



ITU Regional Economic Dialogue on Information
and Telecommunication Technologies
(RED-2019) for Europe and CIS

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**Advances in regulatory costing and
pricing strategies in the digital
economy**

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Part 1: How regulatory costing and pricing has evolved to date

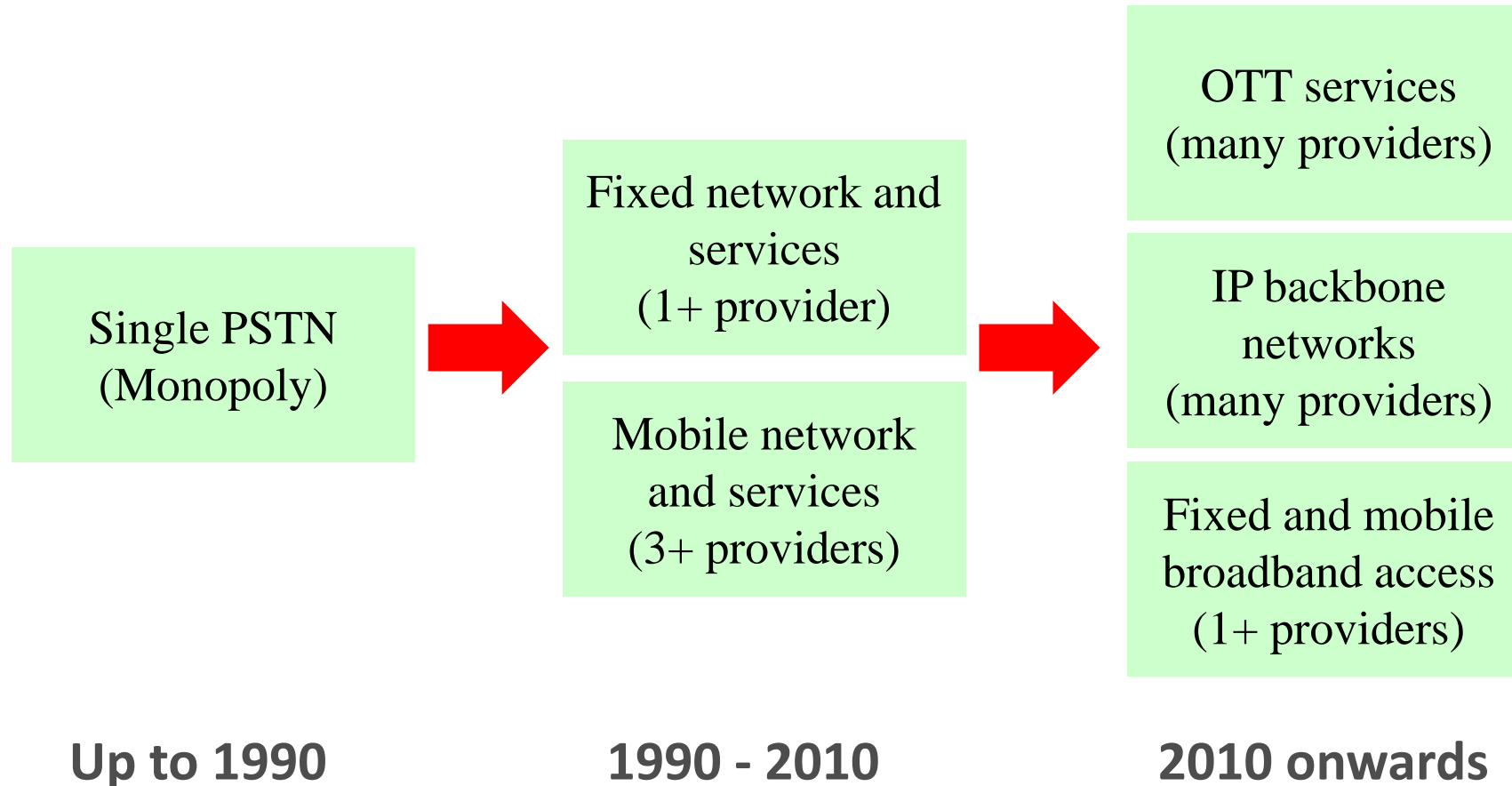


Overview

- Traditional approaches to cost and price regulation
 - Monopoly era
 - Competitive era
- Changing business models and their impact on price regulation
 - The IP network revolution
 - OTT services and multi-play
- Current and future requirements
 - A focus on access networks fixed and mobile



The digital revolution



(Timelines are only indicative and vary by country)



Price regulation of monopoly

- Public utility service
- State control and ownership
- Pricing based on political and social objectives
- Revenue creation for the Government
 - Cost plus required revenue share
 - Static view of costs without assessing efficiency

Monopoly-based regulation still exists in many countries but it generally holds back investment, innovation and efficiency, results in higher end user prices and holds back the digital economy.



Price regulation of fixed/mobile competition

- Separate platforms with different cost and price structures
- Retail/wholesale and network/service differentiation begins
- Emergence of competition and relaxation of price controls
- Regulation based on Significant Market Power

Define markets

Determine SMP

Apply remedies



The objectives of price regulation

- Avoid price controls if you can – don't regulate if the market is competitive
- Concentrate on wholesale price controls as far as possible – prices in retail markets can then be left to competitive forces
- Remember that not all prices need detailed costing (e.g. retail-minus pricing or benchmarking may be appropriate)
- Allow operators to cover their costs plus a reasonable return on capital employed (profit) – makes for sustainable prices
- Goal: find a “simulated” market price – try to mimic the prices that a competitive market would produce



The role of cost-modeling

- New entrants require call termination services (fixed and mobile) in order to compete:
 - Any-to-any connectivity
 - Network effects
- Service competition requires access to bottleneck facilities (e.g. local loops)
- Cost models to ensure prices for these services are fair and transparent, based on efficient and forward-looking prices
 - Long run incremental costs



