Rebooting the NBN

(Personal) Reflections On The Journey Thus Far

Simon Hackett

AugNOG 2014

Previously on “NBN Co: The Series”

2009
FTTP NBN Announced

(This is not Mike Quigley)

2010
A Very Big organisation was built Very Rapidly
Many Meetings Were Held

http://www.abc.net.au/tv/programs/utopia/

NBN Co outcomes running way behind initial promises
(time, money, connections)

We did have an election in 2013

THE HON MALCOLM TURNBULL MP
Minister for Communications

SENATOR THE HON MATHIAS CORMANN
Minister for Finance

08 APR 2014

Dr Ziggy Switkowski
Executive Chairman
NBN Co Limited
Level 40, 360 Elizabeth Street
MELBOURNE VIC 3000

Dear Dr Switkowski

GOVERNMENT EXPECTATIONS

We are writing in our capacity as Shareholder Ministers in NBN Co Limited ('NBN Co' or 'the Company') to provide a new Statement of Expectations. This Statement of Expectations replaces previous statements and will be updated as required to reflect future decisions by Government.

New Statement Of Expectations (SoE)

- http://www.communications.gov.au/__data/assets/pdf_file/0014/221162/SOE_Shareholder_Minister_letter.pdf

Policy Objectives

The Australian Government is committed to completing the National Broadband Network ('NBN') and ensuring all Australians have access to very fast broadband as soon as possible, at affordable prices, and at least cost to taxpayers.

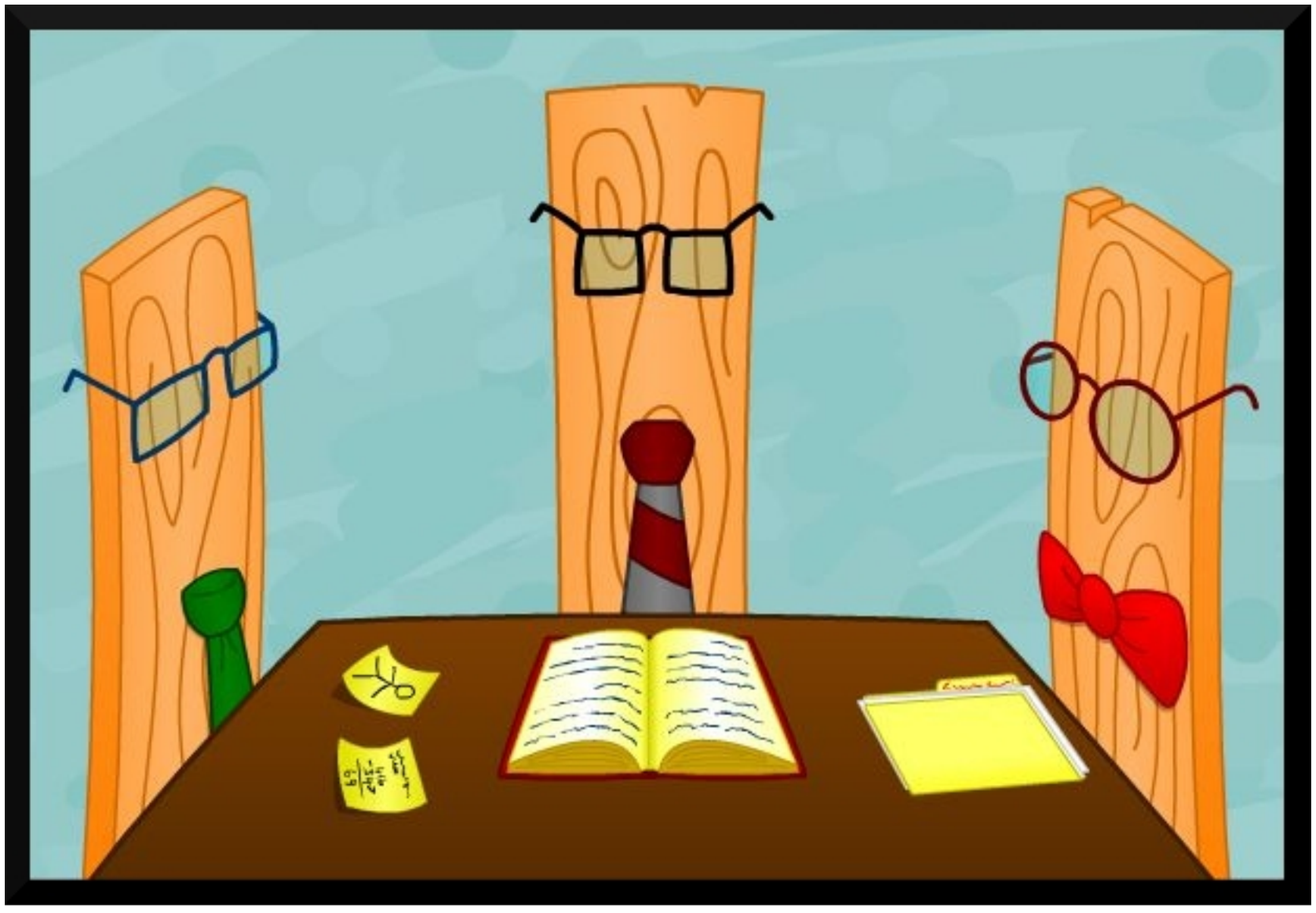
To achieve these objectives the NBN should be built in a cost-effective way using the technology best matched to each area of Australia. This Statement of Expectations provides NBN Co with flexibility and discretion in operational, technology and network design decisions, within the constraints of a public equity capital limit of $29.5 billion specified in its funding agreement with the Commonwealth, and the Government's broadband policy objectives (as summarised below).

The Government intends the NBN to be a wholesale-only access network, available on equivalent terms to all access seekers, that operates at the lowest practical levels in the network stack. The Government expects completion of the NBN will result in the structural separation of Telstra and a competitive market for retail broadband and telephony services.

SoE defines the NBN Implementation Policy

- http://www.communications.gov.au/__data/assets/pdf_file/0014/221162/SOE_Shareholder_Minister_letter.pdf

http://eat3d.com/files/360610808_654.jpg



I was asked to join the NBN Co Board

This is what ‘Whirlpool’ expected me to do about MTM on my arrival at the NBN Co board room

HFC in the National Broadband Network

HFC, the NBN, and the meaning of life

With the release of the NBNCo Strategic Review earlier this week, I've seen some very significant misunderstandings (and consequent angst) expressed about the inclusion of HFC into the mix of technologies intended for the NBN rollout.

This post is intended to be a counterpoint to those misunderstandings.

I haven't written this post to tell you that this is the best, or the only, way to change the shape of the future version of this network.

I haven't written this because I've stopped believing that the best ultimate answer wherever possible is Fibre-To-The-Premises (FTTP) – because it still is.

