Next Generation Networks: overview and status in Europe

Seminario Regulatel I/ERG

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Outline

1. NGN and NGAN deployment plans across Europe
2. NGN: Implications for interconnection
3. Pricing in an “all IP” environment
4. Quality of Service and Net Neutrality debate

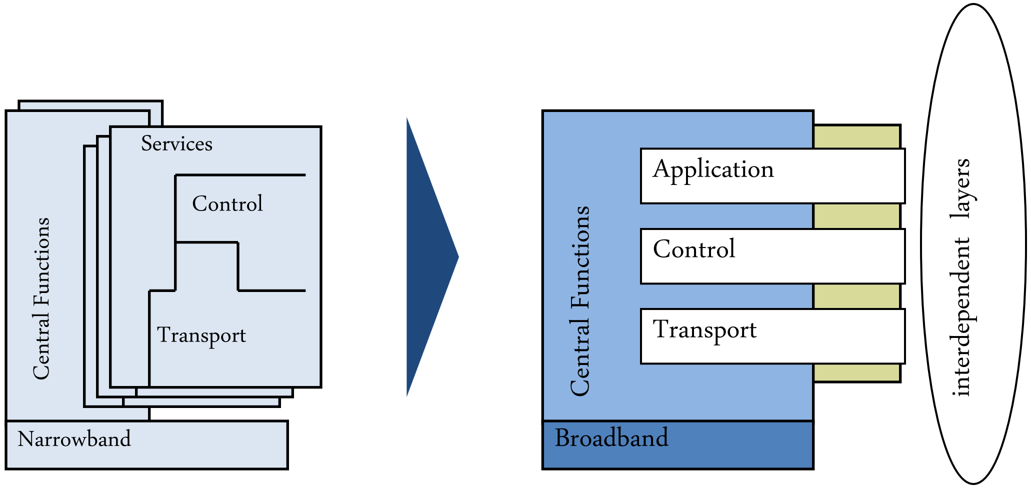
1. Incumbent NGN deployments: who is doing what?

- Plans announced by several incumbents, but very few details available
- In some cases plans were reconsidered
- Different investment approaches across the EU