Three cost model types

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 onex



Hybrid models

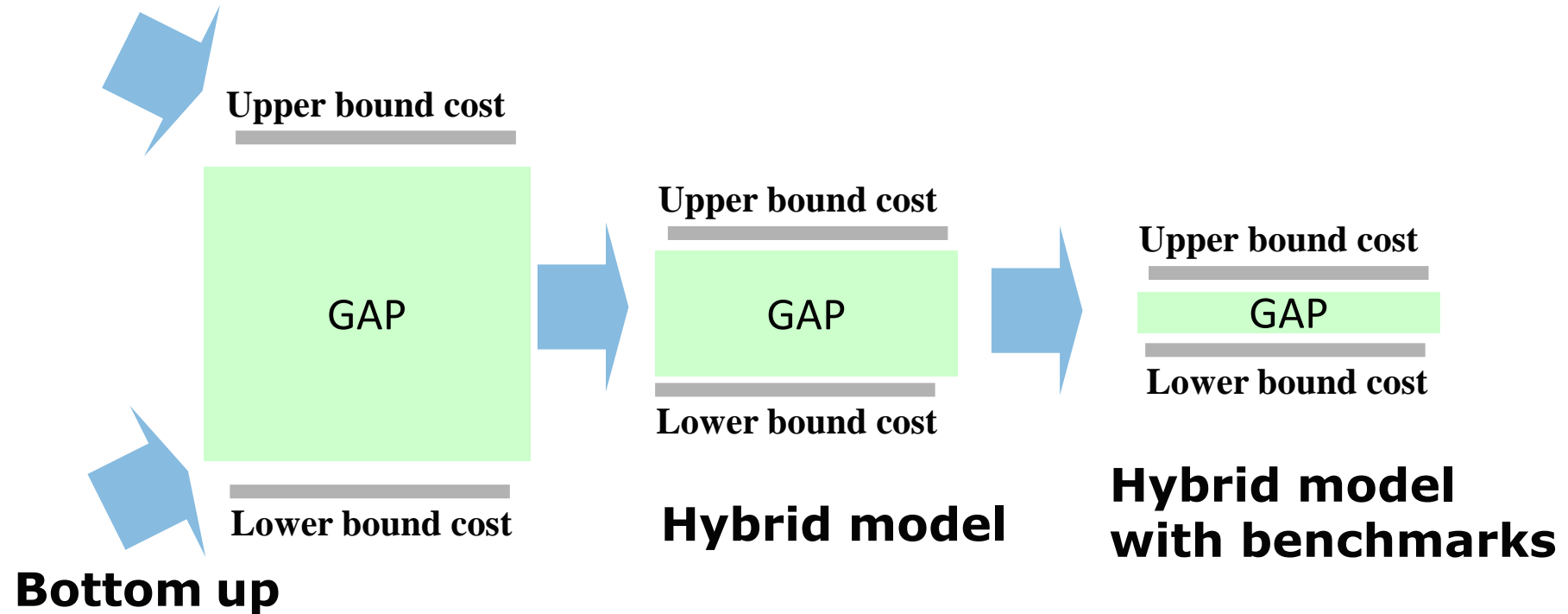
Combine good points of each approach:

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



Using models in price regulation

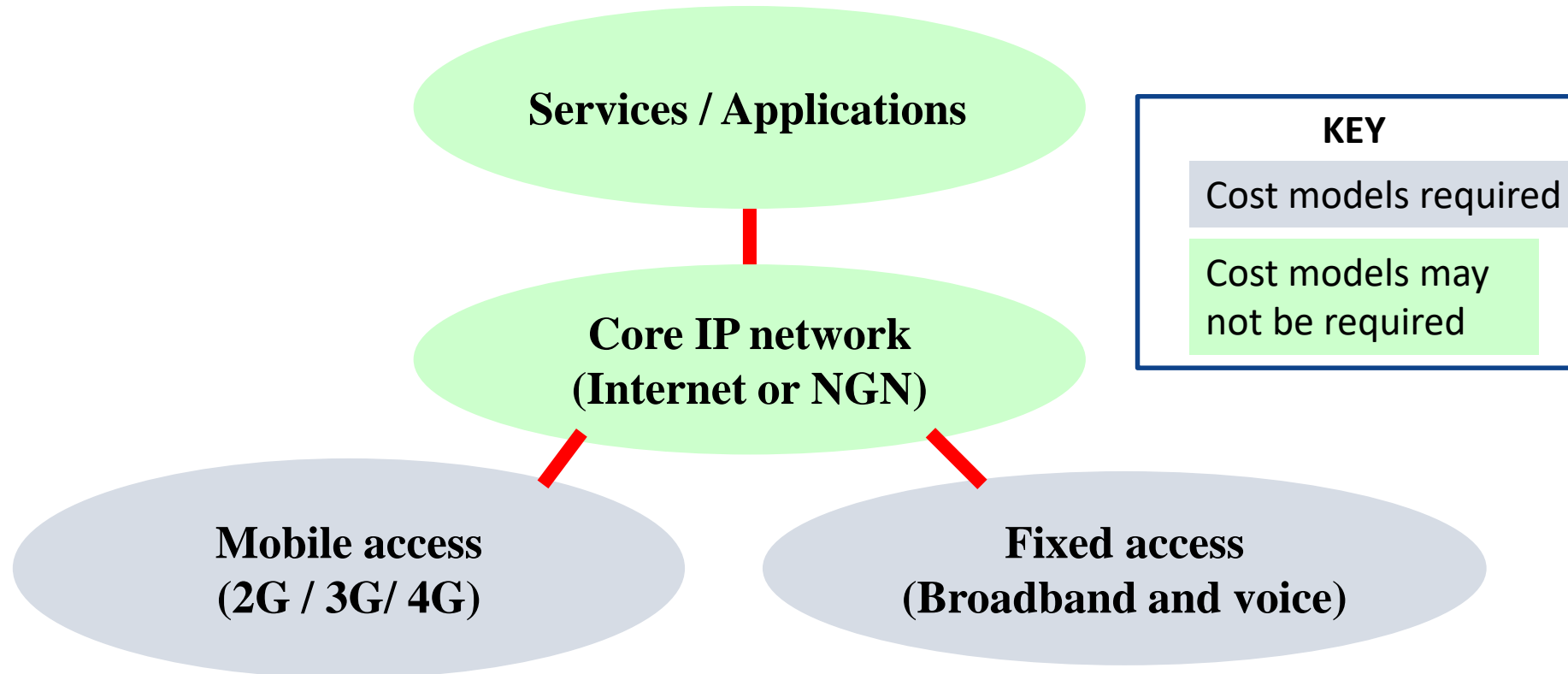
Top down





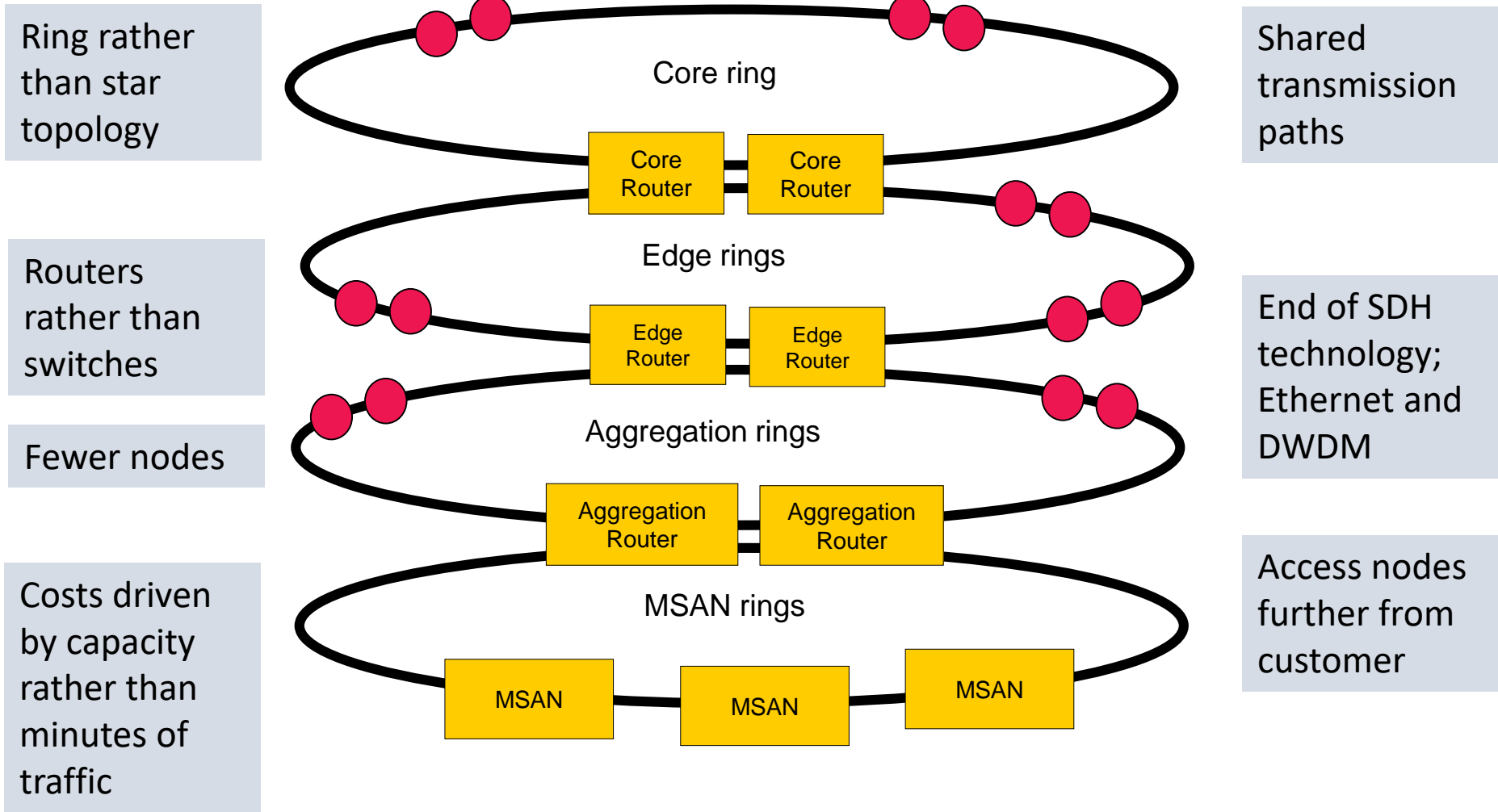
Transition to IP networks

- IP networks are radically changing the service supply chain, affecting costs and prices





Structure of an IP network





Cost modelling of IP networks

- IP network models are substantially different from PSTN models.
- The tendency is to have high fixed and low variable costs, thus making usage-based charges somewhat theoretical.
- Variable costs are based on Mbps and not voice minutes
- It is hard to reconcile assumptions within the model between theoretical efficiency and actual deployment practice (e.g. tendency to build in lots of spare capacity)

