

The Challenges of the Next Generation Online Environment

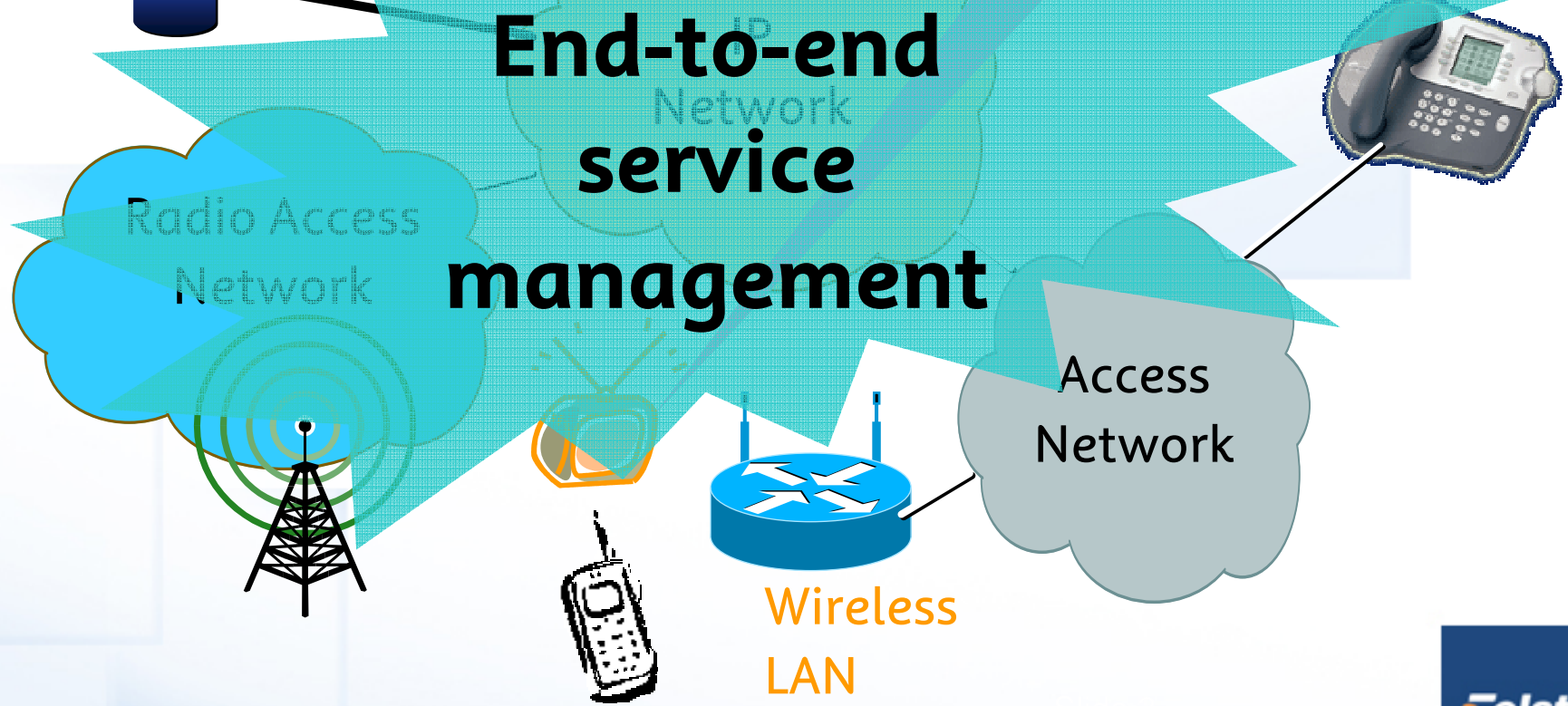
Hugh Bradlow
Chief Technology Officer
Telstra

Outline

- The Big Picture
- What is “Web 2.0”?
- What’s next? “TV 2.0”?
- What network infrastructure will it take to support it?