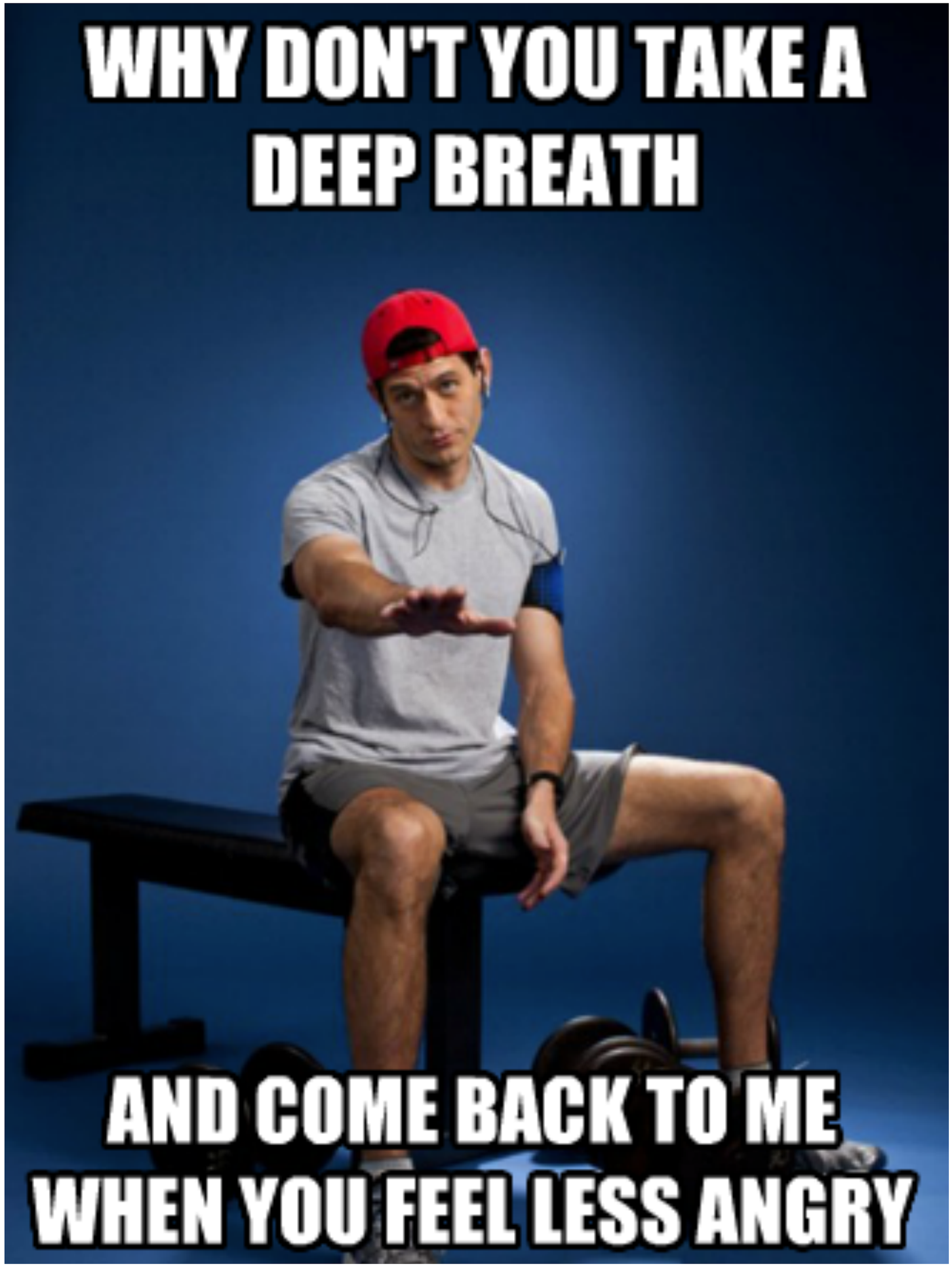
Rather, I've written this in the hope that, whatever view you form about the use of HFC in the NBN, at least the view you form will be far better informed than it would otherwise be.

But to the surprise of some, I then *defended* (parts of) the MTM model

http://simonhackett.com/2013/12/14/hfc-in-the-nbn/

What I've consequently been accused of

- http://the-dark-empire.forumotion.com/t2182-anakin-skywalkerdarth-vader-episode-iii-rots-cinematic-canon-character-no-customization-allowed


WHY DON'T YOU TAKE A DEEP BREATH
AND COME BACK TO ME WHEN YOU FEEL LESS ANGRY

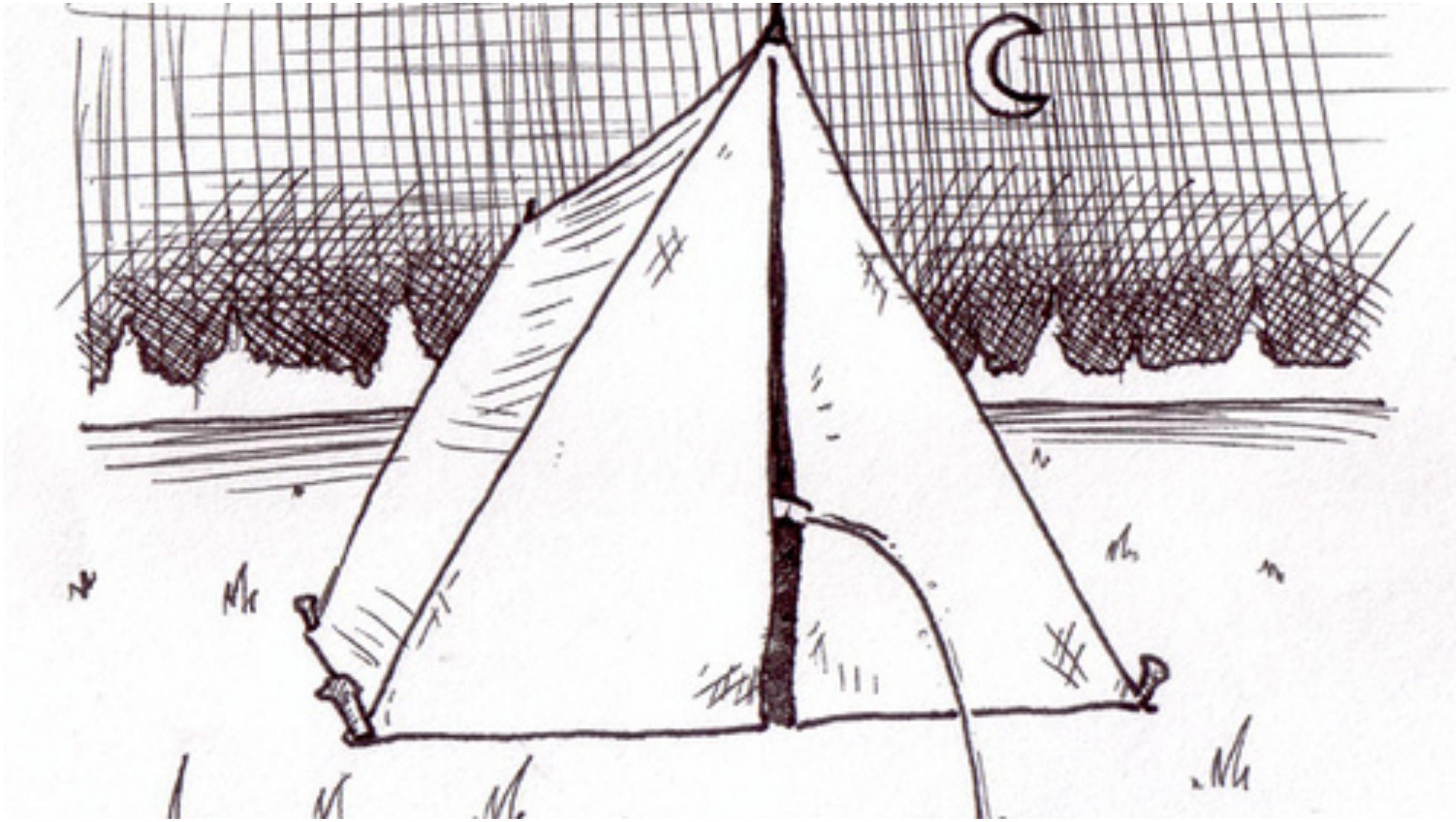
My decision was pretty simple

- Can I do more good,
  in terms of NBN outcomes for Australia,
  given current policy and funding constraints,
  by being on the *outside* or the *inside* of the tent?