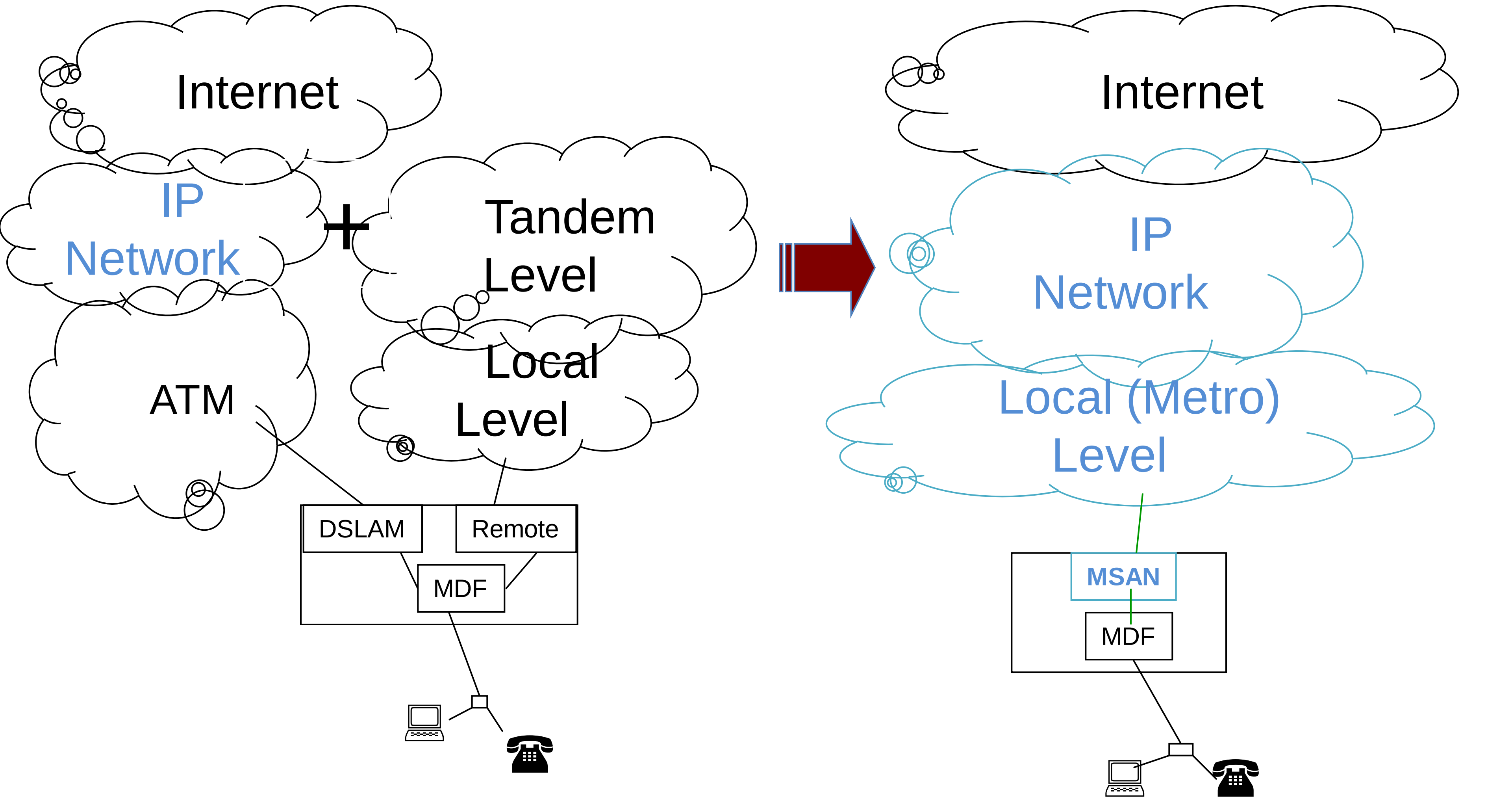
Incumbent	NGN deployments	NGAN deployments
UK	√ (21 CN – 2005)	√ ~2% of HH?
Italy	√ (2005)	
Germany	√	√ DT: ~25% of HH
France	√ (2003)	√
Spain	√ (2003)	√
The Netherlands	√	√ KPN: 13% of HH

Key features of NGNs

- Packet-based (internet protocol – IP)
- All services, including voice, transported trough “packets”
- “Horizontally”- integrated layers. Service-related functions independent of transport-related functions

