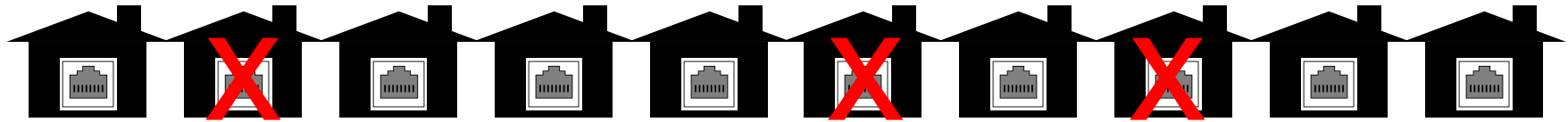


Fixed broadband: private enterprise or public utility?

“Broadband at a Crossroads” Conference
Auckland, 26 & 27 February 2009

Robert (Bob) James
Principal Consultant
Nokia Siemens Networks

National broadband goals and stakeholders



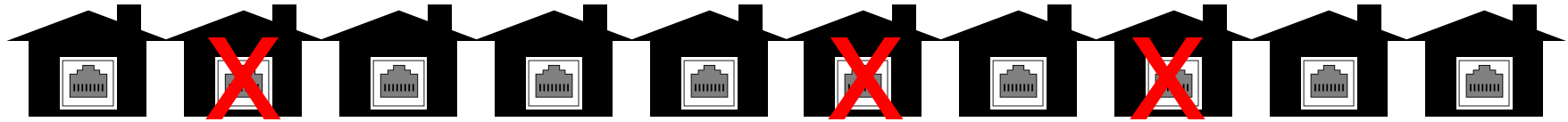
One goal:

Nationwide affordable *real* broadband with *high adoption*.

- Speed
- Capacity
- Capability

- Most houses in street,
- Most streets in country
- High adoption not availability

National broadband goals and stakeholders



Six stakeholders with different concerns

- **governments** frustrated by the slow rate of deployment
- **consumers** want faster services but reluctant to pay more
- **application and content providers** fear extra imposts
- **access competitors** can't justify a second fixed network
- **access network owners** fear further decline in ROI
- **regulators** want infrastructure competition (may get services competition)

Can goal be met and stakeholders concerns satisfied?

The context of today's discussion

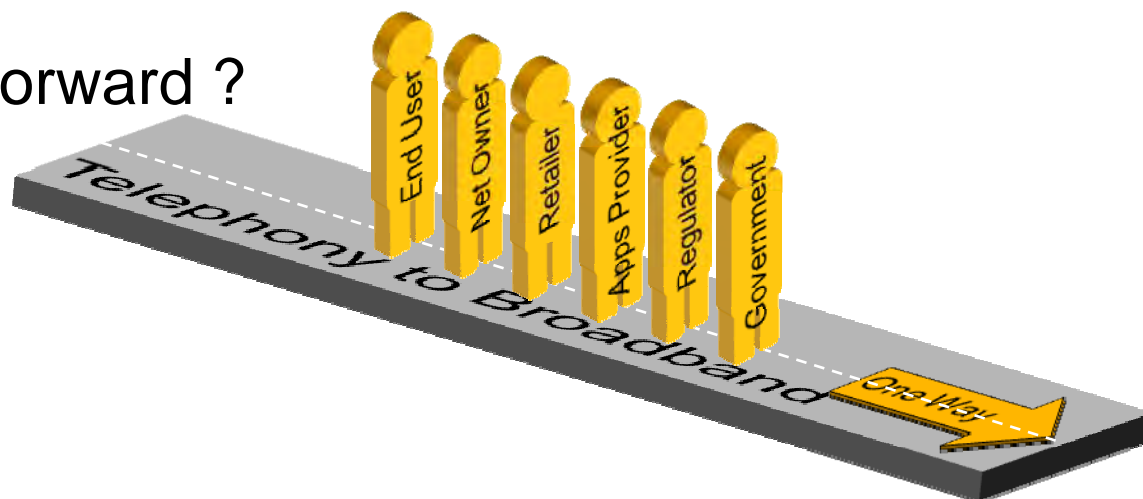
As National Broadband Policies established:

- every service and consumer is impacted by decisions taken
- impact on network operators quick as frameworks established
- a few key parameters define business case for network owner
- only one or two steps to the end game.
- delays make wireless a stronger substitute for fixed

A critical & unique moment for national infrastructure

Agenda for today's discussion

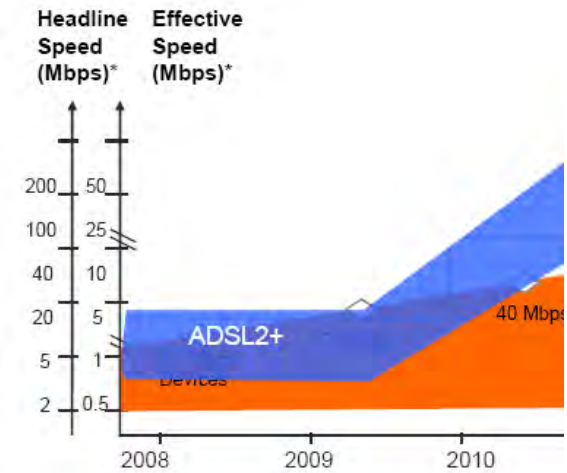
1. a different definition of broadband – not just speed
2. “fixed versus mobile” or “fixed + mobile” ?
3. lessons from the IT industry – particularly layering
4. how fixed broadband will evolve through 3 key steps
5. who benefits from network investment and who pays?
6. A path forward ?



1. Real Broadband – 3 Characteristics

1. Effective speeds replace headline speeds

- like 240V power point - get the capability you pay for
- speed typically limited by technology choice - FTTx etc
- unconstricted like utilities - 100% capability available



Maha Krishnapillai, Optus
Aust Comms Summit 2008

2. High capacity as well as speed

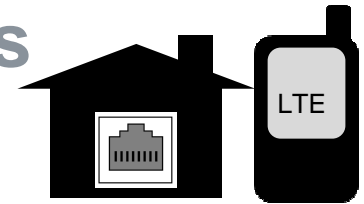
- like 10 Amp electricity socket - there are limits to available capacity
- end to end provision not expensive compared with overall access investment
- “pay for use” makes this viable