- This is *not* a political decision or a political act

- This is *not* about being paid to do it

  - Its just about wanting the best possible network build to happen, within current constraints, in parallel to the ongoing policy debate



What was inside the tent?

Stuff was already broken

- Previous political promises made in public were disconnected from reality
- "Service Class Zero" as the 'reality gap' filler
- Mishandled construction relationships threatening to halt the built entirely
- These (and other) issues had come to a head well *before* the election,
  and well *before* the MTM policy shift

What is being done?

Top-Down NBN Reboot

- New Government + Minister
- New Policy & SoE
- New board <— **(I am here)**
- New CEO
- New senior executive layer

http://1.bp.blogspot.com/-iaZY98Z80Ww/UVa6e9j1g5I/AAAAAAAALaQ/MYnF559jEco/s1600/reboot-univers.jpg

Work In Progress

- Restructure and rebuild, both company and culture
- Construction Partner relationship reset
- SC0 remedy program (existing FSAMs)
- Proactive lead-in builds in new FTTP areas
- Reset public build maps to reflect reality
- Set up for MTM deployment mode

- http://steve-lovelace.com/wordpress/wp-content/uploads/2013/05/keep-calm-and-reboot.png

Challenges and Risks

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Adding new rollout technologies

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Evolving the access cost model as demand rises

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Preserving the core access model abstraction

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Disconnection Process Ramp-Up

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Better relationships, marketing & communications

Challenges and Risks

Voice and Special Services Management

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Disconnection Process Ramp-Up

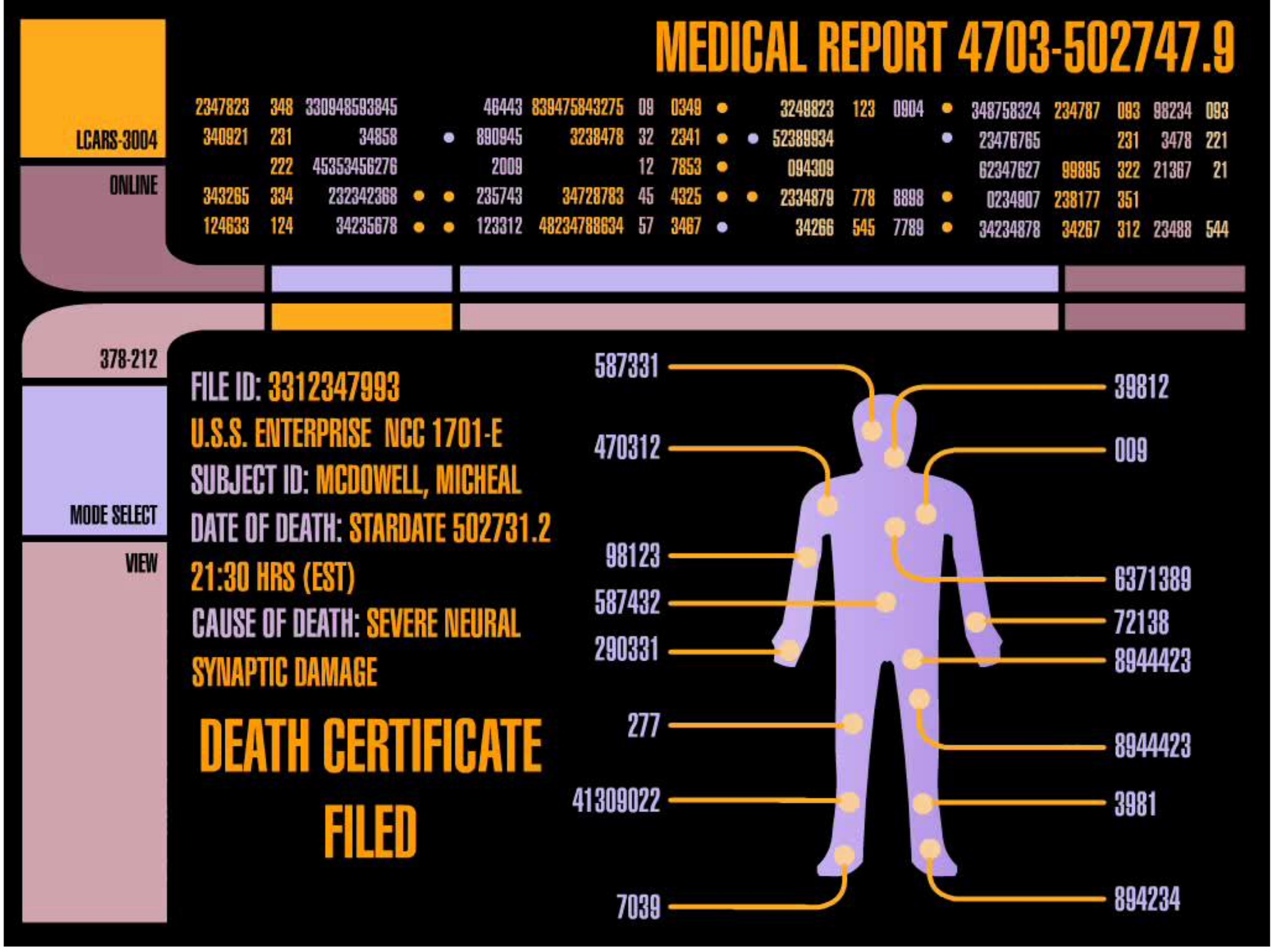
Improving transparency at multiple levels