The Big Picture:

Converged
Intelligence



“Triple Play” &
“Always Best
Connected”



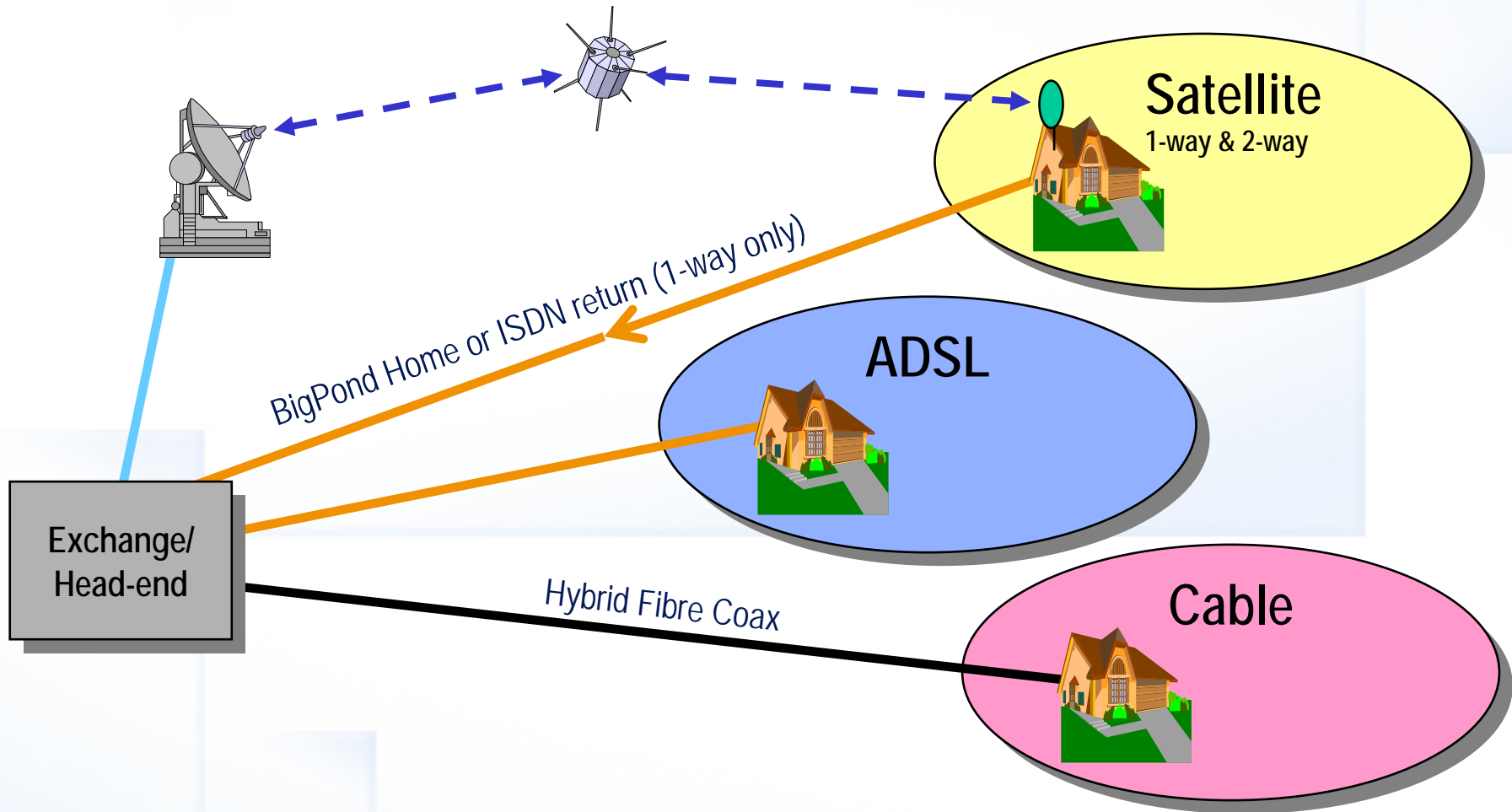
What is “Web 2.0”?