3. Application independence

- like electricity - one simple product can drive telephones, TV s and PCs

Real Broadband: Speed + Capacity + Any Application

2. Fixed and mobile can connect premises



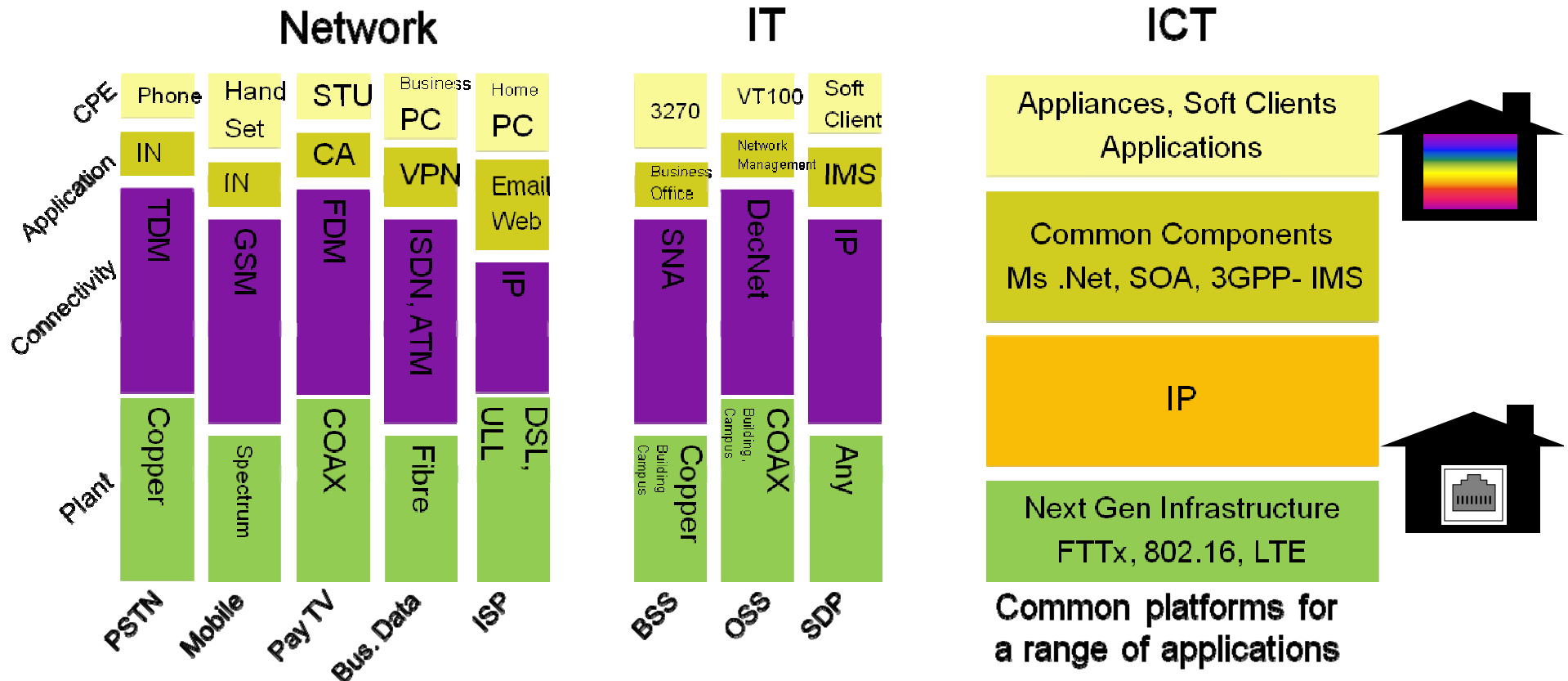
- Evolving differently (IP in common) and together defining playing field
- fixed capacity growing, but limited by premises passed costs:
 - enormous capacity,
 - inherent separation of applications from connectivity but
 - difficult economics for a second fixed network, economics dominated by civil works
- mobile broadband capacity is growing rapidly while costs fall:
 - mobile economics support multiple networks.
 - mobile becoming a valid fixed competitor for some demographics and markets
 - itinerant youth may prefer mobile broadband just as they often prefer mobile voice.
 - mobile broadband (LTE especially) may well fill the gaps where fixed networks either cant be deployed or where a market fails to deliver affordable fixed broadband quickly
- potentially very complementary for all stakeholders
 - meet complementary needs for most users
 - potential for bundling together

Fixed is the problem: competition isn't driving transition

3. Purpose Built Network vs Any Purpose Network

From Vertical Stacks

To Horizontal Layers



Real Broadband: One Network for Anything!
 Hard part isn't narrowband to broadband, but vertical to horizontal

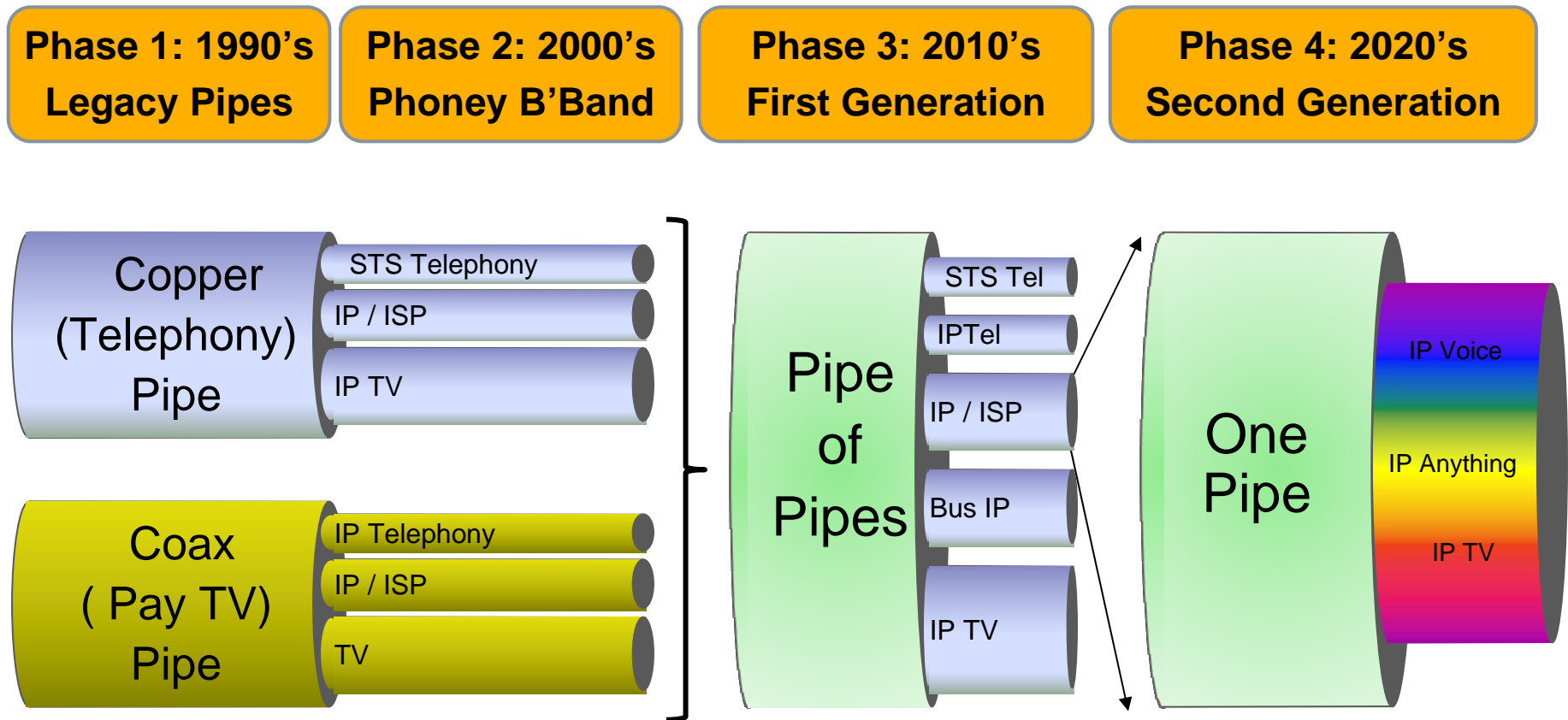
3. From Vertical to Horizontal:

- IT went horizontal in 1990,
- now fixed broadband networks
- some IT companies gone (Wang), some prosper (IBM)
- choice of IP in IT and Comms world was critical event
- now same path being followed in communications
- the business implications aren't hard to see



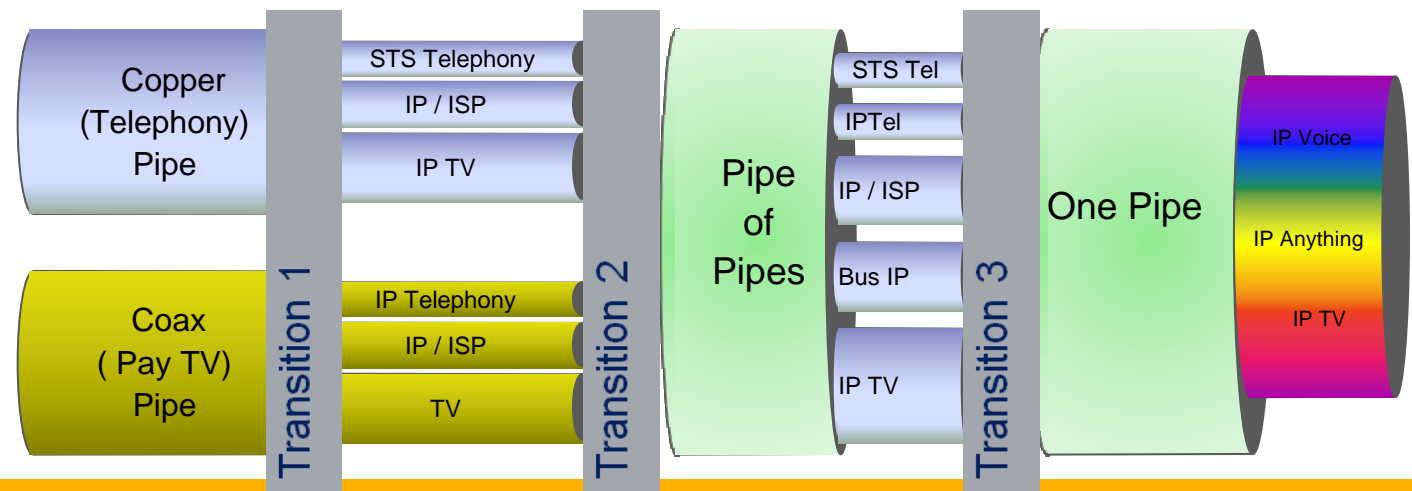
First IT, now Communications

4. From telephony to *real* broadband



The natural network evolution path

4. Natural evolutionary path for fixed access: but transitions must be managed with foresight !

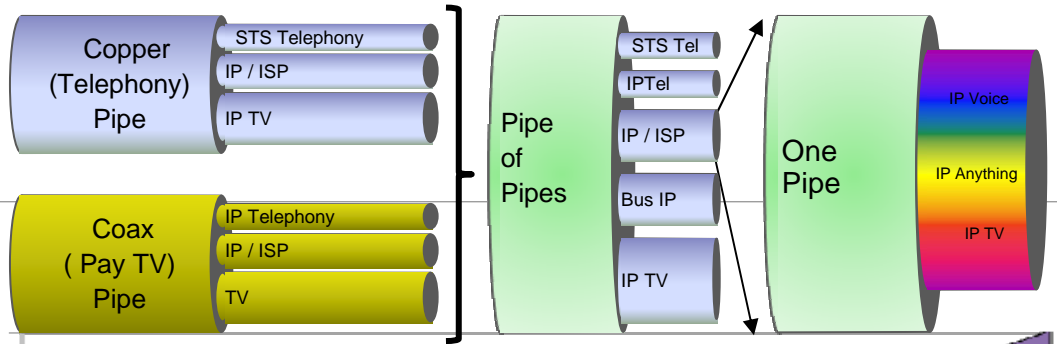


	Phase 1: 1990's (Legacy)	Phase 2: 2000's (Phoney BB)	Phase 3: 2010's 1 st Gen	Phase 4: 2020's 2 nd Gen
Competition Model	Calls (1992)	Access	Services	Applications
Regulatory Focus	Preselection, Interconnection	Unbundling	Open Access	Net Neutrality
Revenue Drivers & Network Funding	N Calls + 1 x Access	N Calls + N x Access	0 x Calls N x Access	0 x Calls + 1 x Access

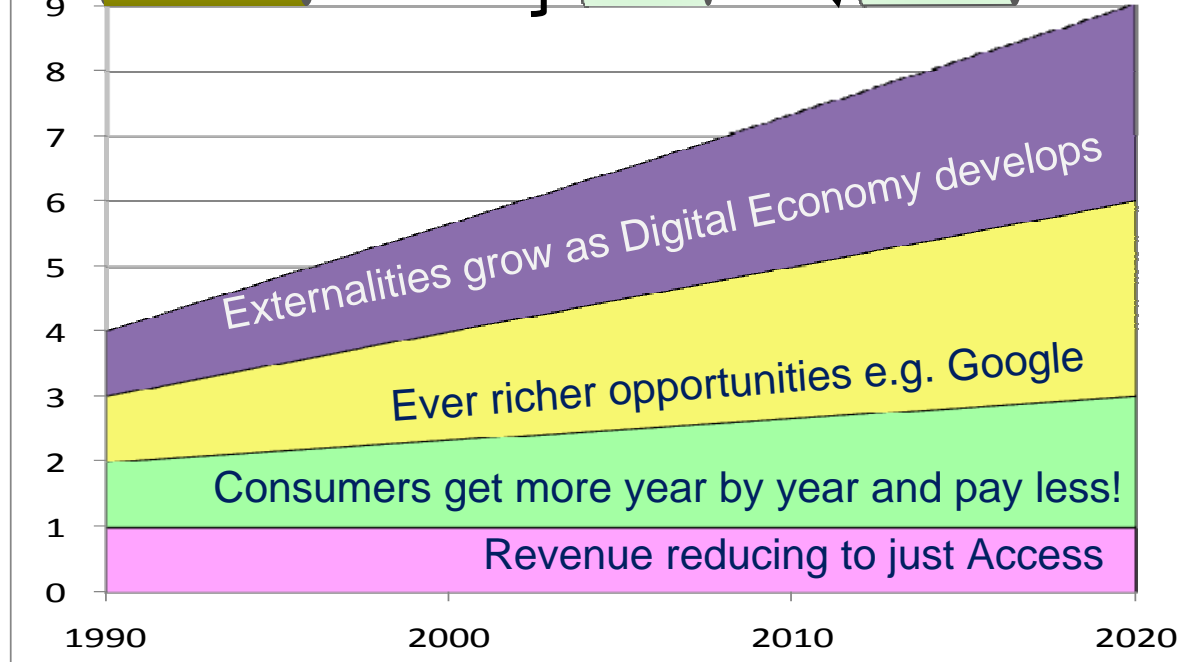
The changing business case is also important