Evolving the access cost model as demand rises

Better relationships, marketing & communications

Surviving the transition from Managing Failure to Managing Success

- http://willpowerthru.files.wordpress.com/2012/06/youchainsaw.png



Current Status

http://i.ytimg.com/vi/plNHGi-cJbY/maxresdefault.jpg

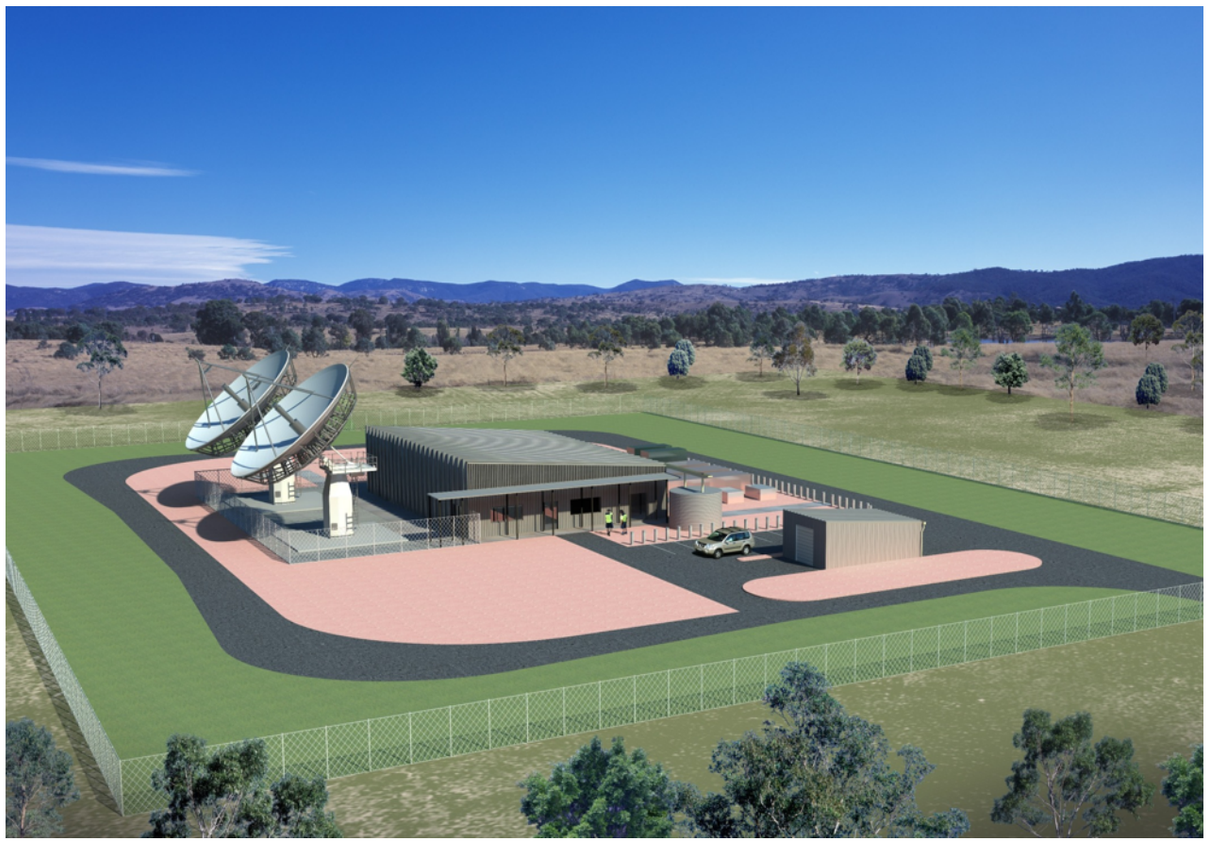
Interim Satellite Service

- ISS is a huge problem (NBNCo boiled the frog)
- Previous management inexperience with Internet Service Provision realities
- Real solution is the LTSS

- http://static.echonest.com/frog/images/frog.jpg

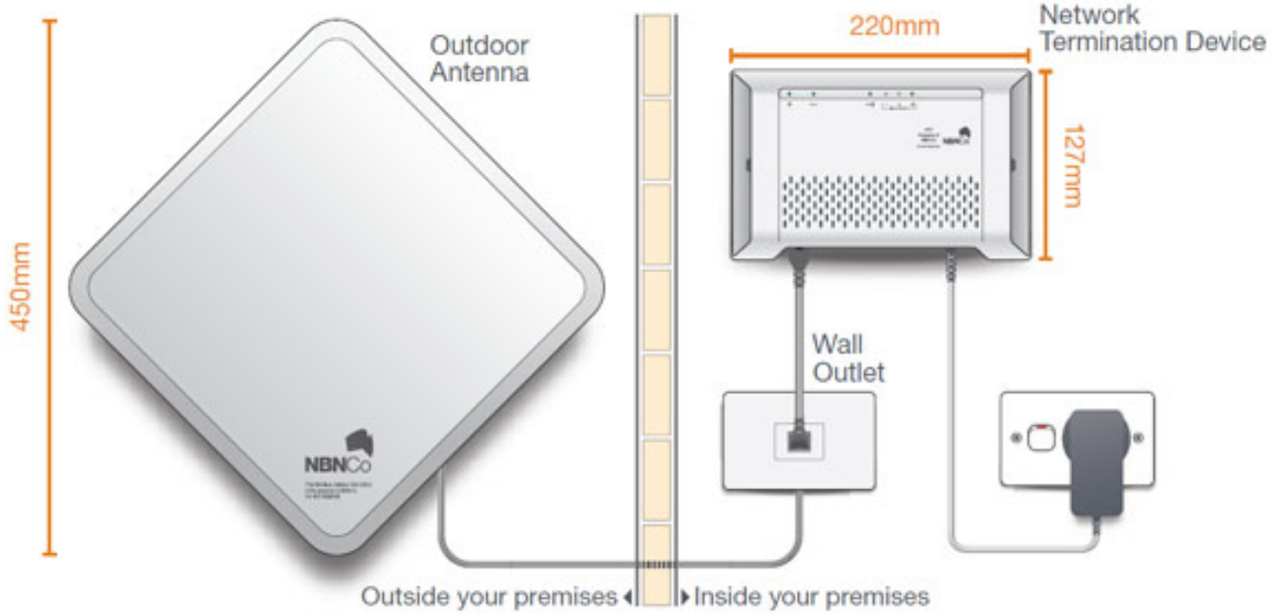
Long Term Satellite

- Ticking along pretty well
- Mindful of lessons from ISS



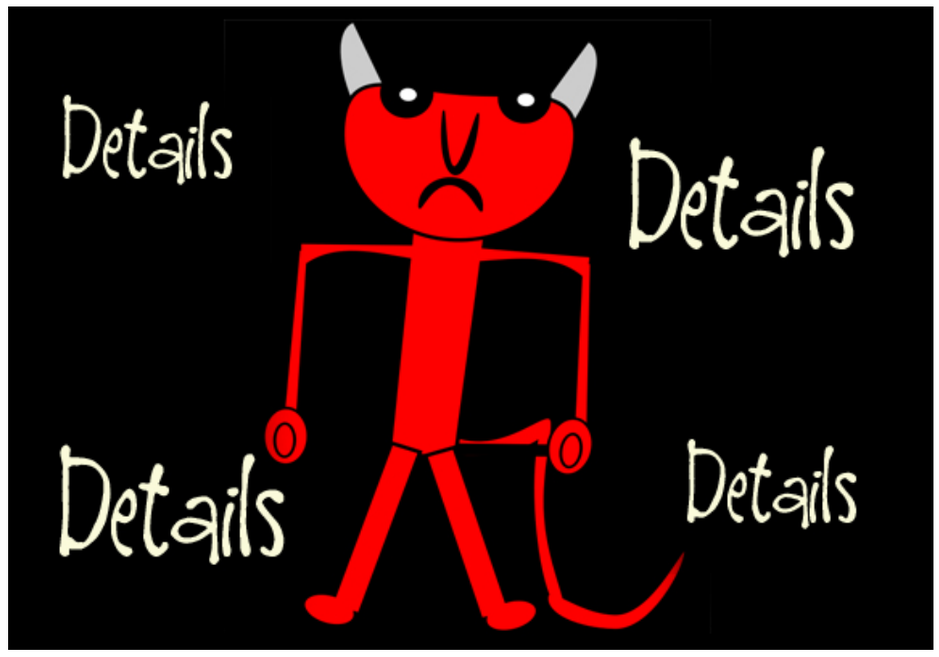
Fixed Wireless

- Larger deployment than originally envisaged
- Radio Spectrum Challenges
- Performance is pretty high (low contention ratios)
- User data rates up to 25/5