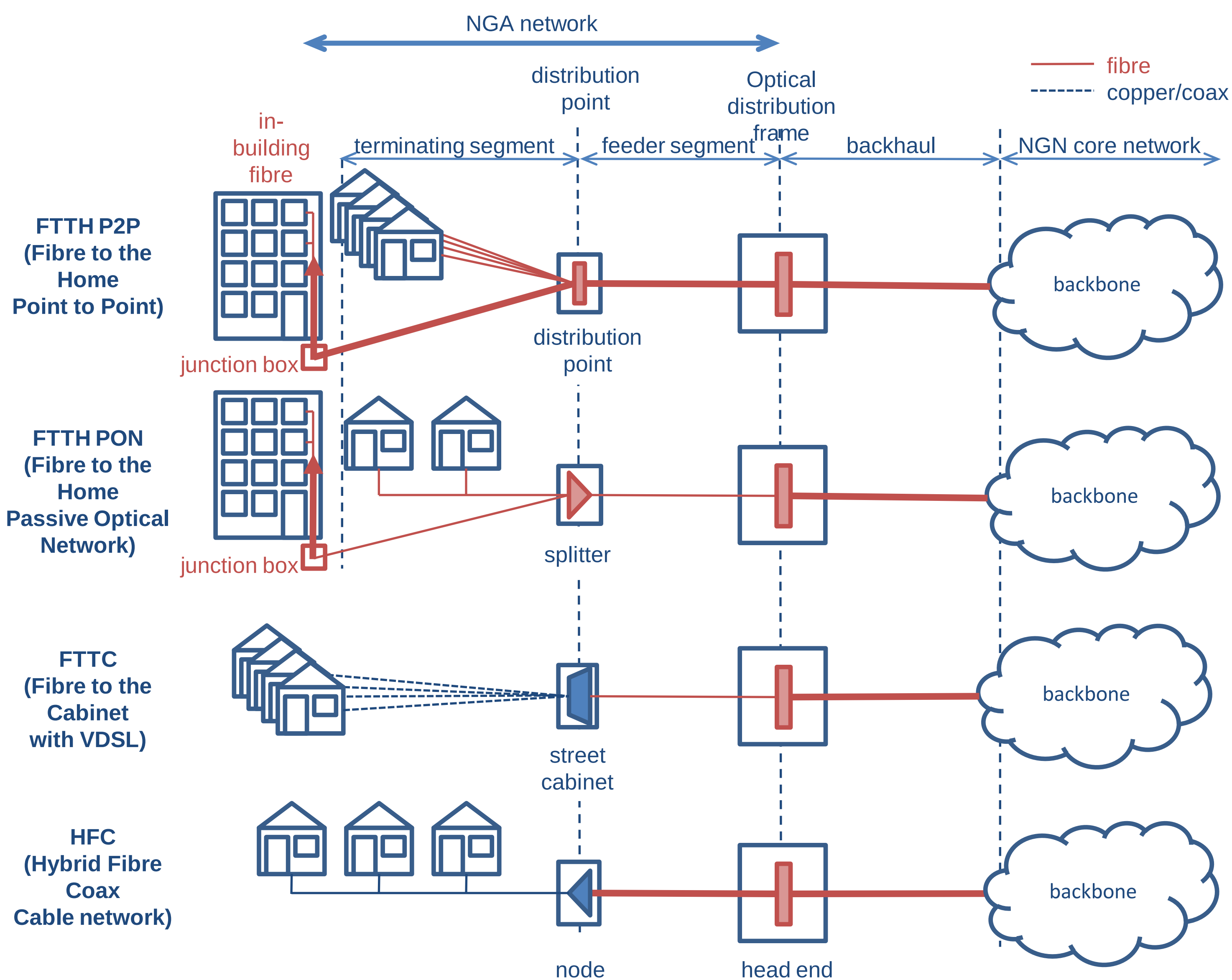


NGN - migration in the “core” network

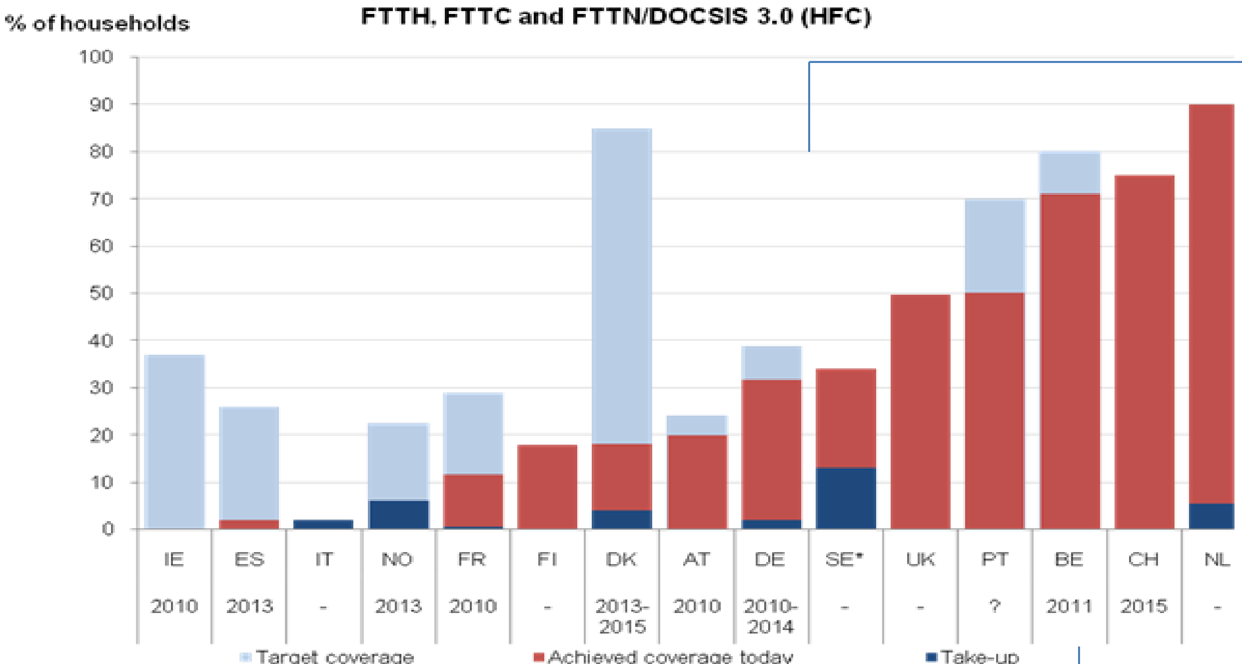


Metro nodes at a greater number of locations than existing local exchanges
Metro and IP nodes at physically different locations than current switching sites

NGAN: approaches may differ considerably



NGAN investment across Europe



Germany: FTTC – VDSL2 investment by the incumbent. Local initiatives (FTTB and VDSL2, FTTH, and HFC)

Netherlands: plans by incumbent and two cable operators. FTTH, FTTC, VDSL, HFC deployments. Also local independent NetCo deploy FTTH

Belgium: FTTC – VDSL2 investment by the incumbent, and HFC deployments by one cable operator (Telenet).

Spain: plans by incumbent (FTTH, FTTC+VDSL2), and one cable operator (ONO) via HFC deployments.

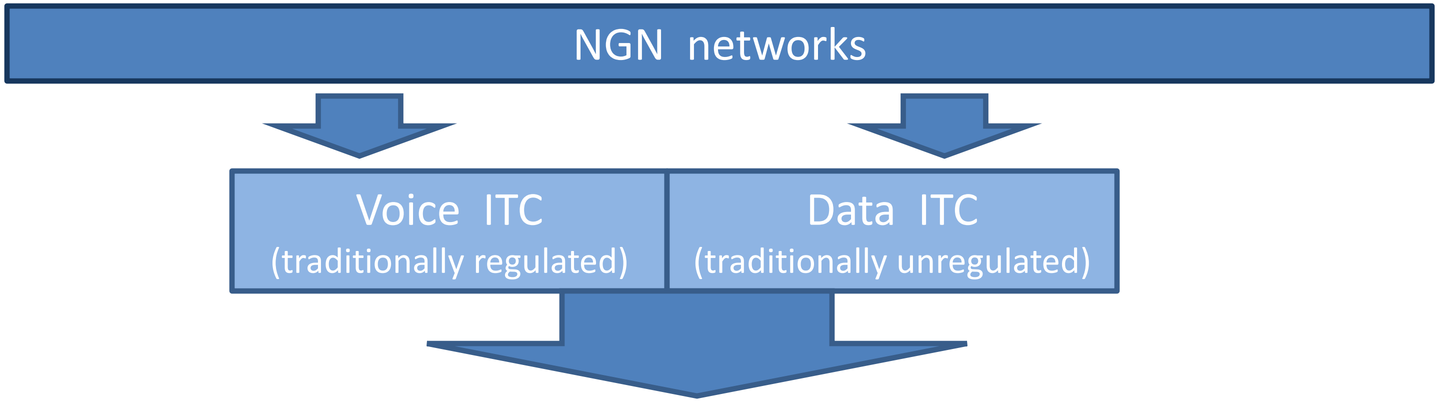
France: plans by incumbent, alternative , and cable operators. FTTH and HFC deployments.

United Kingdom: plans by incumbent and one cable operator (Virgin). FTTH, FTTC and VDSL2, HFC.

NGN vs. NGAN – main challenges

	NGN	NGAN
Investment approach	• Investment in the "core" • Capex and Opex reductions • Broadband & multimedia	•Investment in the "access" •Innovation vs. Investment •Ultra-broadband & multimedia
Wholesale implications	**Interconnection** •Where? •What service? • Cost/billing? • Quality?	**Access** •Available? •Regulated? •If yes, who? •If yes, how? •Quality ?
Retail	•Transparency •Quality •Availability	

2. NGA - Implications on interconnection



Regulatory framework needing to address "convergence"

EU regulatory framework and convergence

- Which markets should be regulated, and when?
  - Markets “candidate” for *ex-ante* regulation
  - Possibility to identify other markets by NRAs

