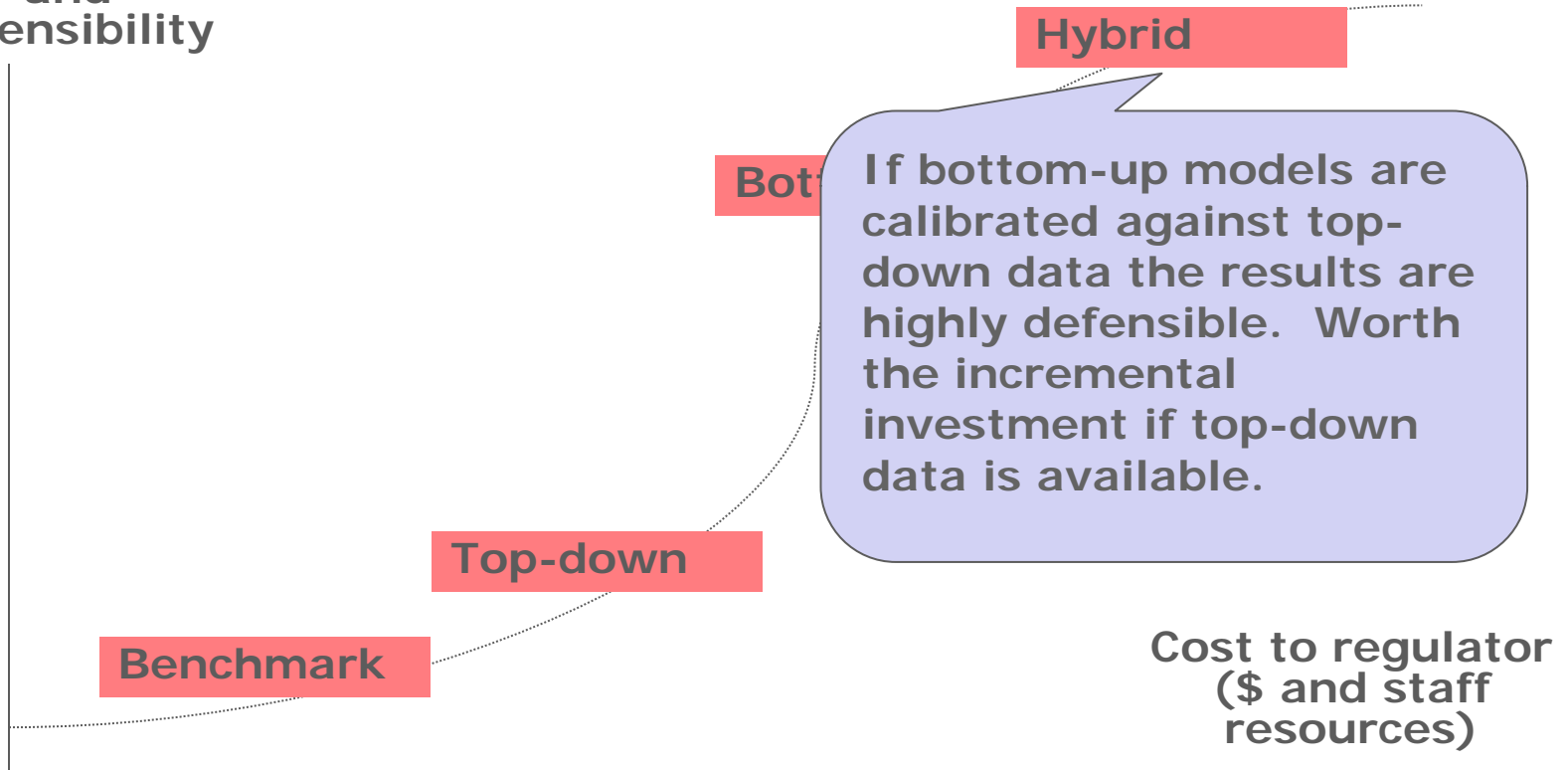
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Mini-étude de cas

- Mobile termination rates (MTRs) in A-land currently stand at 5.5cpm (USD cents per minute)
- Respondents to a public consultation have said that:
 - A regional benchmark of 18 countries shows that MTRs range from 2cpm to 12 cpm, with an average of 5.1cpm and a median of 4.2cpm.
 - One mobile operator claims it has a top-down model which shows its costs at 4.8cpm
 - The regulator in a neighbouring country has recently completed a bottom-up model estimating costs of 1.8cpm. This is being challenged in court.
- Consultants responding to a recent RFP for bottom-up models quoted \$100k – 20% over your budget.