5. Who benefits from network investment



Trend is to fewer pipes, Open access and Net Neutrality. This directly benefits everyone except network operator

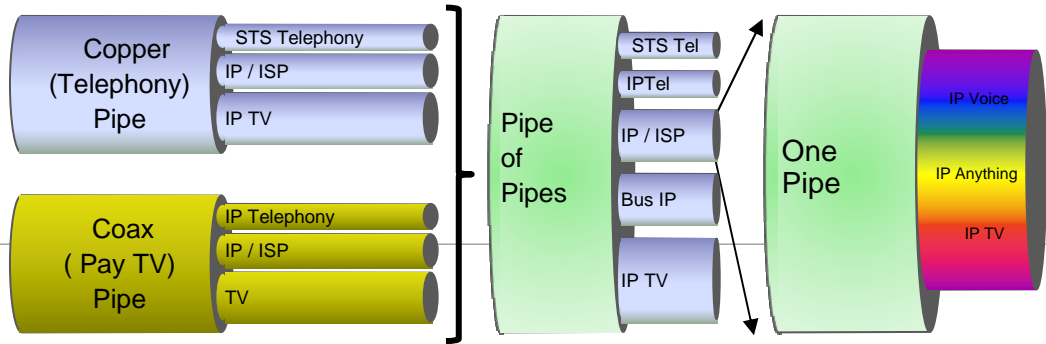


- Community gains
- Net Apps Provider gains
- End User gains
- Network Provider can lose (or not invest)

Better business case for network operator?



5. Who might pay?

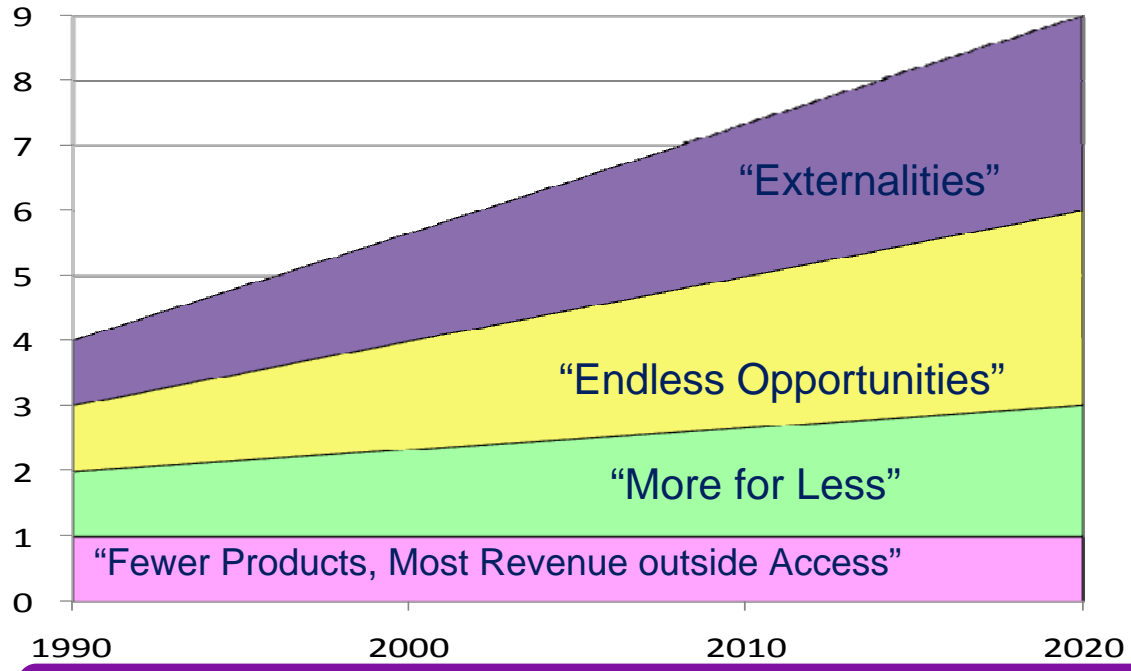


Only Three Options to improve Business Case (excluding cross subsidies)

3. Government Pays More: Public Business Case

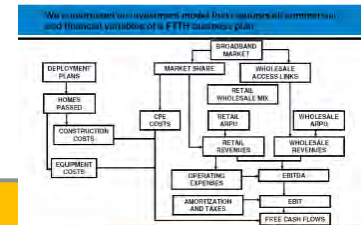
2. B Party Pays More: e.g. Google Pays

1. User Pays More: or More Users Pay



All Practical?

5. Lessons from overseas: Can fixed broadband be profitable?



“Is NTT making money on FTTH? No”
“Is Verizon FTTH investment case making money? No”

Ultrabroadband telco investment models
Paris, April 4, 2008 Dr. Raúl L. Katz

Problems

1. Low dwelling density or low take up
2. Previous subsidy (e.g. ADSL via ULL) destroys business case
3. Benefits not captured by network owner (open access/net neutrality)
4. (profitless) Infrastructure competition



Solutions

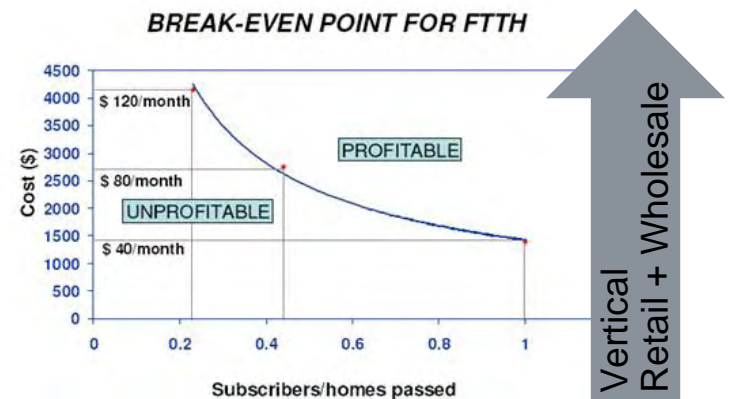
1. One (Regulated) Network only
2. New must replace old
3. Government subsidy, B Party Pays or User Pays for Usage, More Users (100% ideally)
4. One (Regulated) Network only