- “Parsumer”: “harnessing the collective intelligence”
 - Databases and Metcalf’s Law
 - Blogging
 - P2P
- Rich user experiences
 - AJAX
- Loosely coupled systems
 - Reuse and reassembly
 - Mashups
 - Continuous software releases (An ASP model)
 - Real-time monitoring of user behaviour
 - Many devices involved
 - Simple programming models
 - RSS versus SOAP and Web service discovery (UDDI)

“Parsumer” experiences

- Amazon advisory system
 - Amazon as a reference system
- eBay reputation system
- del.icio.us, Flickr, youtube, etc, etc
- Wikipedia, Wikitravel, Wikihow

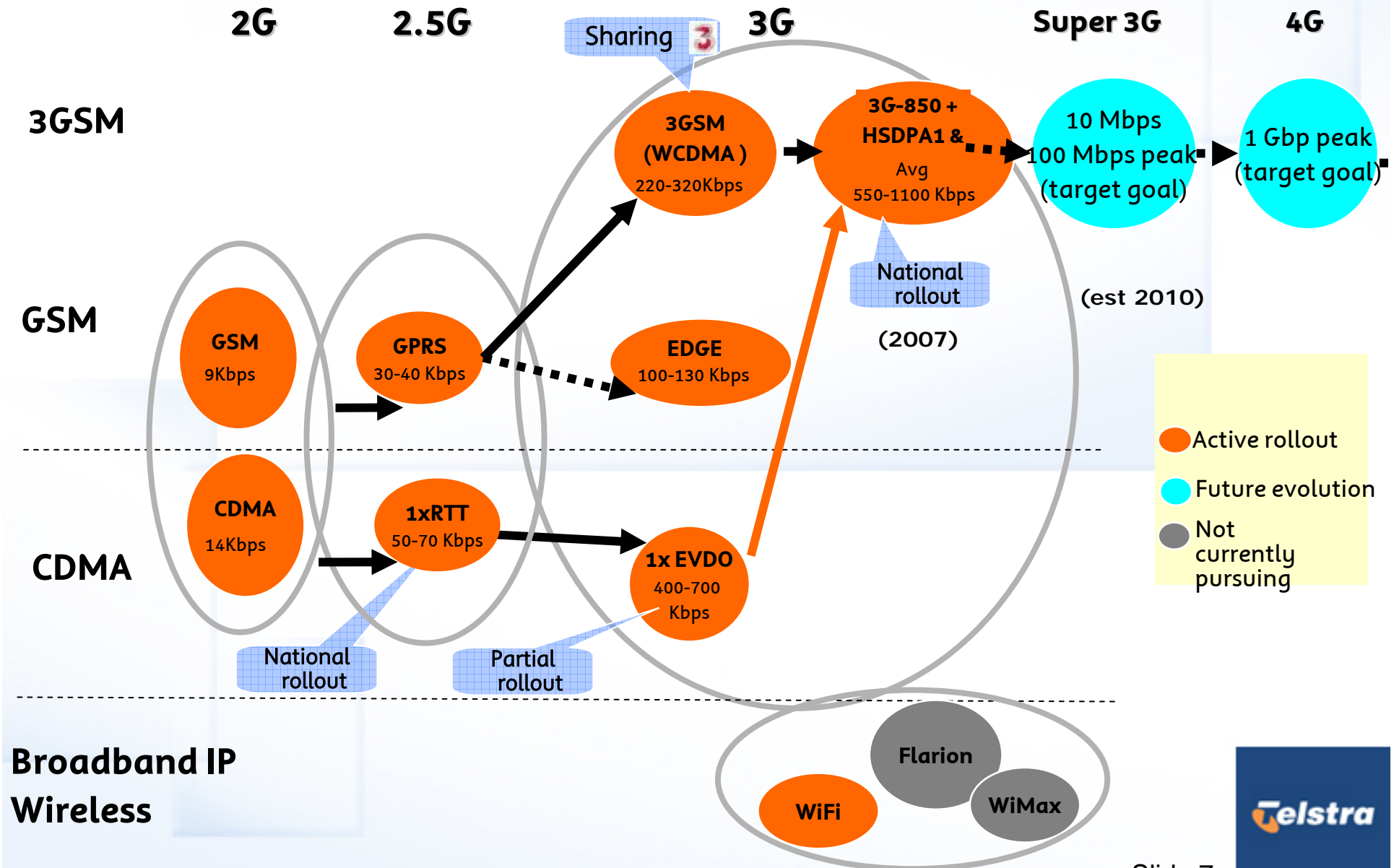
Web 2.0 and Broadband: Today's Broadband Generation



