

NGN: TECHNOLOGY CHANGES FAREWELL TO CIRCUIT SWITCHING- HOW SOON?

Prof. Jens Arnbak
TU Delft

THE CLASSIC NATIONAL PHONE NET: AN (UN)ECONOMIC CASE.... ?

NETWORK INVESTMENTS:

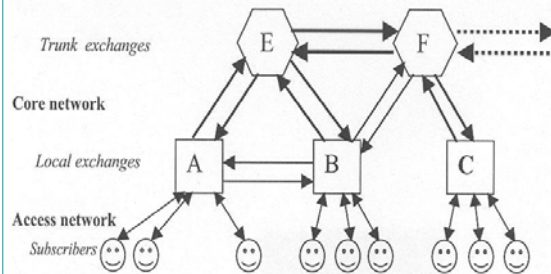
TRUNK LEVEL

- Trunk exchanges ~ 10%
- Multiplexed cables ~ 7%
- Test equipment ~ 7%
- Radio & SATCOM relays ~ 4%

LOCAL LEVEL

- Local exchanges ~ 22%
- Subscriber access lines ~ 49%

~ 1100 € per subscriber!



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REVENUE SHIFT IN FIXED NETWORKS

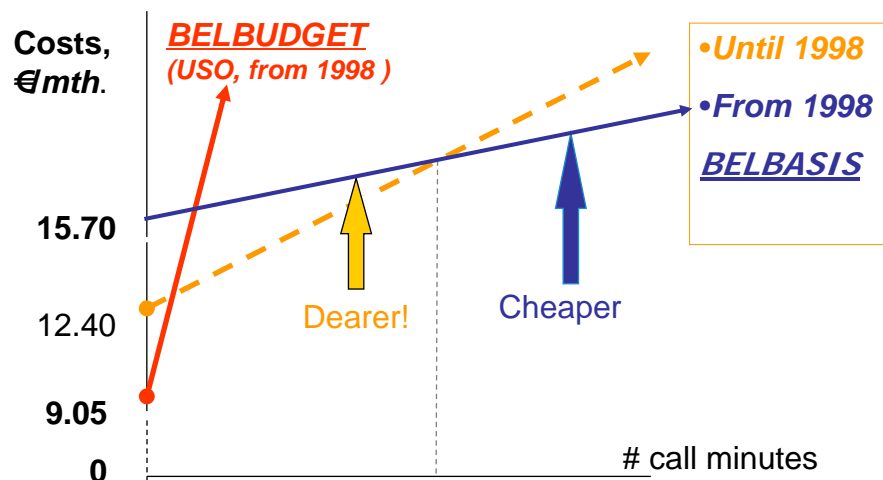
- In final years of Europe's national monopolies (1994-1997), the average daily use per subscriber line remained very low:
 - ~ **12 minutes national**
 - ~ **0.5 minute international** (incl. business users!)
- Rebalancing to cost-oriented phone tariffs (mandated by EU) was completed first by the Netherlands (1998):
 - Incumbent (KPN) **subscription fee raised** by 27%
 - Incumbent **domestic minute rate reduced** by 27%
- Low-user scheme (**BelBudget**) introduced by NL in 1998:
 - 700,000 subscribers (10%) were expected to join, but...
 - Only 70,000 opted in (i.e. about 1%!)

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MAKING INCUMBENT'S TARIFFS COST-ORIENTED (KPN TARIFF RE-BALANCING, 1998)