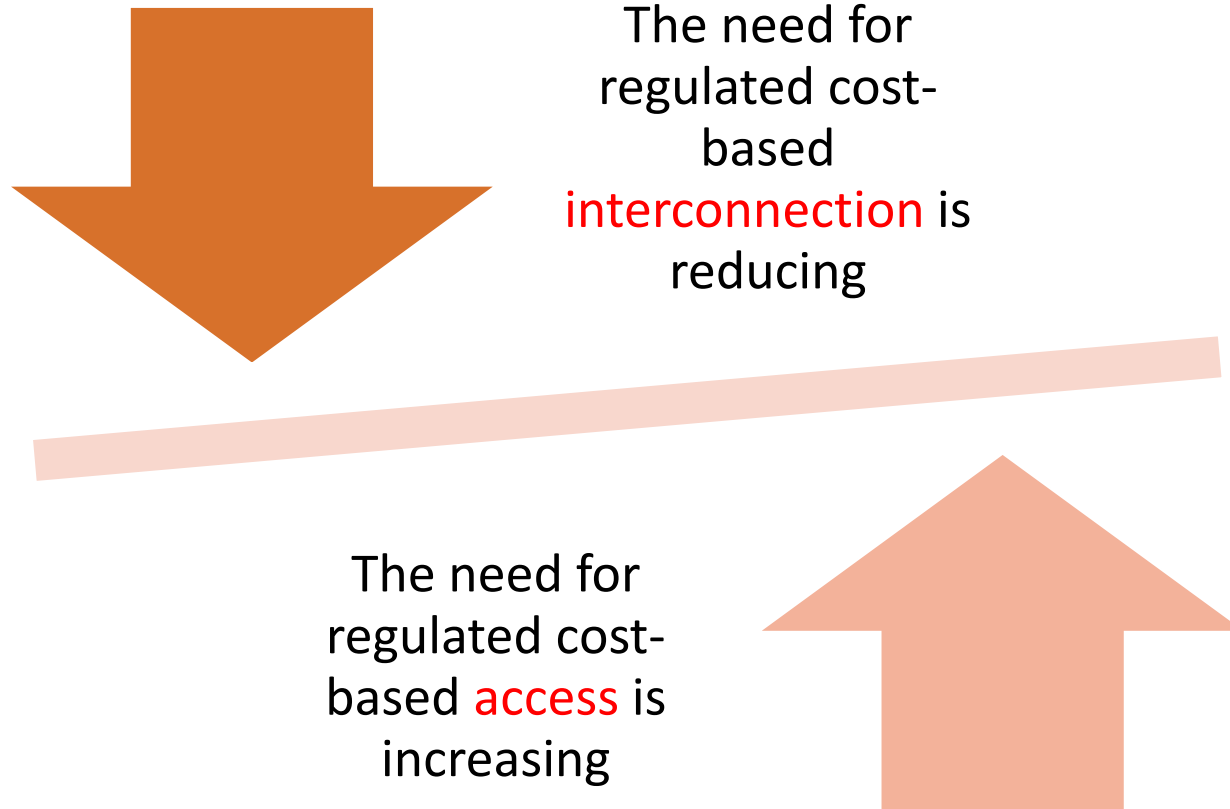


Price regulation of IP networks

- Key issues:
 - Voice is dying: so cost-based voice termination is of marginal significance
 - Broadband access over fixed and mobile networks is critical to service providers
 - Bundling of retail services: e.g. quad-play (fixed, mobile, internet and TV)
 - Evolution of markets and market power; potentially less SMP and less need for ex-ante regulation
 - Cost-based regulation may still be important but more likely in ex-post dispute resolution.



A shift in the regulatory balance





Principal regulatory requirement for cost models

- Mobile network cost model
 - With 2G, 3G and 4G components (with 5G soon)
 - Cost increments for coverage and capacity
 - Capacity to be based on Mbps.
 - Used to set voice termination rates.
- Fixed access cost model
 - Different technologies (e.g. copper and fibre; buried and overhead cable)
 - Different local geographies (e.g. urban and rural; rocky or sandy terrain)
 - Costs for different access products (e.g. full loop, shared loop, virtual unbundling, bitstream access).



Part 2: Case study – the European Union



Principal regulatory instruments

FIXED ACCESS

Recommendation on costing methodologies to enhance the broadband investment environment
(2013)5761

MOBILE

Recommendation on regulatory treatment of fixed and mobile termination rates
C(2009)3359

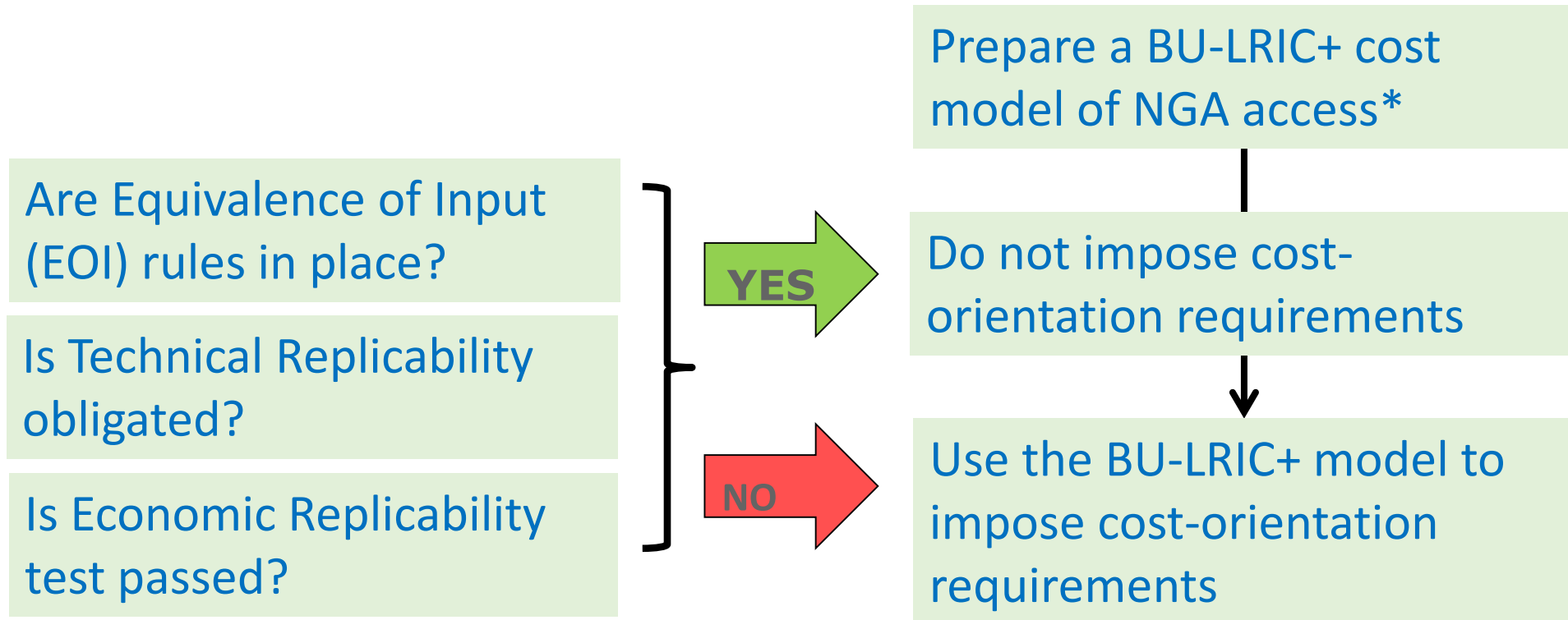
Directive establishing the European Electronic Communications Code
(EU 2018/1972)



Recommendation on costing methodologies (2013)

- The Recommendation seeks to:
 - use appropriate cost-accounting methods and ensure consistent pricing of access products along the same value chain to safeguard the ladder of investment principle,
 - apply the principles of the relevant cost model consistently to all relevant input data
 - recognise the importance of using the costs of a modern, efficient network to set access prices.
- The Commission considers (recital 29) that:
 - *The bottom-up long-run incremental costs plus (BU LRIC+) costing methodology best meets these objectives for setting prices of the regulated wholesale access services. This methodology models the incremental capital (including sunk) and operating costs borne by a hypothetically efficient operator in providing all access services and adds a mark-up for strict recovery of common costs. Therefore, the BU LRIC+ methodology allows for recovery of the total efficiently incurred costs.*

The approach to costing and pricing



* In some cases use of a legacy cost model is allowed.