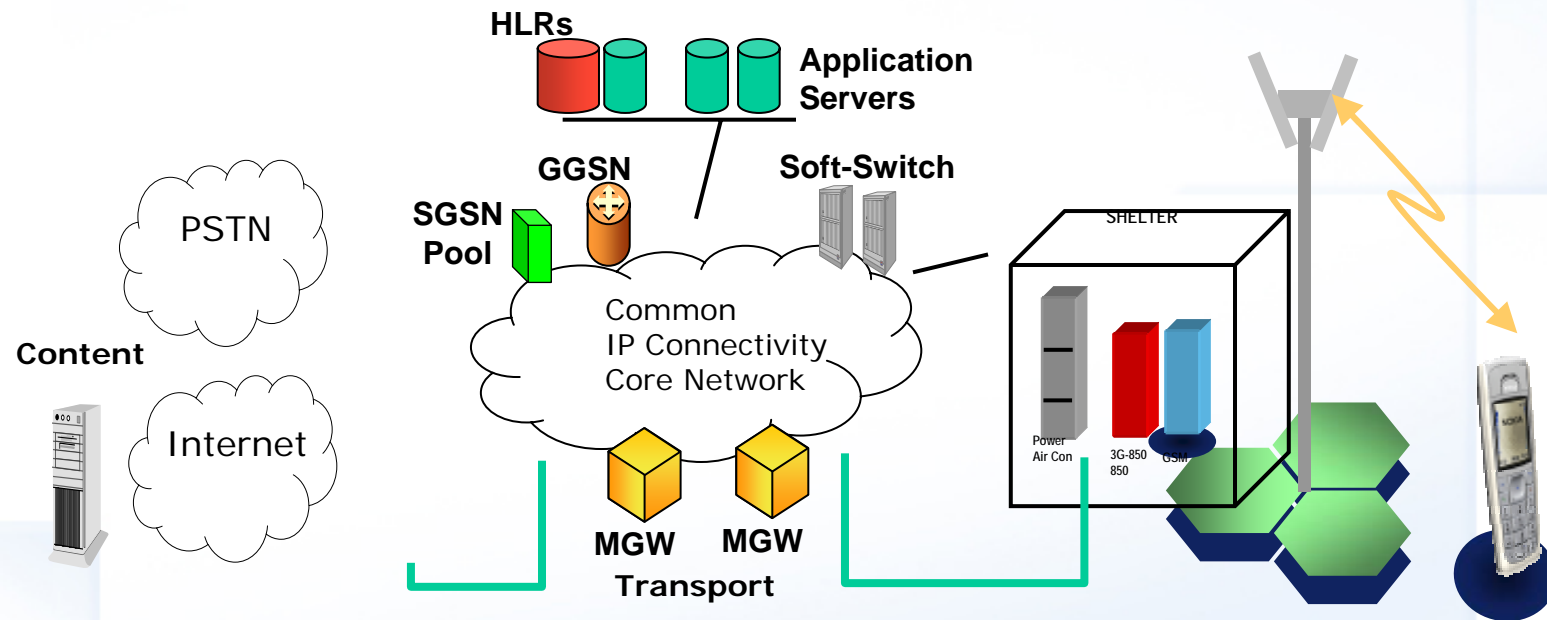
A “HSI” (High Speed Internet) Experience