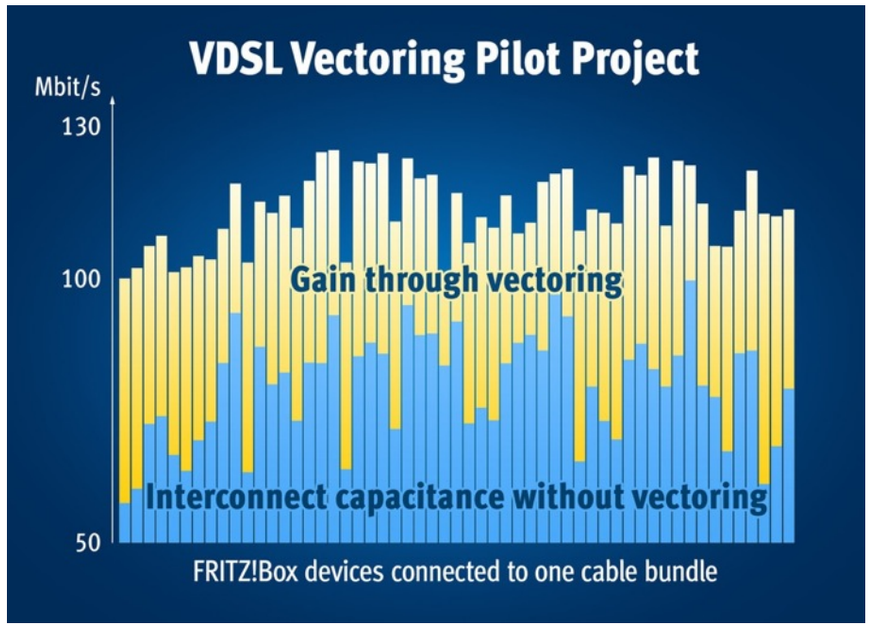
Revised Telstra Deal

- Distraction from many reviews (especially the CBA)
- Have closure on key points
- Details (many) being sorted



FTTB in MDUs

- Original ‘only fibre’ vision prohibited this pragmatic solution for Multiple Dwelling Units
- Vectoring is highly effective in MDUs
- Most work is in adapting systems and IT processes, not in hardware
- Routinely capable of 100M speeds
- Cranking up for initial release in early 2015



AVM Fritz!Box MDU Vectoring Pilot

FTTB - and TPG

- CBA may (or may not) work against TPG
- ACCC may (or may not) move to block TPG
- NBNCo just needs to get on with executing asap on this one in the meantime
- However, TPG *are* being a bit naughty on comms strategy on VDSL2 in MDUs

http://www.keepcalmandposters.com/posters/242702.png

FTTN

- Not rocket science, not all that new
- Technical outcomes are *worse than FTTP (shock, horror)*
- Challenges are in scaling up for volume
  - Site access
  - Power supply arrangements
  - Cutover and Migration processes

- http://jxeeno.wdfiles.com/local--files/blog:nbn:details-of-fttn-pilot-emerge/fttn_umina_insidenode.jpg

FTTN Cabinets

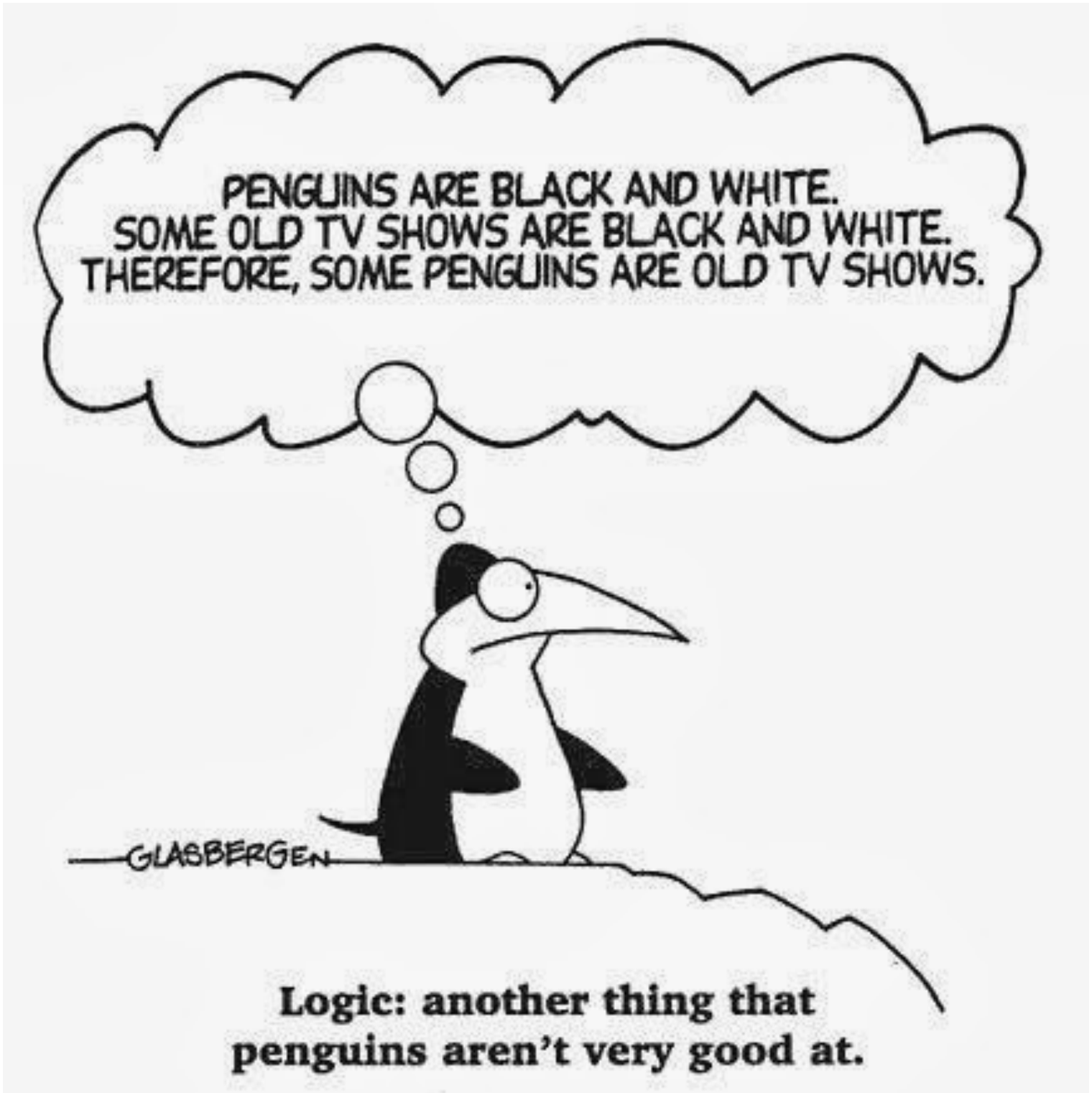
- Overseas deployments use quite large cabinets (older designs)