- Market analyses – three steps
  - Concept of “technology neutrality” when defining markets

- “Menu” of obligations available to address SMP
  - Access
  - Non discrimination
  - Transparency
  - Accounting separation
  - Price control
  - Functional separation (only if the above obligations are insufficient)

1. Market definition

↓

2. SMP assessment

↓

3. Regulatory remedies

Relevant markets under the EC Recommendations

Retail access to PSTN	1	1	Retail access to PSTN
	2		
Retail fixed voice telephony	3		
	4		
	5		
	6		
Retail leased lines (minimum set)	7		
Fixed voice call origination	8	2	Fixed voice call origination
Fixed voice call termination	9	3	Fixed voice call termination
Fixed voice transit	10		
Local loop unbundling	11	4	Local loop unbundling
Wholesale broadband access (bitstream)	12	5	Wholesale broadband access
Leased lines terminating segments	13	6	Leased lines terminating segments
Leased lines trunk segments	14		
Mobile access and call origination	15		
Mobile voice call termination	16	7	Mobile voice call termination
Mobile roaming	17		
Broadcasting transmission	18		

Interconnection regulation

"Fixed incumbents and large mobile operators continue to interconnect voice services using the same circuit-switched interconnection capabilities that they have been using for years, even if they have converted their core network to the use of the IP protocol" - (WIK study on NGN, 2009)

Technology-neutral approach to regulation to address the concerns on the impact of NGN migration on competition

Technology-neutrality

- substitutability test when defining relevant markets (demand and supply sides)
- market power assessed through a number of factors having a potential impact on competition

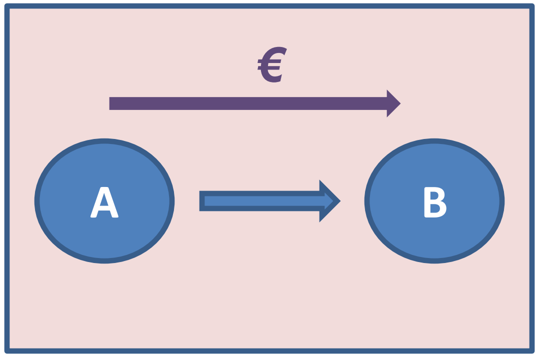
Risk, highlighted by large operators, that the concept of technology neutrality be inequitably used to leverage regulation from traditional telecommunications markets into newly emerging markets

3. Debate on charging models

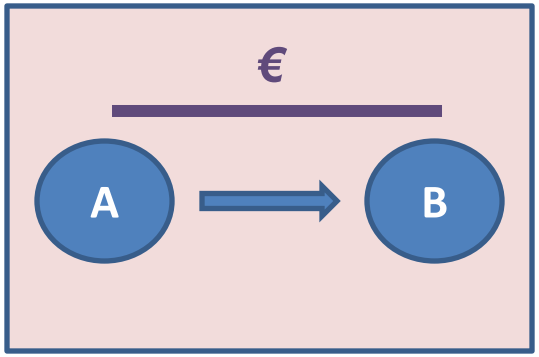
- Interconnection in the PSTN and IP: different charging mechanisms
- PSTN: Calling Party Network Pays, covering transport and service
- IP: Interconnection arrangements based on peering and transit. IP interconnection so far considered sufficiently competitive

What pricing is most appropriate in an all IP environment?