Lesson 1: only one fixed broadband network is likely to be profitable in urban areas

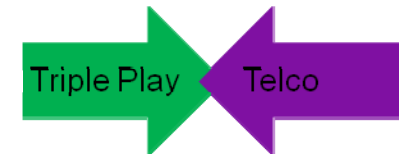


5. Three approaches that have been tried

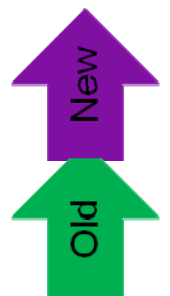
1. **Vertical Integration:** as an incumbent, use retail revenues from a vertically integrated model to reduce the % take up needed – see Corning graph. Problem is retail price - \$40 @ 100%, \$80 if two networks sharing (assuming high price doesn't impact take up!!!)



2. **“Telephony Grab”:** new challenger gets share of existing telephony from incumbent by offering triple play. Problem is that incumbent has a business case to fight back. Starts with duplication and price wars. Typically ends in stalemate

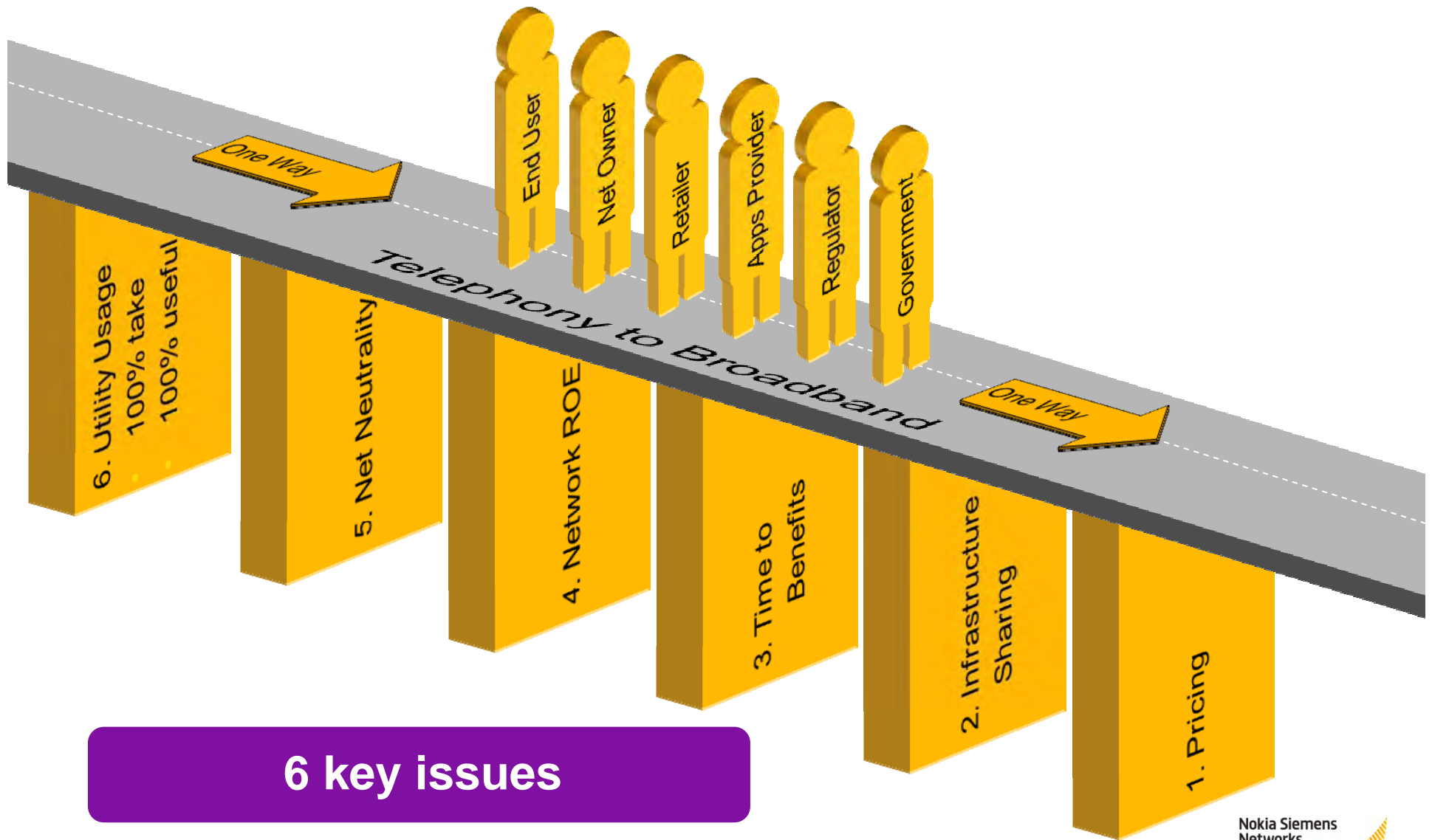


3. **“New services”** will arise and network owner keeps all revenues. Problem is that a real broadband pipe can support all applications – the revenues from new services don't contribute to the pipe business case (e.g. Google Street View) if net neutral