- NBNCo FTTN cabinets are much smaller

- There are still going to be a *hell of a lot of them*

  - By the way FTTP requires a lot of cabinets as well - albeit passive ones

FTTN Misconceptions



http://jokeallucan.blogspot.com.au/2014/02/penguins-are-black-and-white-some-old.html

FTTN Realities

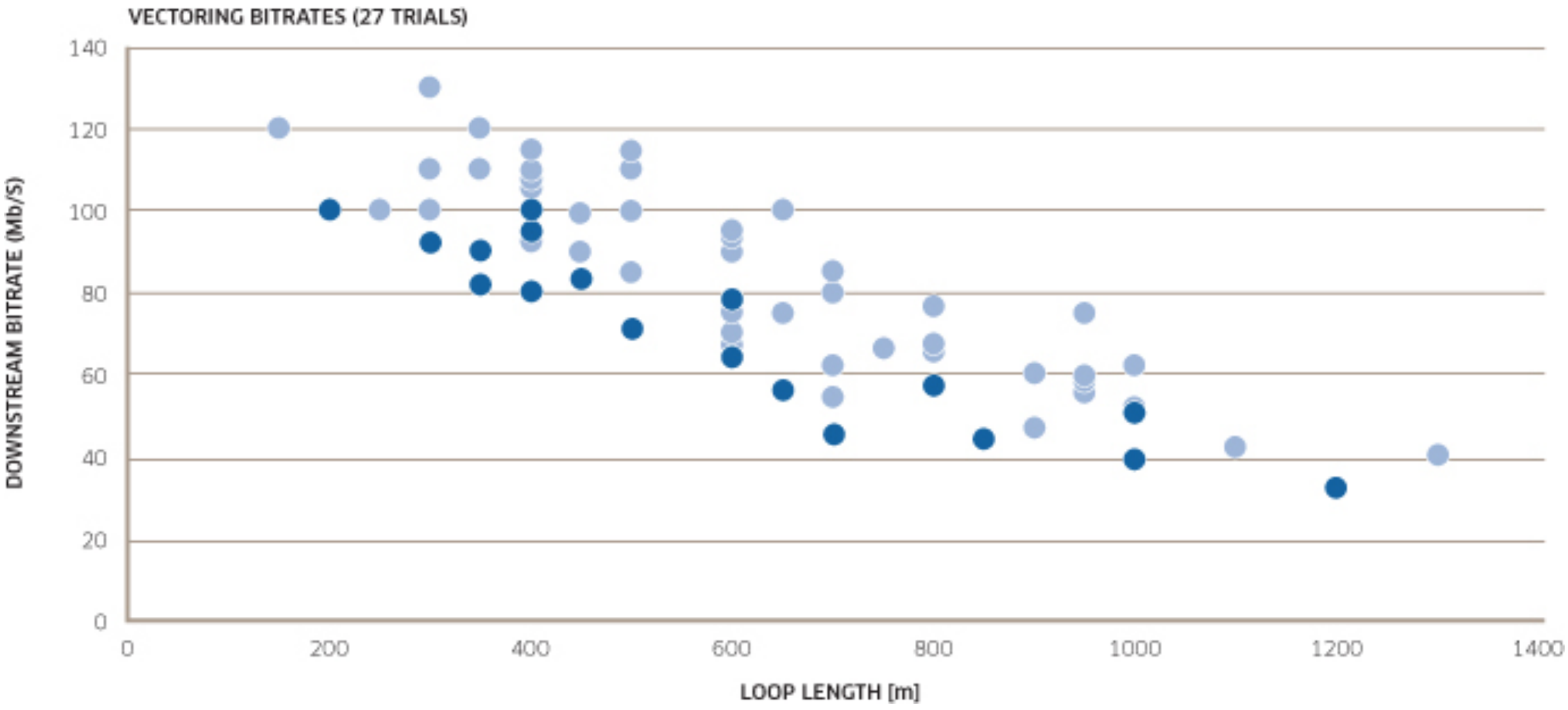
- Moving to VDSL2+Vectoring means a huge speed boost compared to ADSL2+
  (VDSL2 never made it to Australia)

- Removing *most* of the copper path is obviously not as good as removing *all* of it (FTTP)
  However, it *does* still *greatly* improve performance

- Existing deployments are instructive exemplars

- Did I mention that its not as good as FTTP?

VDSL2+Vectoring Real-World Speeds



Downstream bit rate results from 27 trials (Dark blue = prototype trials in 2010-11. Light blue = trials with commercial equipment in 2012-2013.)

http://www2.alcatel-lucent.com/techzine/vdsl2-vectoring-delivers-on-its-promise/

FTTN Trial Rollout

- Initial 1000 node Telstra/NBN JV
- Alcatel-Lucent hardware Leverages existing chassis and element managers
- Build Australian deployment experience
- Customer services slated to be delivered from mid 2015 (across all 1000 nodes)

(None of these people are Senator Conroy)

- http://i1.ytimg.com/vi/QTG4TBxVOZ4/0.jpg

Fibre-on-demand

- FTTP service access for business customers + residential true believers
- Connection cost model could be pragmatically set on a case-by-case basis