Votre tâche

- The Chairman of the Regulatory Authority has asked you to consider the facts and make a reasoned recommendation on the way forward.
 - Evaluate the options
 - Propose a course of action
- You may include any or all of the four main modelling approaches

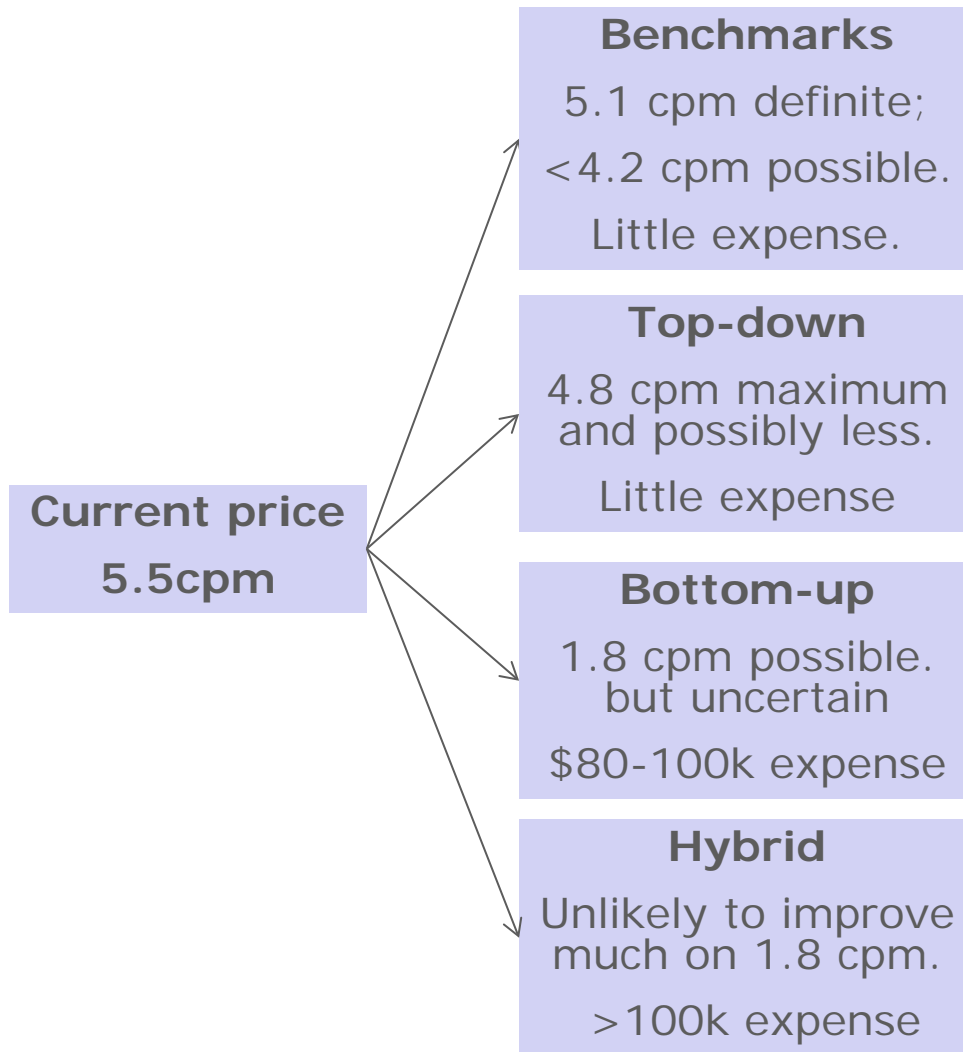
Top-down

Bottom-up

Hybrid

Benchmarks

Mini-étude de cas



PROPOSAL

- Potential improvements with bottom up model justifies the expense.
- Negotiate the consultants down to \$80k
- Require that they take into account the top-down and benchmark data, without necessarily building a hybrid model.



Régulation effective basée sur le calcul des coûts