Mobile broadband

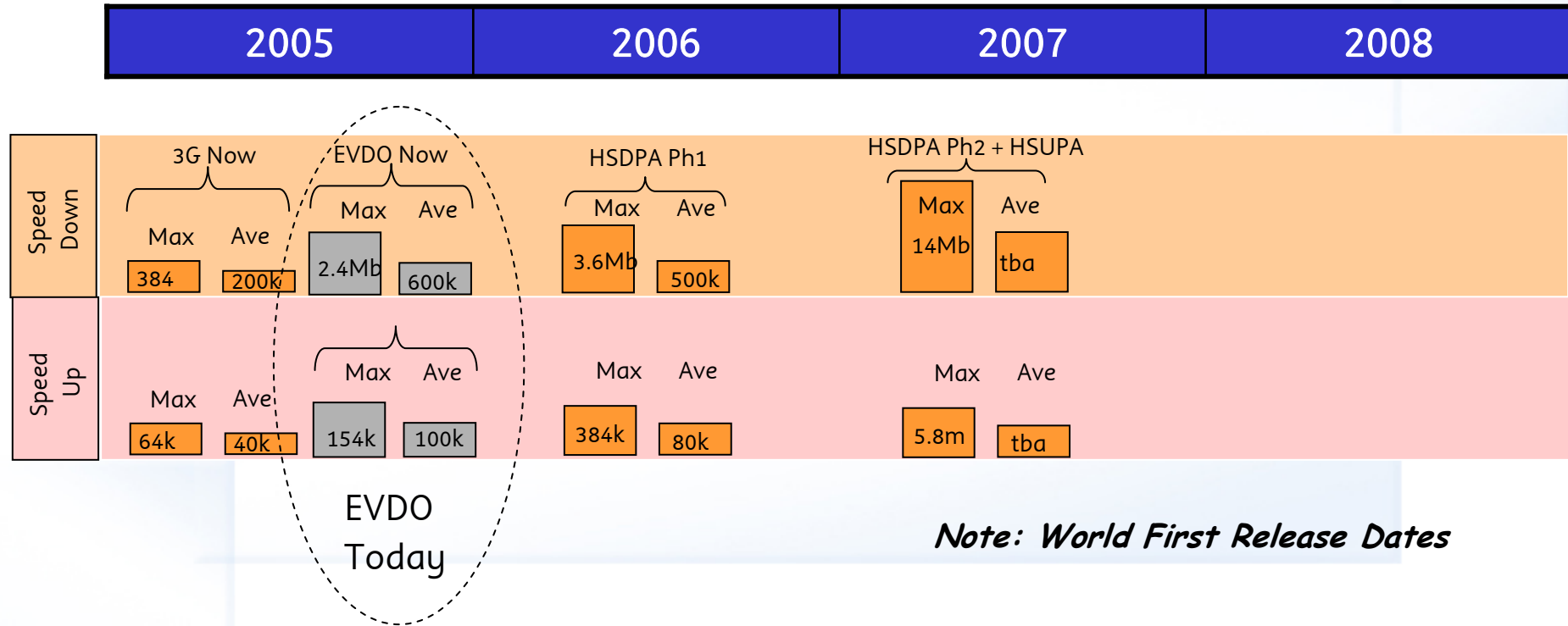


Transforming Access to 3G-850 Everywhere

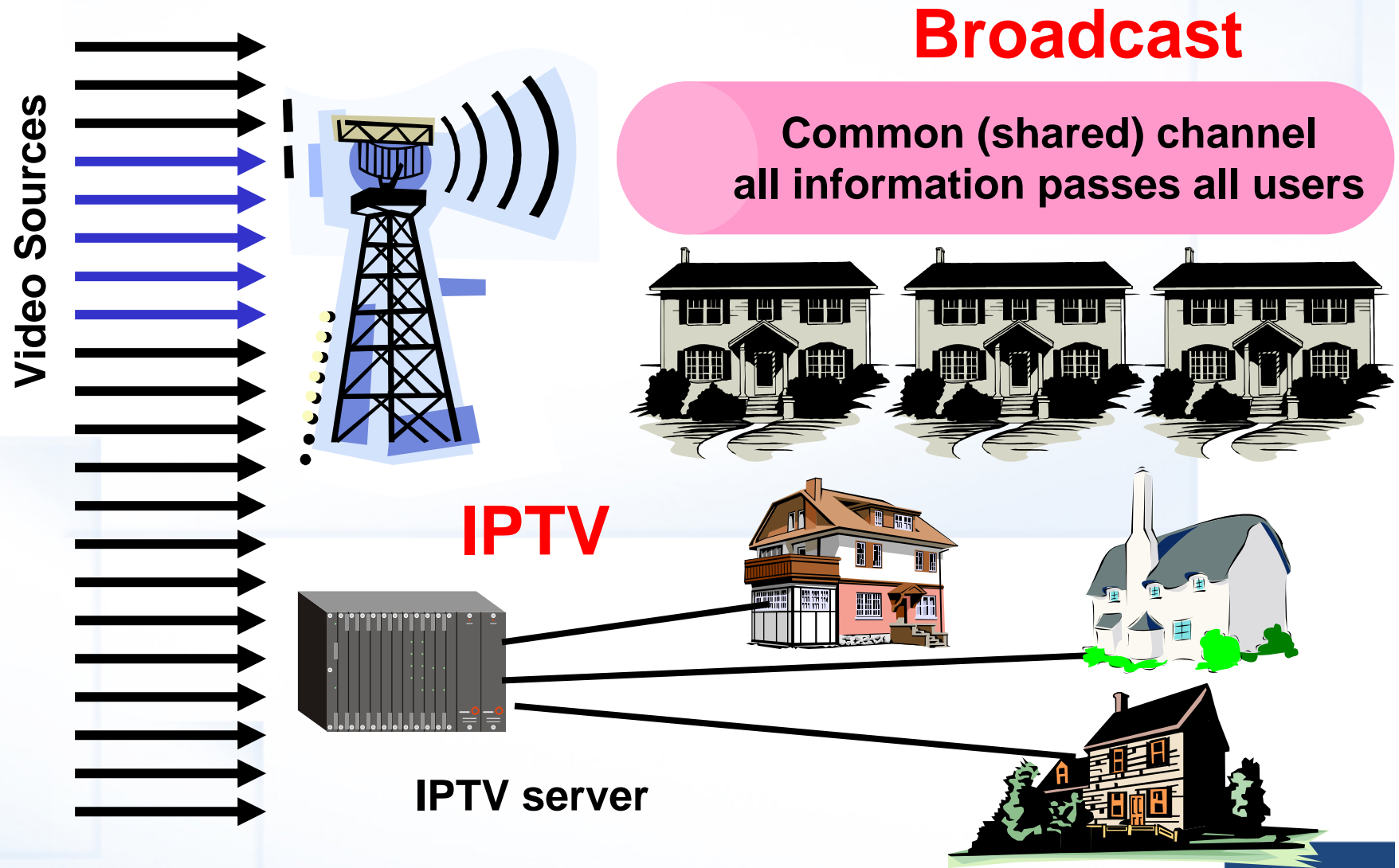


- **3G-850 Equipment installed into over 5,000 base stations**
- **Upgrade and migration to a single, Soft-Switch based core**
- **Upgrade of all legacy 2G hardware and enabling of EDGE**
- **Voice, Video, high speed data & fixed wireless broadband over a single network**
- **Coverage well in excess of current GSM network**

HSDPA Broadband Wireless Access



Beyond the HSI experience: TV services



Web 2.0 with an IPTV platform

- Not merely TV - a new media experience
 - Time shifted TV
 - Video on demand
- Targeted advertising
- Education, health care, retail delivered as video rich media
- “Parsumer” TV programming
 - Community TV

Requirements for next generation fixed service

High Speed Internet service:
Peak rate ~1-10Mbps, average ~100kbps



Telephone service:
Peak rate ~100kbs, average ~100kbps



Standard Definition TV service:
Peak rate ~1.5-3Mbps, average ~1.5-3Mbps



High Definition TV service:
Peak rate ~6-10Mbps, average ~6-10Mbps



Total Peak rate requirement ~ 10-30Mbps

Total short term average rate requirement ~10-30Mbps

Requirements for Next Generation Mobile Service

High Speed Internet service:
Peak rate ~1-10Mbps, average ~100kbps



Telephone service:
Peak rate ~16kbs, average ~16kbps



Mobile TV service:
Peak rate ~300kbps, average ~300kbps



Total Peak rate requirement ~ 10Mbps

BUT

Total short term average rate requirement ~0.5Mbps

OR IS IT?