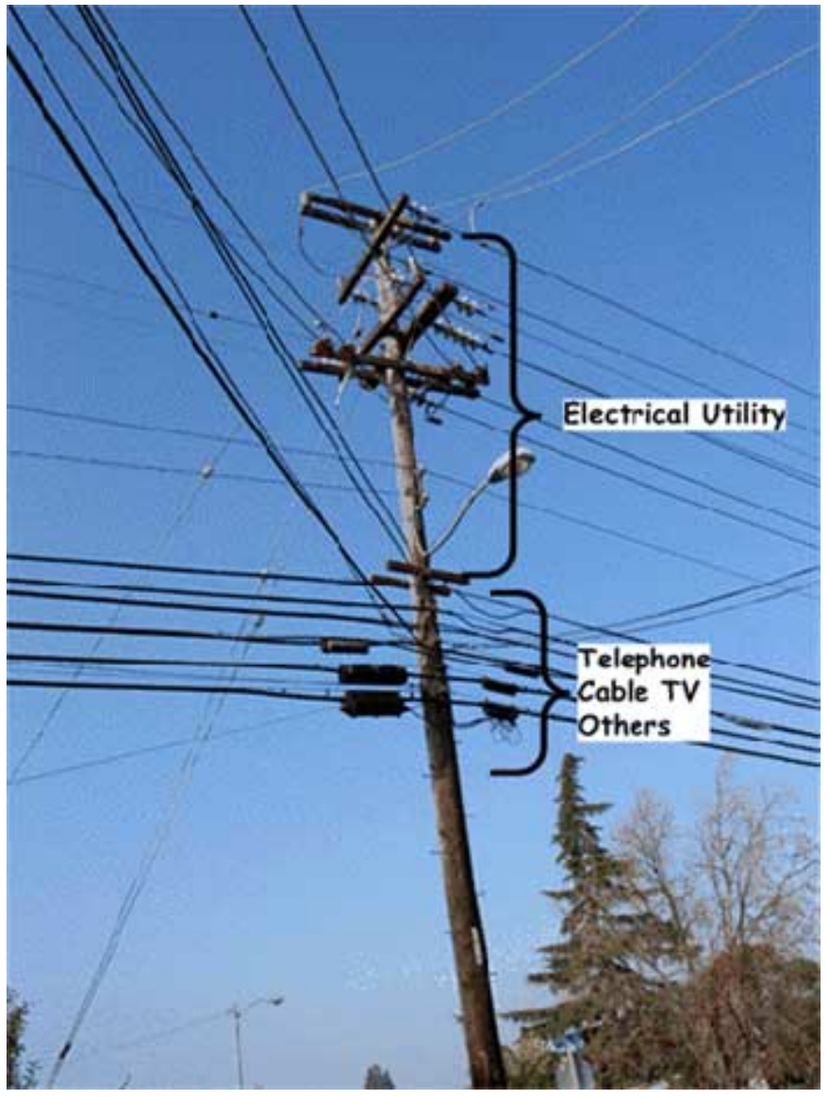
HFC Misconceptions

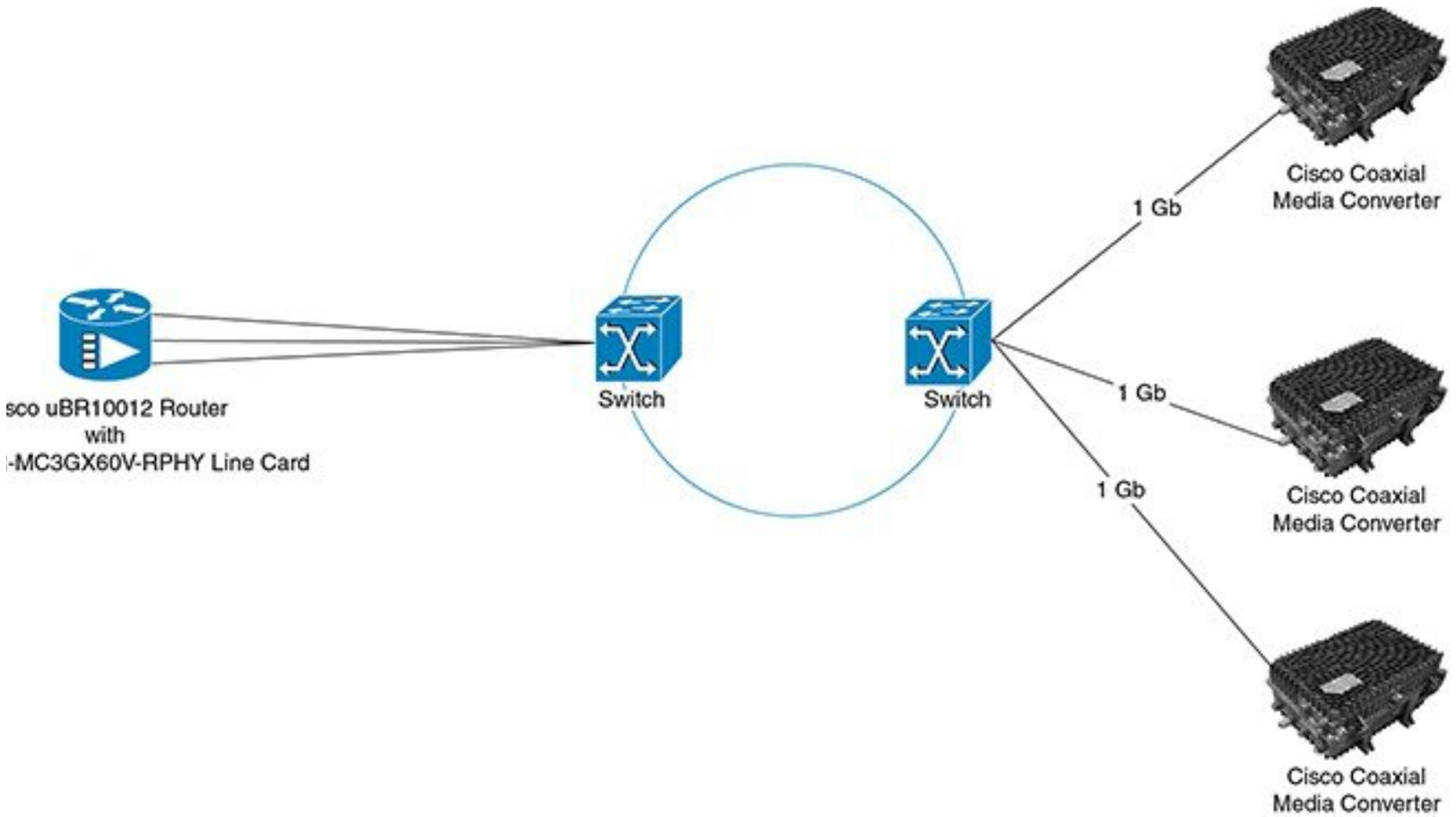
- "NBN HFC will be exactly like Telstra Cable Internet"
  (just re-badged as the NBN)

- "There is no NBN budget to upgrade the HFC networks"

HFC Realities

- Genuinely gigabit capable technology
- Initial DOCSIS 3.0 and node splitting upgrades
- “Remote PHY” deep native IP fibre devices as subsequent upgrade phase
- Tail circuit speed choices for HFC NBN set to match current FTTP service speed choices (including 100/40)