The relevant tests

- Equivalence of Input test
 - meaning that all relevant services and information supplied to the access seeker are the same, and provided on the same timescales, as to the downstream businesses of the SMP operator.
- The technical replicability test
 - the access seeker must be able to replicate the retail offers of the downstream businesses of the SMP operator, based on having timely availability of all wholesale inputs and access to equivalent Service Level Agreements (SLAs) and Key Performance Indicators (KPIs) including: service ordering, service provision, quality of service, fault repairs, network migration.
- The economic replicability test
 - the margin between the retail price and the price of regulated wholesale inputs (being the most representative combination of active and passive elements in the time-frame of the analysis) covers the incremental downstream costs (of an operator equally efficient to the SMP operator) plus a reasonable percentage of common costs.



The BU-LRIC+ cost methodology

- The cost model should reflect a hypothetical, efficient operator capable of delivering Digital Agenda for Europe broadband targets
- It should be based on existing and new infrastructure (not all new) to include reusable legacy civil engineering assets
- Full replacement costs; but legacy assets valued by indexation method.
- Asset lifetimes to reflect actual physical lives (e.g. minimum 40 years for ducts)
- For services based on copper assume FTTC network is efficient and estimate cost difference of copper.
- Models to be in place by end 2016 and maintained for minimum of 6 years (subject to a number of exceptions).



Regulatory Asset Base

- Civil engineering assets (ducts, trenches, poles) are unlikely to be replicated, but instead could be re-deployed within an NGA network.
- The Commission therefore recommends using a Regulatory Asset Base (RAB) corresponding to the reusable legacy civil engineering assets based on the following principles:
 - be valued at current costs
 - take account of the assets' elapsed economic life (cost already recovered)
 - use an indexation method to calculate the current costs of the reusable civil engineering assets
 - be locked-in and rolled forward.



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Approach to setting mobile termination rates

- The Recommendation sought to harmonise the many different costing tools and implementation practices across EU member states.
- Symmetrical rates – the same for all operators above minimum scale, but transitional arrangements for new entrants possible for up to 4 years.
- Bottom-up costing methodology consistent with Modern Efficient Operator service provision
- Pure LRIC – an incremental cost approach allocating only the costs that would be avoided if the call termination service were no longer produced.
- Economic depreciation or a method similar to that of economic depreciation.