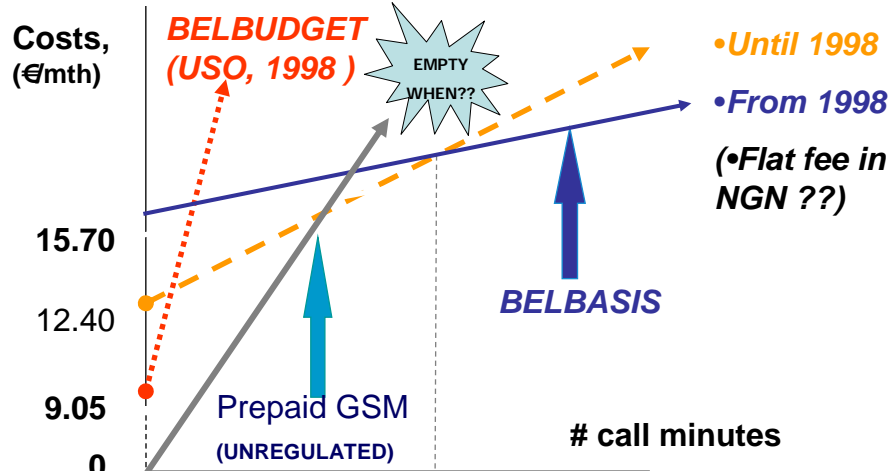


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BUT: TARIFF REBALANCING MITIGATED BY COMPETITIVE (PREPAID) MOBILE OFFERS!



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INCUMBENTS' TRAFFIC CHANGES 2004, RELATIVE TO 2003 (Source: OVUM)

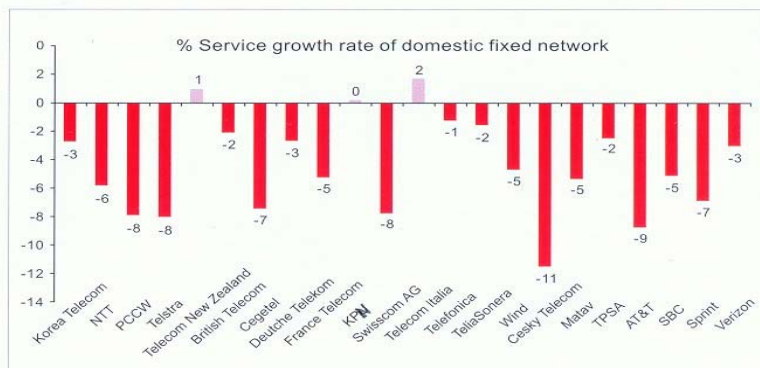


Figure 1 Service growth rate of global fixed network operators

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Effect on incumbents, by end 2001

(Source: McKinsey Quarterly, 2003)

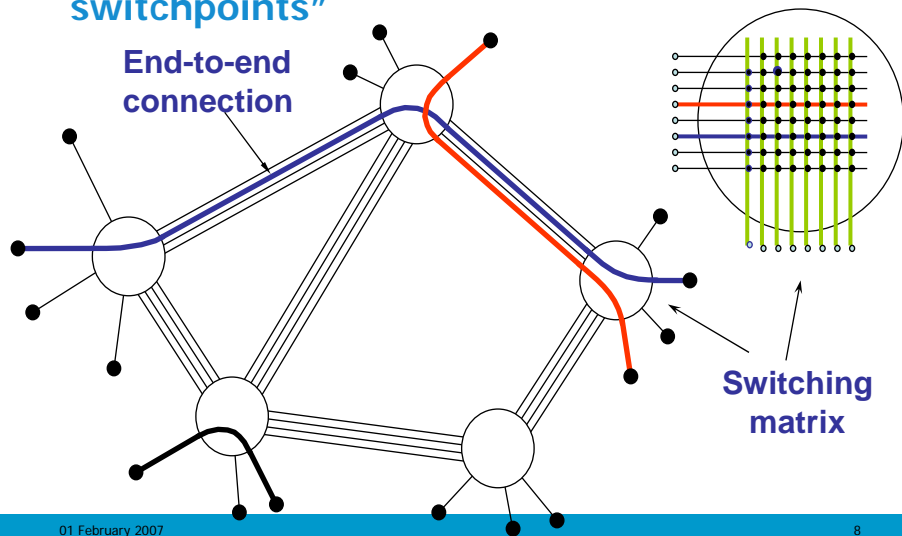
<i>Dominant National operator</i>	NATIONAL CALLS (LONG-DISTANCE)		INTERNATIONAL CALLS	
	Market share loss	Price reduction (@ 3 min.)	Market share loss	Price reduction (@ 3 min.)
Denmark (<i>TDC</i>)	38%	58%	51%	76%
Germany (<i>DT</i>)	41%	61%	49%	83%
Holland (<i>KPN</i>)	30%	39%	50%	90%
Sweden (<i>Telia</i>)	31%	85%	57%	89%
UK (<i>BT</i>)	47%	49%	68%	62%