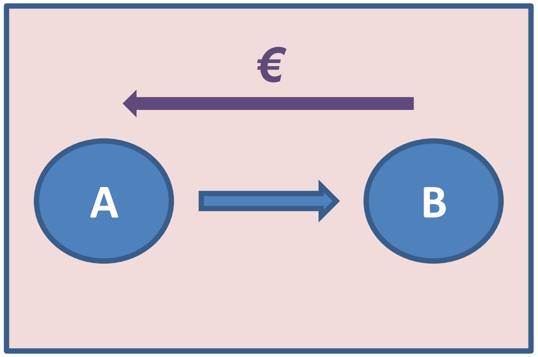
Calling Party Network Pays
CPNP



Bill and Keep
B&K



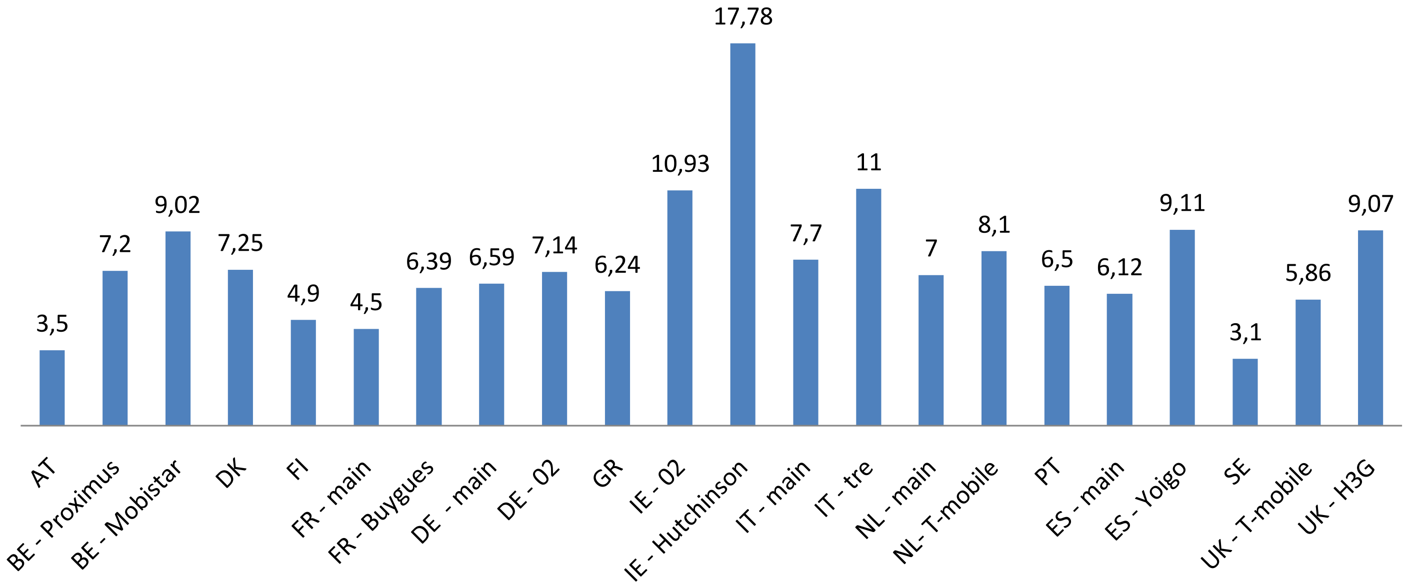
Receiving Party Network Pays
RPNP



The termination bottleneck

- The “monopoly” of call termination markets
- The CPNP charging principle and the impact on termination charges
- Use of Bill & Keep in NGN environment currently under evaluation

Mobile Termination Rates **(as of March 2010 - €cent/min.)**



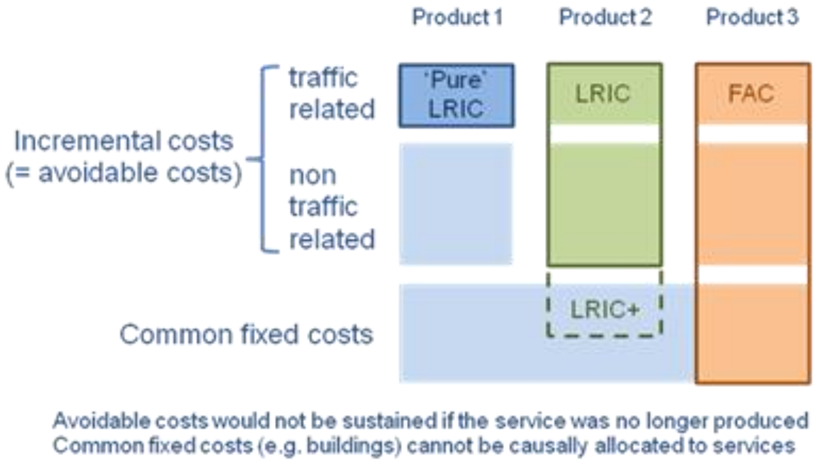
ERG proposed common position on B&K

Main benefits	Main challenges
People call more, welfare will increase	Users under B&K subsidise users under CNPP
Regulatory cost and uncertainty reduced	“Hot potato” routing
Incentive for operators to minimise costs	Mobile operators lose cash stream from fixed operators
Economic value is better allocated	Carrier pre-selection operators (mark-up?)
Impact on investment is neutral	