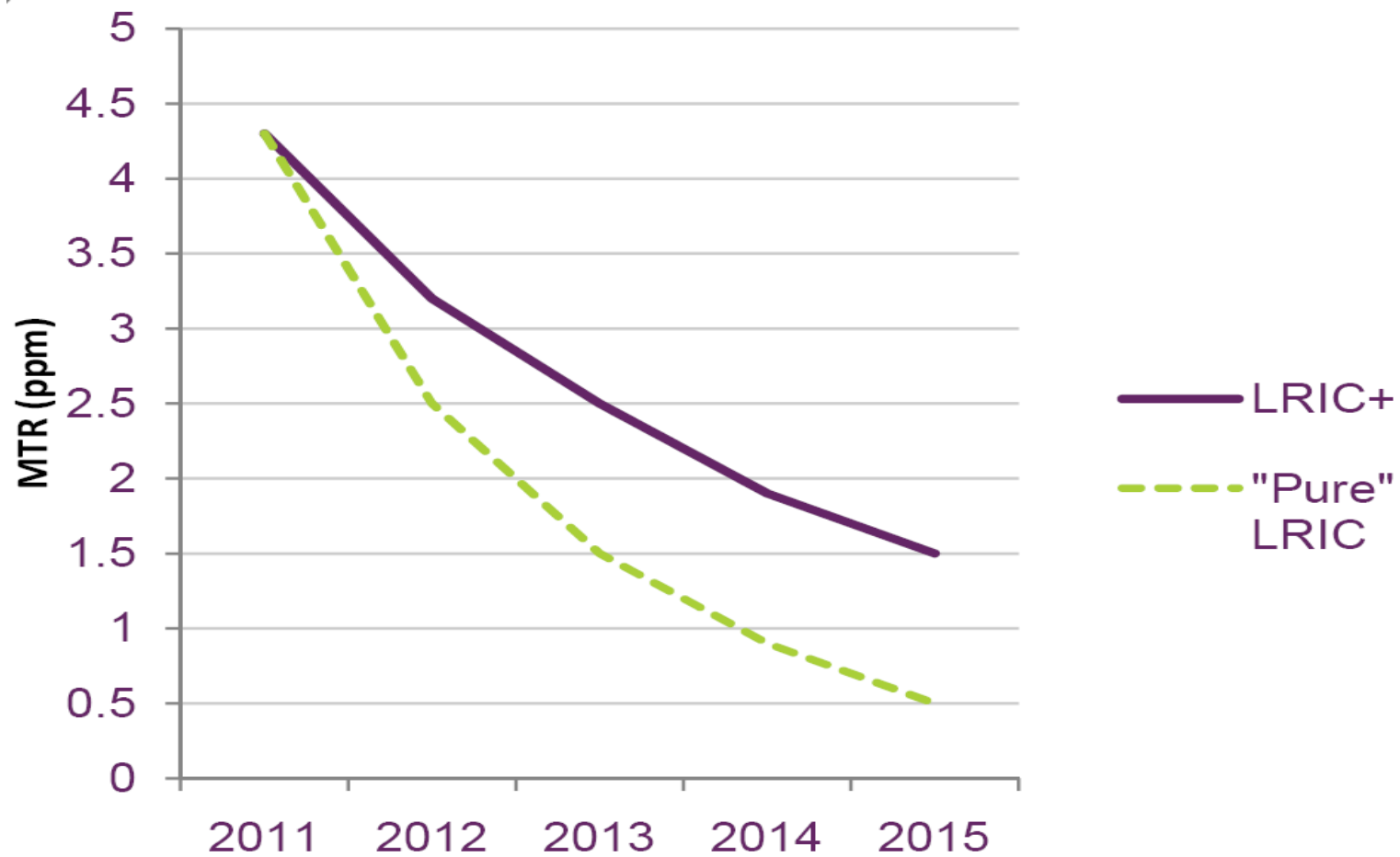


Modern Efficient Operator concept

- Using the most efficient available technologies:
 - seen in 2009 as a combination of 2G and 3G networks, with 4G added later.
- Minimum scale = 20% market share.
 - Studies had shown that economies of scale were essentially exhausted at this level
- MEO rates to be applied to all operators unless justified by objective differences, e.g.:
 - transitional arrangements for new entrants possible for up to 4 years.
 - If uneven spectrum assignments lead to exogenous cost differences.



Impact of Pure LRIC methodology



Source: OFCOM



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What is the EECC?

- The European Electronic Communications Code (EECC) is designed to overhaul the EU legislative framework that was established in 2003, and amended in 2009.
- The EECC amends and recasts various regulations including:
 - Framework Directive (2002/21/EC)
 - Access and Interconnection Directive (2002/19/EC)
 - Universal Service and User Rights Directive (2002/20/EC)
 - Authorisation Directive (2002/22/EC)
- The EECC establishes a new harmonised framework for the regulation of electronic communications networks and services in the EU.



What the EECC aims to achieve

- The overall aim of the EECC is to (EECC) is facilitate the Digital Single Market Strategy for Europe.
- It focuses on measures that will:
 - Provide incentives for investment in high-speed broadband networks
 - Bring a more consistent internal market approach to radio-spectrum policy
 - Support the internal market by tackling regulatory fragmentation
 - Ensure effective protection of consumers, a level playing field for all market players and consistent application of the rules. .



What the EECC says about costing and pricing

- Most of the requirements from previous legislation are carried over into the EECC: e.g. market analysis and SMP; focus on wholesale regulation; remedies that are transparent and proportionate.
- The EECC preference is for market-driven deployment of very-high capacity networks (VHCNs). NRAs shall:
 - exercise their responsibility in a way that promotes efficiency, sustainable competition, the deployment of very high capacity networks, efficient investment and innovation, and gives the maximum benefit to end-users (Recital 7)
 - Allow a fair return for the investor ... in particular [where] there are risks associated with investment projects specific to new access networks which support products for which demand is uncertain (recital 179)



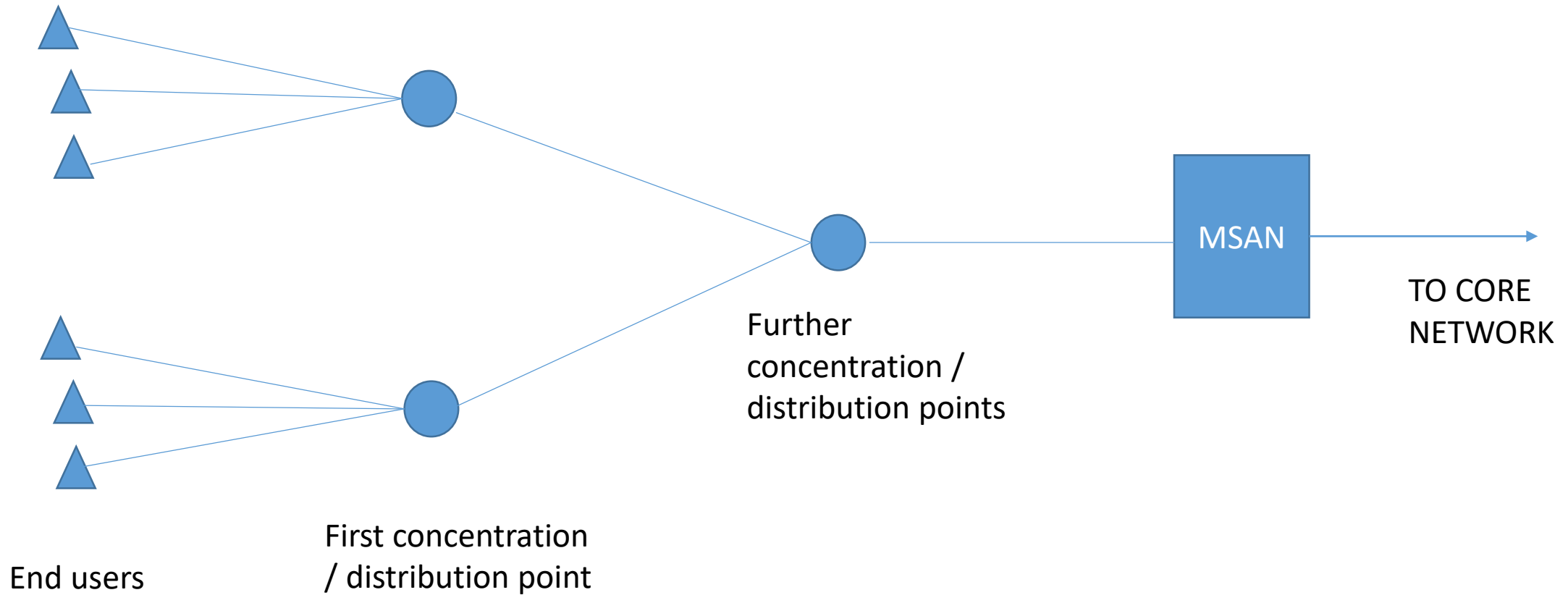
Impact of the EECC on fixed network costing

- The EECC builds on the 2013 Recommendation on Costing Methodologies for Broadband Investment.
- It confirms the use of the RAB for reusable legacy civil engineering assets
- It extends the application to all electronic communications networks, specifically to cable networks as well as copper networks.
 - *The current response towards that demand is to bring optical fibre closer and closer to the user, and future 'very high capacity networks' require performance parameters which are equivalent to those that a network based on optical fibre elements at least up to the distribution point at the serving location can deliver. (Recital 13)*