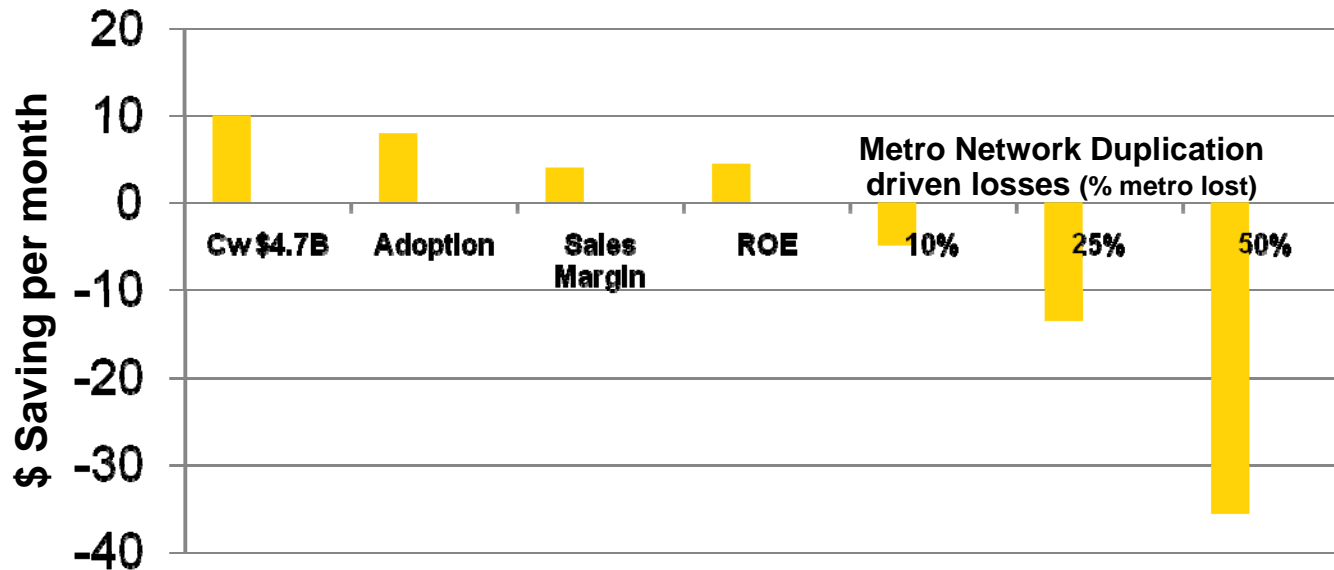


Lesson 2: access revenues must pay for access networks

6. A path forward



6. Factors that reduce end user pricing (\$/month)



Assumptions

- 4.9m B'band Households
- 20% non-Metro
- 70% Internet households
- \$52pm retail ARPU
- \$10bn CAPEX
- straight- line depreciation
- D/E ratio of 50%

Source: John de Ridder,
Telecommunications Economist

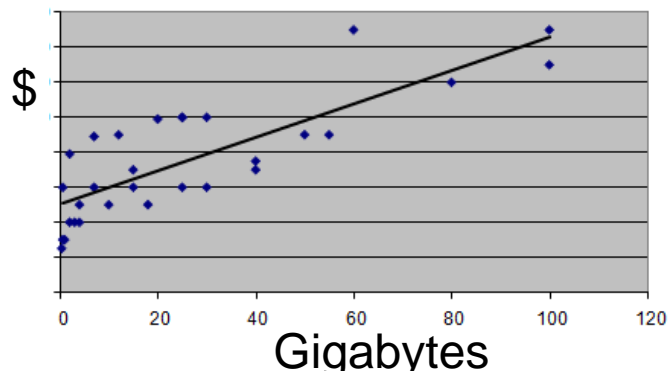
Item	Saving	How
\$4.7bn C'wealth Cont	\$9.99	reduced need for metro to subsidize
Increase adoption by 10%	\$7.95	more revenue, little extra cost, savings for all
Retail Margin reduced 10%	\$4.03	open access stimulates more retail competition
Halve Netw'k ROE to 10%	\$4.25	halve profit on network
Metro net duplication:25%	\$13.31	costs spread across a smaller base

Top three: avoid duplication, leverage Gov contributions, increase adoption



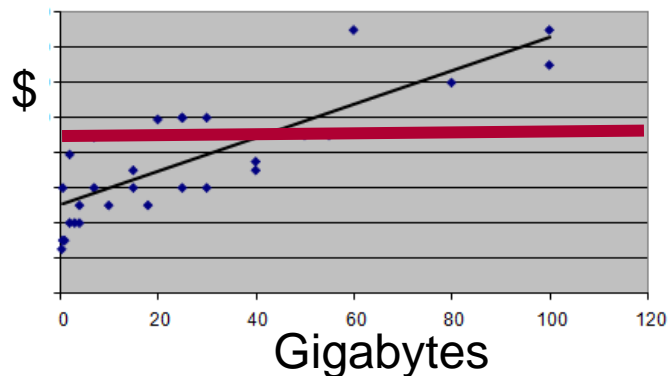
6.1 Pricing options for wholesale access

Every major new network has used low monthly access fees plus usage charges to achieve profitability. What will be possible for fixed b'band ?



1. Au Retail Plans – Prices grow with Gigabytes

- Scatter diagram of all DSL2 price points
- Line of best fit reflects rising costs with rising capacity (in access, backhaul, core...)



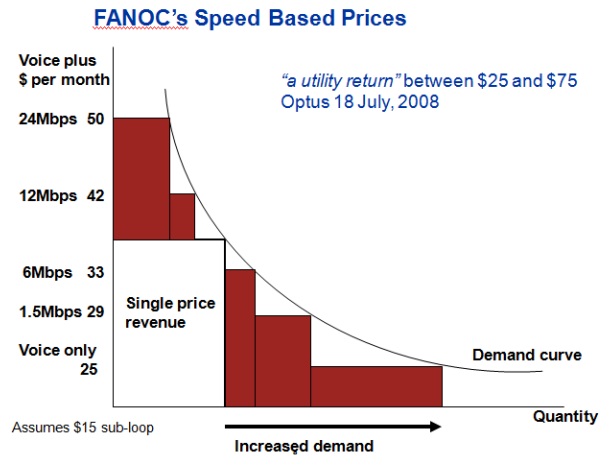
2. Single cost based wholesale price:

- Too low destroys business case
- Too high destroys entry level pricing

No right price!

Lesson 3: flat (ULL type) prices do not work

6.1 Pricing options for wholesale access

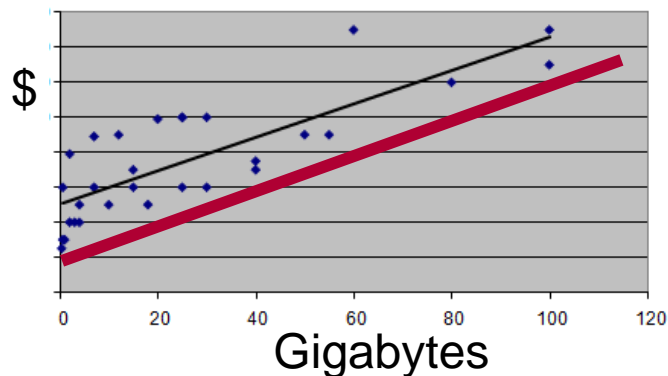


3. Speed based pricing:

- Artificially throttles entry level services
- Small minority get full benefit of investment
- Wastes expensive capability