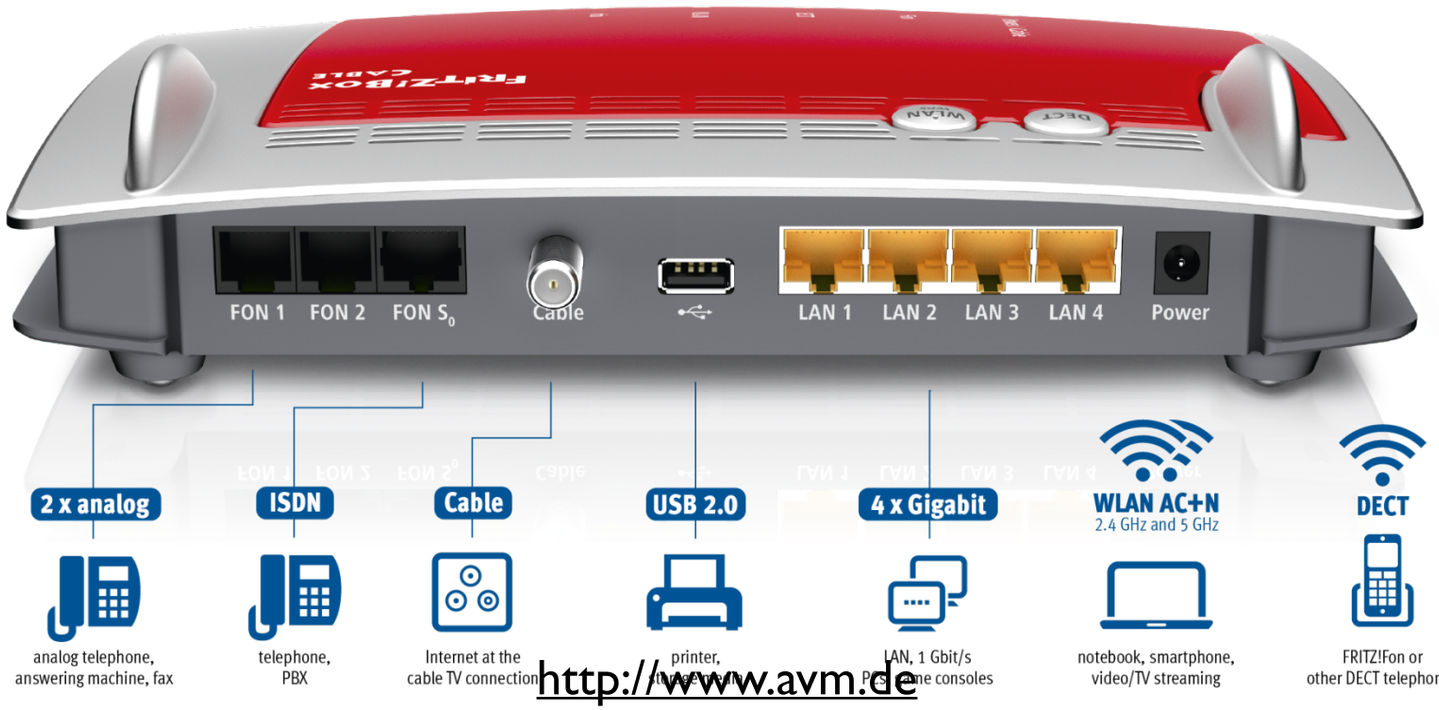




Remote PHY

(Yet Another Generic Cisco Network Diagram. Source: cisco.com)

Gigabit rate HFC customer routers already exist: FRITZ!Box 6490 Cable



http://www.avm.de

Overview of Cable Docsis 3.0 Bandwidth Speeds

Channel configuration		Downstream throughput		Upstream throughput
Number of downstream channels	Number of upstream channels	DOCSIS	EuroDOCSIS	
4	4	171.52 (152) Mbit/s	222.48 (200) Mbit/s	122.88 (108) Mbit/s
8	4	343.04 (304) Mbit/s	444.96 (400) Mbit/s	122.88 (108) Mbit/s
16	4	686.08 (608) Mbit/s	889.92 (800) Mbit/s	122.88 (108) Mbit/s
24	8	1029.12 (912) Mbit/s	1334.88 (1200) Mbit/s	245.76 (216) Mbit/s

http://www.avm.de

FTTP still rolling out

- NBNCo FTTP build process and progress is smoother than it has ever been in the past

- Existing and new FSAM lead-in install programs underway

- FTTP in Greenfields also continuing unabated

Targets toward 2016

Skilling Up

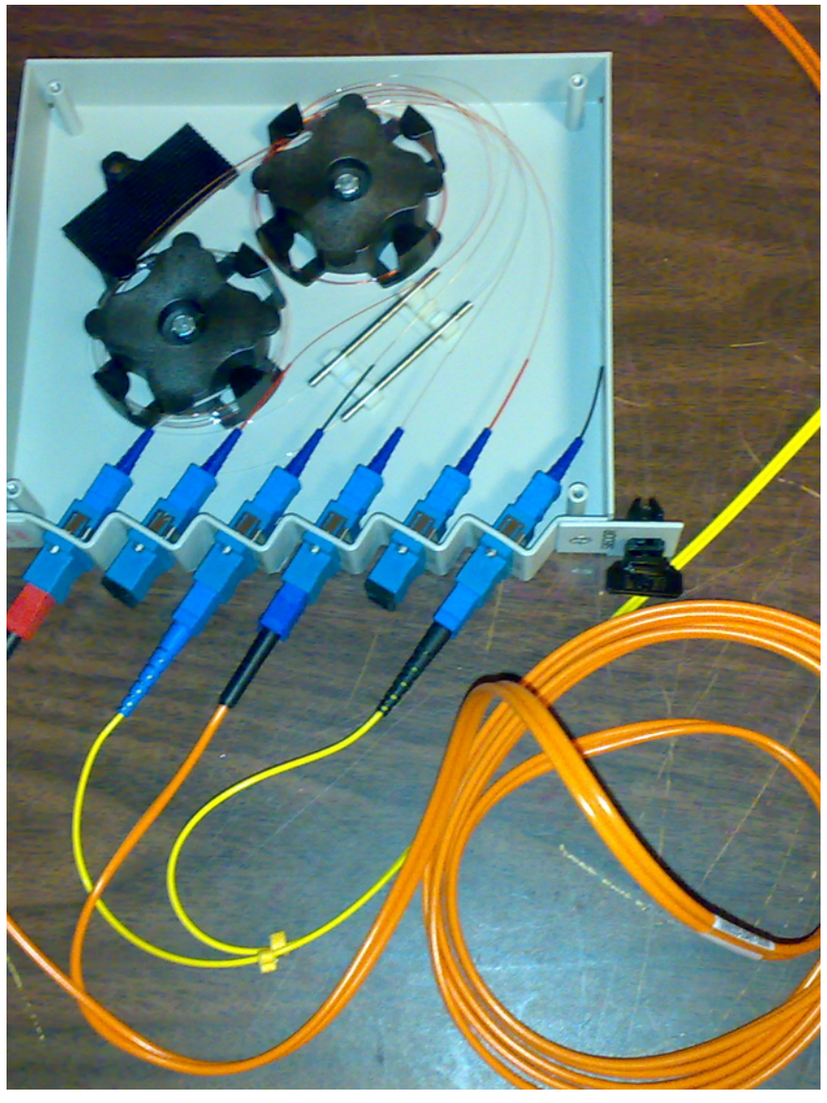
- Learning to walk, chew gum, *and* hum tunes, all at once
- Overcoming silo issues, focus on end-to-end performance
- Refocus on the right metrics
- Hiring great people and trusting them to get things done

Scaling Up

- Success brings its own (large) challenges

- Multiple technologies under active deployment

- Ensuring systems and processes keep up with it



Connecting Up

- Customer count in the millions
- Building some real momentum at last
- Able to adapt more rapidly to future changes in policy
- Predictable/reliable provisioning and fault management pipelines
- Scaling access costs down appropriately as data volumes rise

The bottom line

- Policy debates are *external* to NBN Co.
  They are a political and election issue
  They are not an NBN Co operational issue

- Its easier to *stop* doing things than to *start* doing them

- The mix of technology deployed is expected to change dynamically over the life of the rollout based on changing economics (and any future changes in policy)

- Income sooner will fund upgrades later

- NBN Co has plenty to do!

- http://images.luvimages.com/luvphotos/w/worrying_will_never_change_the_outcome-2929.jpg

The
End