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Circuit Switching: "Railway with switchpoints"

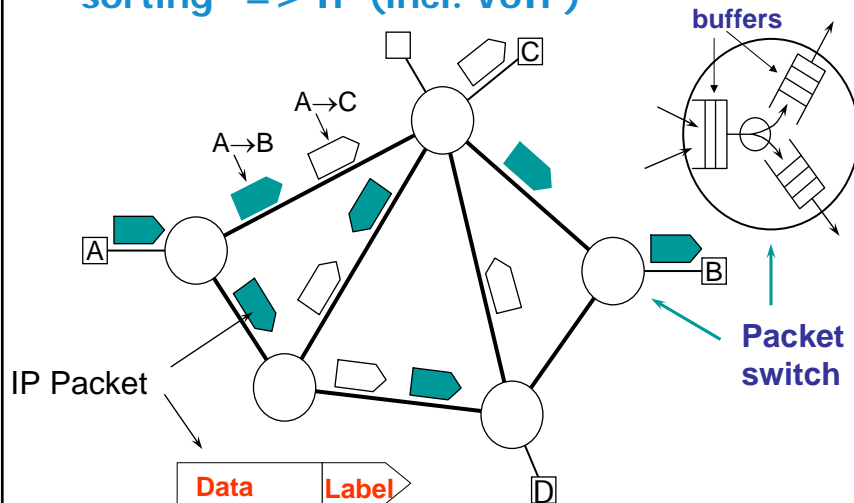


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Packet Switching & Routing: "Post-office sorting" => IP (incl. VoIP)



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BT's NGN: Functional Nodes

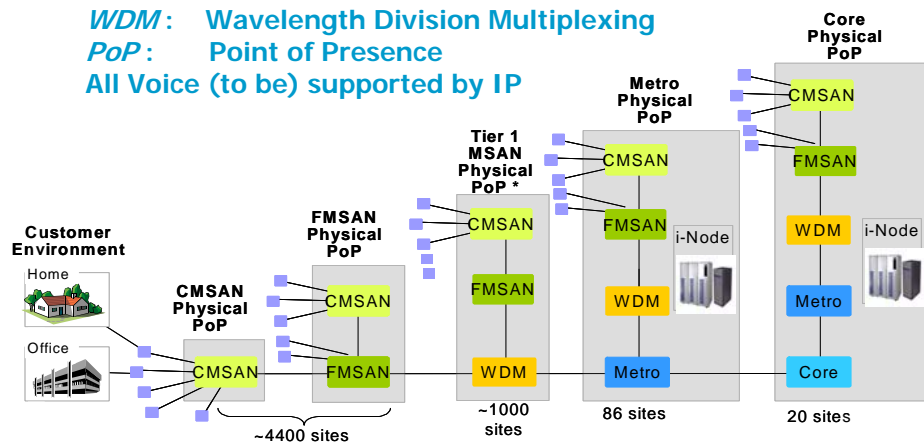
CMSAN: Copper Multi-Service Access Node

FMSAN: Fibre Multi-Service Access Node

WDM: Wavelength Division Multiplexing

PoP: Point of Presence

All Voice (to be) supported by IP



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NGN : KEY DEVELOPMENT DIRECTIONS

- **NGNs** should support *any* IP-based ICT-application
- **NG Core networks** should have simple structure ("*lasagna instead of spaghetti*") to provide
 - supply & support of a **WIDER** range of services,
 - saving of costs and maintenance time in the longer run
- **NG Access networks** should provide bandwidth on (economic) demand; regulatory intervention may still be required for legacy access bottlenecks, which
 - can seldom be replicated in an economic way => a case for continuing local-loop unbundling?
 - may, however, be bypassed by broadband wireless access (e.g., *WiMax*)

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