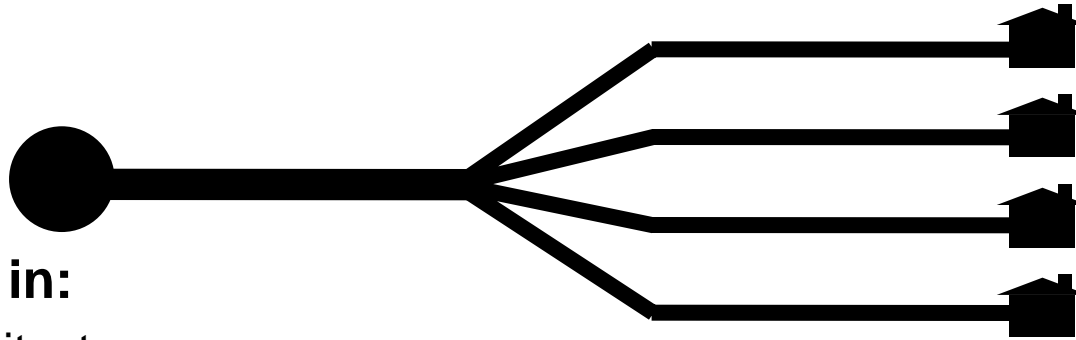
4. Suggested Access Pricing:

- Everyone gets unconstricted pipe
- Affordable entry level pricing
- Plus pay for use – like a utility
- Allows comparable service pricing
- Funds expansion & upgrade of network



Lesson 4: affordable monthly fee + usage charge works

6.2 Water or gas pipe, power line, sewer or FTTH: When is one network is better than two?



Same in:

- architecture
- poles and ditches (civil works dominate costs)
- economics (2 networks double the cost, but not the revenues)
- separation of applications from infrastructure

All can be made affordable:

- simple product definitions
- no network duplication
- uniformity of approach
- moderate retail margins

Same network utility model works for fixed broadband

6.3 Time to benefits: beware of delays!

Estimates of Extra Growth in Au GDP: 1 to 3%

- Broadband Advisory Grp 1.2 to 3%
- Allen Consulting Grp 2.0%
- CIE (Canberra) 1.4%
- PwC 1 to 2%

NPV of Extra Growth: A\$752bn

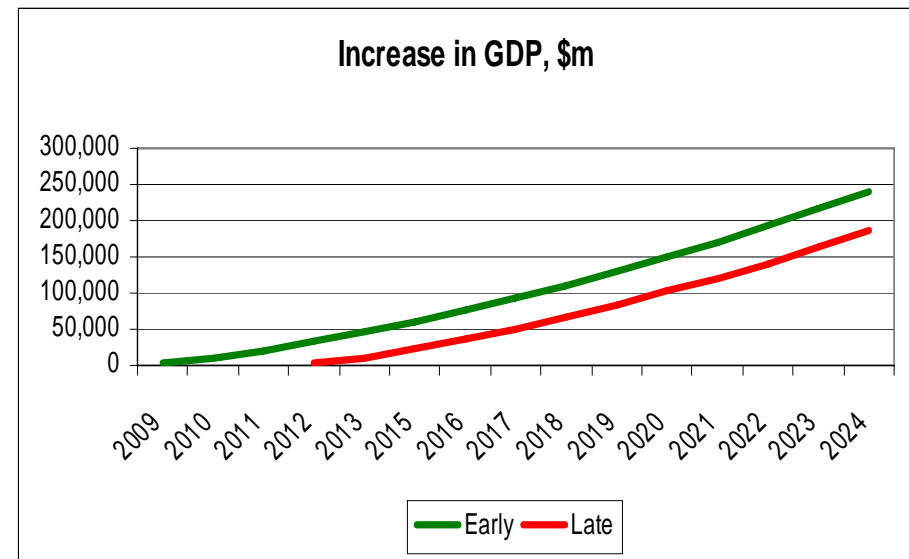
- conservative 1% “extra growth”,
- GDP growth trend of 3%
- 3 year NBN roll-out,
- 7% discount rate, over 15 years

3 years delay reduces NPV to A\$548bn

- simple PV calculation with same assumptions – Late line versus Early line
- cost is \$5.7bn per month delay

Bakerloo	Good service
Central	Minor delays
Circle	Planned closure
District	Part closure
H'smith & City	Good service
Jubilee	Severe delays
Metropolitan	Good service
Northern	Part closure
Piccadilly	Good service
Victoria	Good service
Waterloo & City	Planned closure

Source: John de Ridder
Telecommunications Economist



Cost of delay: \$5.7bn/month

6.4 ROE: expectations misaligned ?



A key issue is the regulated return (post tax, nominal ROE figures used here):

- regulators are typically looking for a return to equity (ROE) of around 11%
- network owners typically seeks a return “north of 18%” (Telstra)

Network Owners see no reason to shift:

- already earning that rate if incumbents,
- potential competitors to incumbents see risks even with regulatory changes
- not their job to manage public business case (external benefits vs shareholders)

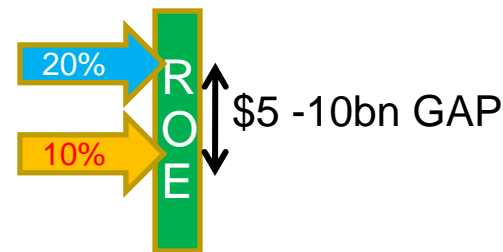
Regulators have a range of concerns:

- lower incumbent returns were needed to created margin for competitors
- loss of public benefit (LTIE is the test)
- broader public business case usually considered elsewhere