Interpreting the EECC

THE ACCESS NETWORK

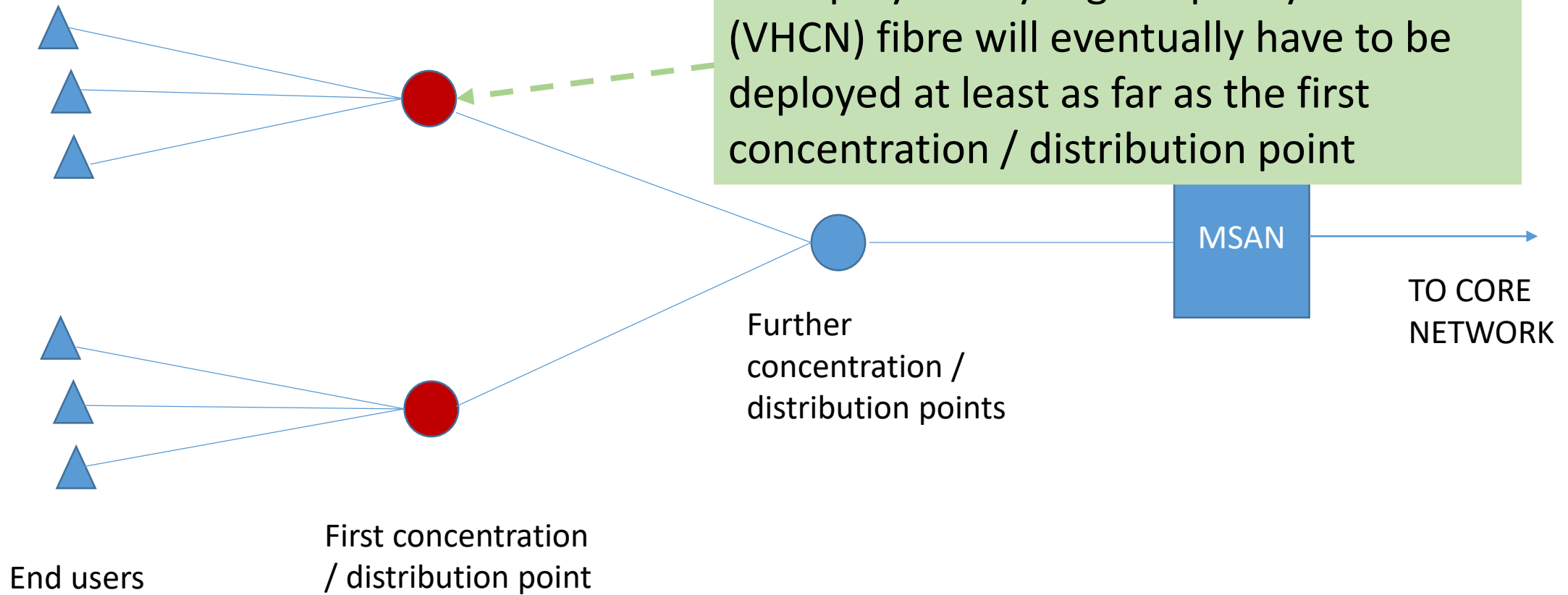




Interpreting the EECC

THE ACCESS NETWORK

To deploy a Very High Capacity Network (VHCN) fibre will eventually have to be deployed at least as far as the first concentration / distribution point

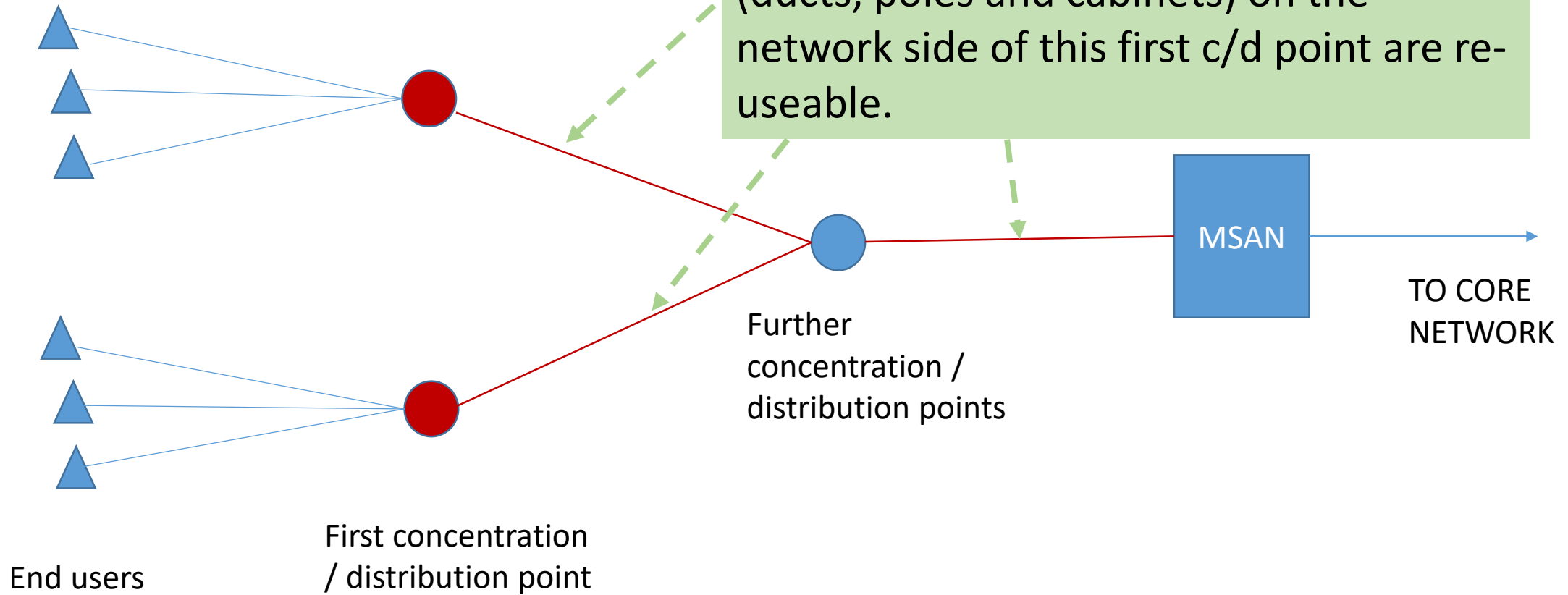




Interpreting the EECC

THE ACCESS NETWORK

This means that all passive infrastructure (ducts, poles and cabinets) on the network side of this first c/d point are reusable.