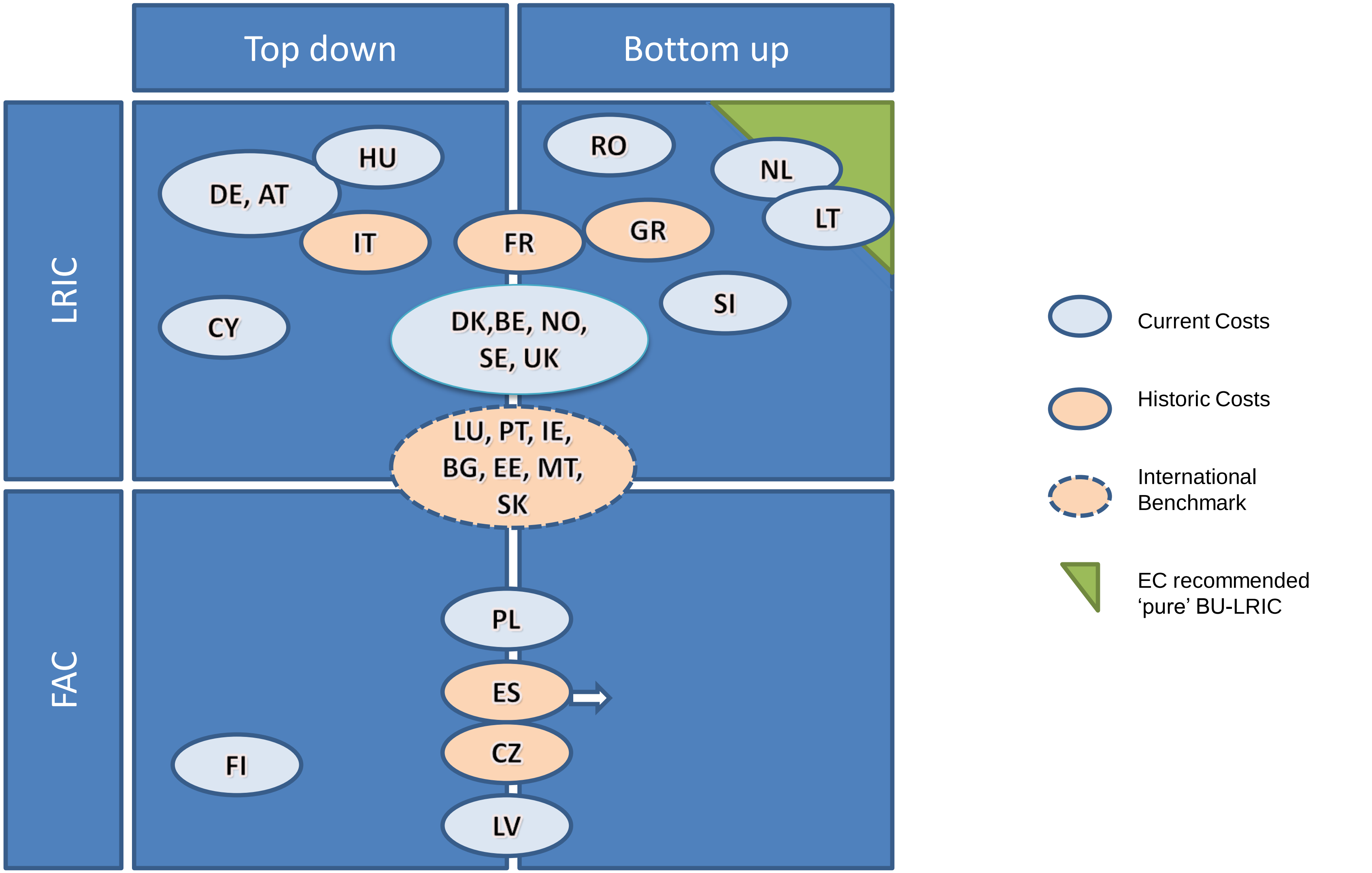
EC Recommendation on termination rates

By December 31, 2012

- NRAs should set rates for voice call termination on fixed and mobile networks (FTRs and MTRs) based on costs incurred by an efficient operator
- FTRs and MTRs should be symmetric
- Efficient costs should be based on current costs and the use of a bottom-up “pure” long-run incremental cost (BU-LRIC) model
- “Pure” incremental costs: the approach is basically to exclude as many cost categories as possible from the eligible costs for setting F/MTRs. Non-traffic-related costs should be disregarded.
- Very significant cuts in MTRs (1.5-3.0 eurocents per minute)



MTRs: Costing methodologies in Europe



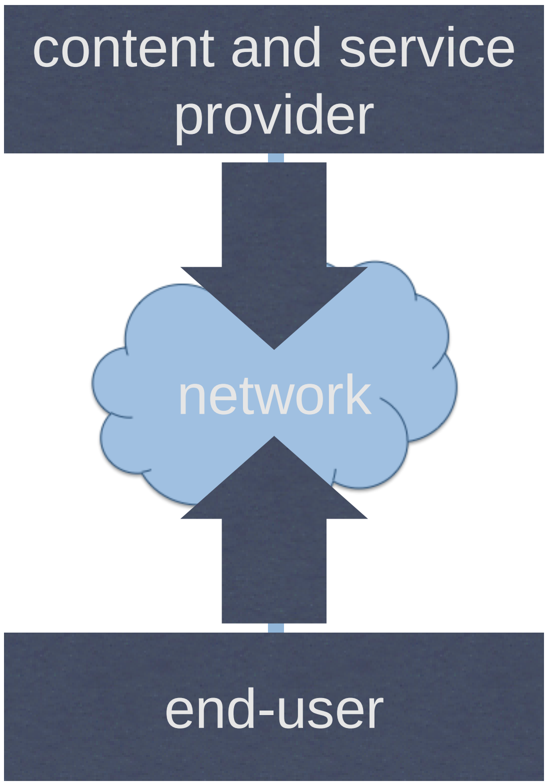
4. Quality of Service

NGN Interconnection

Service aware	Service unaware
▪ Quality of Service ▪ Prioritization based on service ▪ Price differentiation	▪ Pure transport network ▪ Best effort ▪ Functional Internet quality

The migration from PSTN towards IP-networks may bring new charging models based on different business models.

What is Net Neutrality?



- offer any (legal) content
- offer any service
- reach all connected users

- non discriminatory
- agnostic
- treat all content alike

- access any (legal) content
- use any service
- attach any device