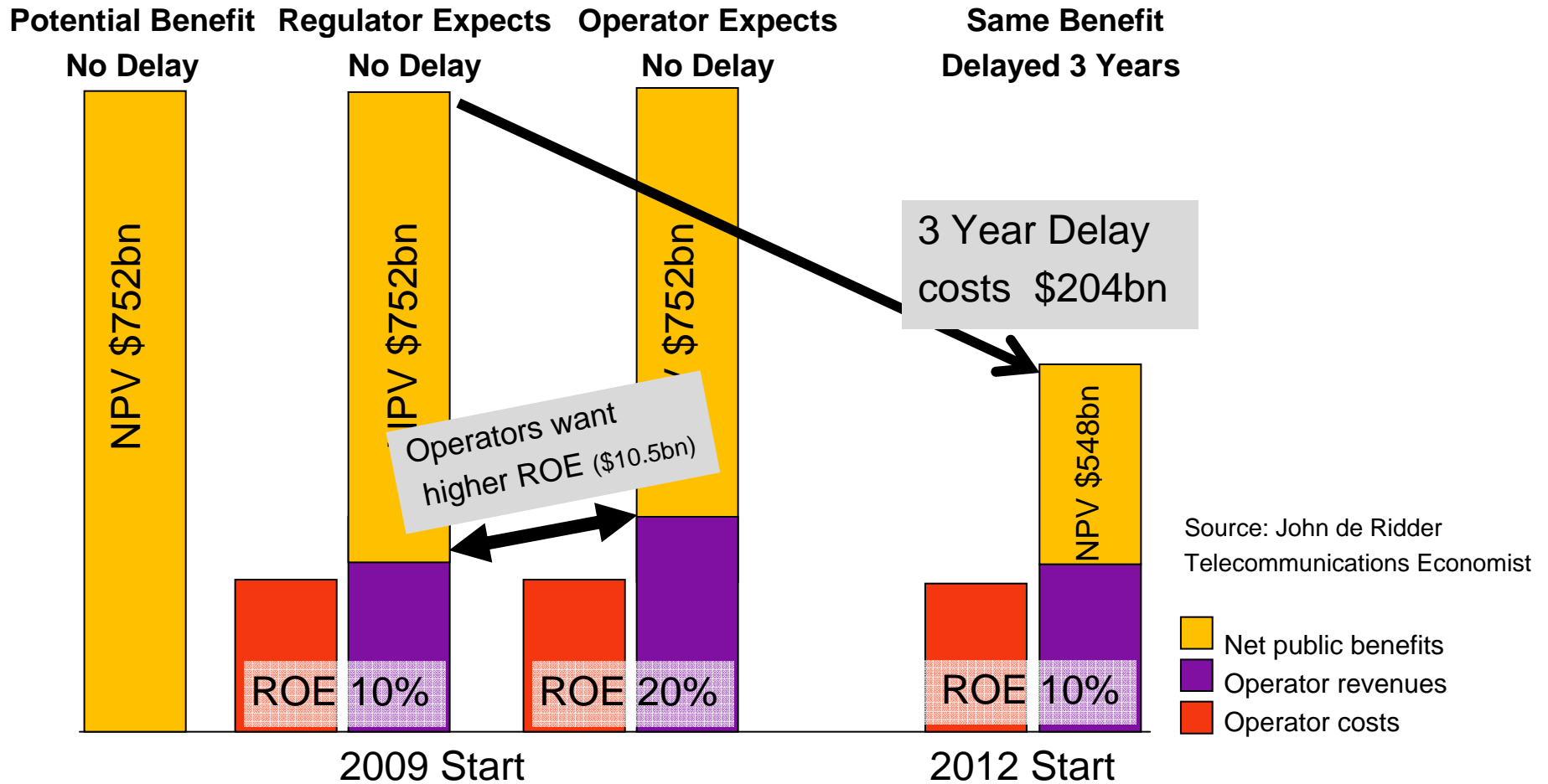
How big is the gap between 10% and 20% ROE?

- \$5bn of extra revenue (if \$10bn CAPEX over 3 years, 50% equity)
- \$10.5bn (as above, 100% equity)

Can we close the gap?



6.4 Operator ROE versus national benefits NPV



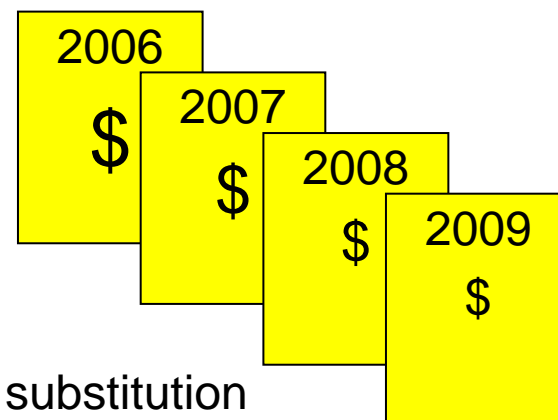
Time to deal?: A\$200bn at stake
Difference in ROE < 2 months of benefits



6.4 Both network owners and regulators must recognise the implications of delay:

Regulators:

Achieving the benefits earlier has a tangible value
Optimum result may involve compromise on models
– in order to bring forward overall benefits



Network Owners:

Fixed network returns under threat:
as legacy revenues decline e.g. voice by mobile substitution
as broadband supports alternatives
as regulators seek new models

A regulated return can be attractive – so long as right number, right period

Delay implications: Fixed broadband may never fully develop and some benefits can be lost forever

6.5 Network neutrality and traffic shaping



Providing high speed, high capacity at a low user price without large government subsidy is difficult. Managing traffic by delaying low priority traffic for high priority can greatly improve the overall experience for all users.

Those who want to speak or video conference get interruption free sessions. Those who want to share files get the benefit of low prices, and very fast transfers on most occasions.

Higher capabilities might be offered at higher prices to the end user & the B Parties might one day choose to pay (eg a movie download service)

Declaration of policies is recommended - approaches are transparent.

Traffic shaping is likely to be important to achieving quality of service on affordable networks

6.6 Utility usage: 100% adoption, 100% useful



Water

- Just H₂O,
- Unconstricted Download
- 1000's of applications



Gas

- Just CH₃CH(OH)CH₂CH₃
- Unconstricted Download
- A few applications



Electricity

- Just 240v, 50Hz
- Unconstricted Download
- 1000's of applications



Wastewater

- Just a Clear pipe
- Unconstricted Upload
- A few applications

101101

Bits

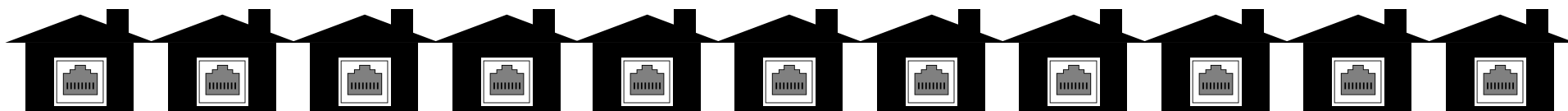
- Just Bit Pipe: 101101
- Unconstricted Upload and Download
- 1111101000's of applications

Utility usage underpins affordable pricing

Nokia Siemens
Networks



6. Five steps to national broadband access



1. User Requirement 2 - Affordability

Pricing: affordable monthly fee + pay for use (gigabytes)

2. User Requirement 1 – Usefulness (The Real Deal)

Pipe: unconstricted for anything and everything

3. Service Providers and Application Providers Needs

Network Access: open access and net neutrality

4. Network Owners Need Business Case for Change

(Good) ROI (don't expect Horizontal ROI << Vertical ROI)

5. Establish Appropriate Industry Context for Fixed B'band

Regulation: as a natural pipe monopoly

**Goal can be met
and stakeholders concerns satisfied!**

Key messages

1. Technology change is making wholesale fixed broadband a simple pipe
2. Urban pipe economics makes fixed broadband a natural monopoly
3. Consequently regulators are likely to impose ROE regulation
4. Difference between vertical and horizontal ROE impacts transition
5. Suggested utility style pricing is likely to be advantageous for all parties:
 - low entry level prices for consumers
 - wide range of options for retailers, minimises impacts on current retail pricing
 - funds on going increase in capacity
 - suits any generation of broadband
 - simple model for regulation
6. An unconstricted pipe is worth considering
7. Near universal customer adoption is an appropriate goal and underpins affordability for consumers and ROE for network operator

End game & one-off opportunity