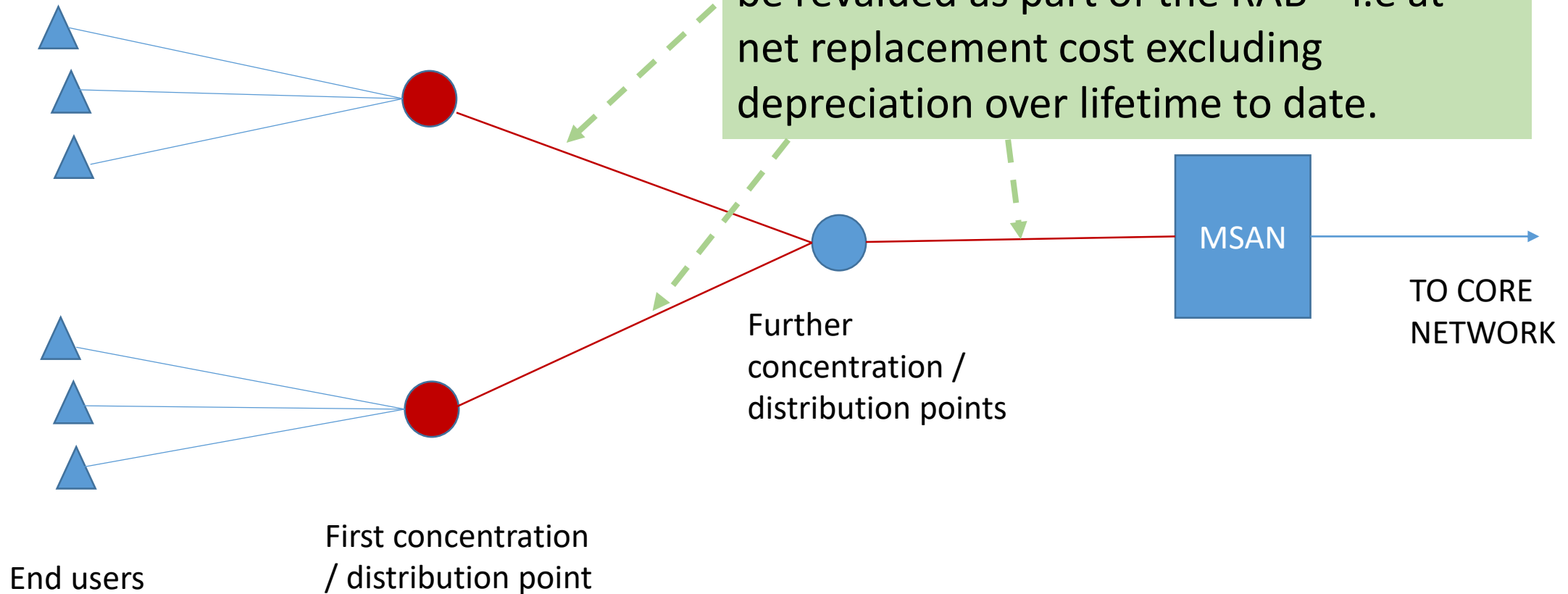




Interpreting the EECC

THE ACCESS NETWORK

Reuseable passive infrastructure should be revalued as part of the RAB – i.e at net replacement cost excluding depreciation over lifetime to date.





What about the costs of trenching?

- The costs of trenching are typically the largest part of the access network – should they be revalued in the RAB?
- Trenches are not physical assets: they are the capitalized costs associated with installing either a duct or a cable.
- Where ducts are deployed, trenching costs should be allocated to the ducts and they should be revalued as part of the RAB.
- But if cables are directly-buried, trenching costs should be allocated to the cable, which is not a civil engineering asset. In these cases replacing the cable (or installing a duct) requires further trenching, so trench costs should not be revalued as part of the RAB.



Impact of the EECC on mobile network costing

- The EECC builds on the 2009 Recommendation on Regulatory Treatment of Mobile Termination Rates.
- Requires a single EU-wide maximum call termination rate to be established by 31 December 2020.
- Based on established principles and criteria, taking into account the weighted average of efficient costs across the EU.
- Not higher than the highest rate in force 6-months prior to adoption of the legislation.
- Possible transition period of up to 12 months.



The principles, criteria and parameters

- Efficient operator.
- Bottom-up model
- Current costs.
- Pure LRIC
- Economic depreciation
- Efficient operator market share not less than 20%.

The principles and methodology have not changed since 2009, but they are now to be deployed in a single harmonized model across all EU member states.



The current situation

- The EC has constructed a unified cost model to determine the costs of fixed and mobile call termination in a harmonized manner.
- The results of the model have been consulted upon via the NRAs.
- Now the EC is engaged in a wider public consultation to determine:
 - In which countries and in what circumstances deviation from Eurorates might be justified;
 - In which countries and in what circumstances a glidepath or other transitional arrangements might be justified;
 - Whether the Eurorates could be applied outside the European Economic Area (EEA) - by establishing requirements on companies that also operate within the EEA.



Conditions that may justify deviation from Eurorates

- Scale of network – not just market share but also country size.
- Technology mix – some countries are switching off 2G and 3G; others don't have or are just starting on 4G. This makes for very different levels of network efficiency.
- Traffic profile – higher traffic volumes lowers unit costs; the more data usage there is the more costs are allocated to data services.
- Country topography and demography affects costs – e.g. dispersed populations; mountainous terrain.
- One size fits all is hard to justify ... but as the underlying technology is common, and the transition to data ubiquitous, so the deviations will be relatively small.



Conclusions

- The last 15-20 years has seen a boom in regulatory cost modelling
- That era may be coming to a close.
- In the future there will be greater standardization and harmonisation of cost models
- Models, and the results of cost models, from the European Union may be translated into other national environments without substantial loss of accuracy.
- Regulators in non-EU Europe and CIS might be best advised to use Eurorates (or equivalent) possibly adjusted for major differences in input costs.



Thank You

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