Example: blocking of VoIP

		VoIP	Premium VoIP	IM	Regulatory approach
FR	SFR	✖	Planned	✔	None
DE	T-Mobile	✖	€10/month	✔	BNetzA: hands-off
	Vodafone	✖	✖	✖	
IT	TIM	✔	-	✔	Law proposed to prohibit blocking of applications.
	Vodafone	✖	€10/month	✔	
	Tre	✔	200min/day included	✔	
	Wind	✔	-	✔	
NL	KPN	✔	-	✔	None
	Vodafone	✖	€0.05/min	✔	
ES	Movistar	✖	✖	✔	CMT: hands-off
	Vodafone	✖	✖	✔	
	Jazztel	✔	-	✔	
SE	Telenor	✔	-	✔	PTS: transparency
UK	Vodafone	✔	-	✔	Ofcom: hands-off

Conclusion

- The evolution to NGN is changing the character of competition
  - ✓ New business models made possible by the decoupling of service and transport
  - ✓ Challenges related to migration from “old” to “new” infrastructure
  - ✓ Need to prevent new forms of discrimination and abuse

- Trade-offs between NGN investment incentives, protection of competition and consumer interests

- The European regulatory framework is sufficiently flexible to address the new challenges posed by convergence. However, different approaches among member states. Still a long way ahead of us

- Dialogue and exchange of experience with other regions, including with Latin America, can be extremely useful to achieve a deeper understanding of this controversial topic

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Thank you!

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