A full screen experience for people on the move



Picture from the Australian Financial Review, 31 Dec 1998

Uplink requirements



Source: Nokia Press photos
www.nseries.com
<http://www.nokia.com>

Bandwidth bottlenecks

Core

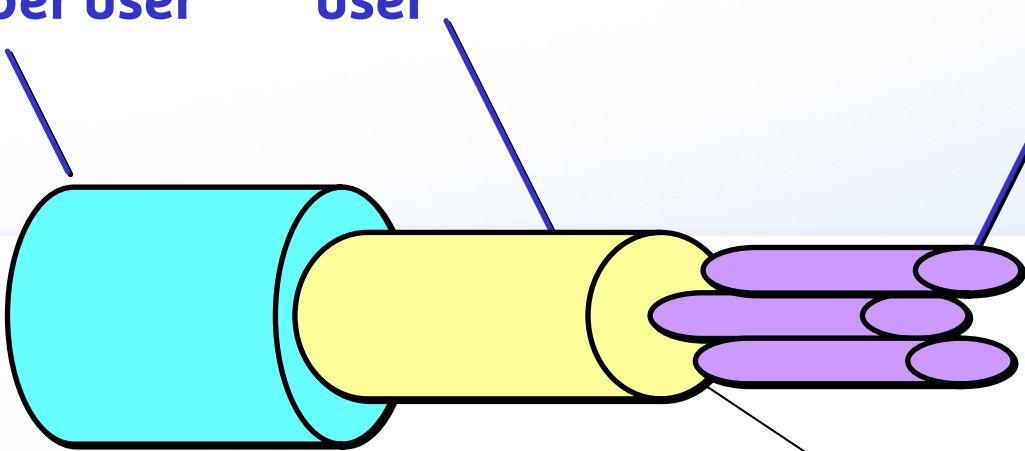
Constrains short term average bandwidth per user

Aggregation

Constrains short term average bandwidth per user

Access

constrains peak rate per user



Fixed network



Bandwidth bottlenecks

Core

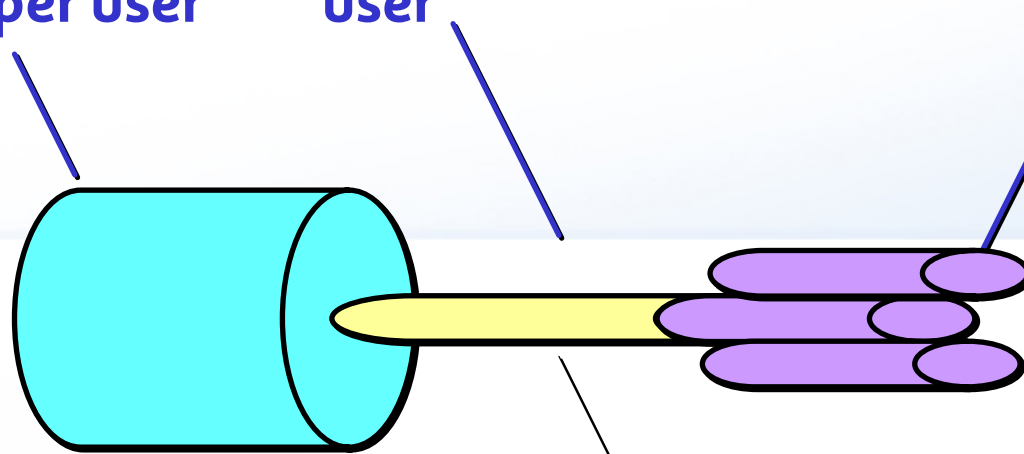
Constrains short term average bandwidth per user

Aggregation

Constrains short term average bandwidth per user

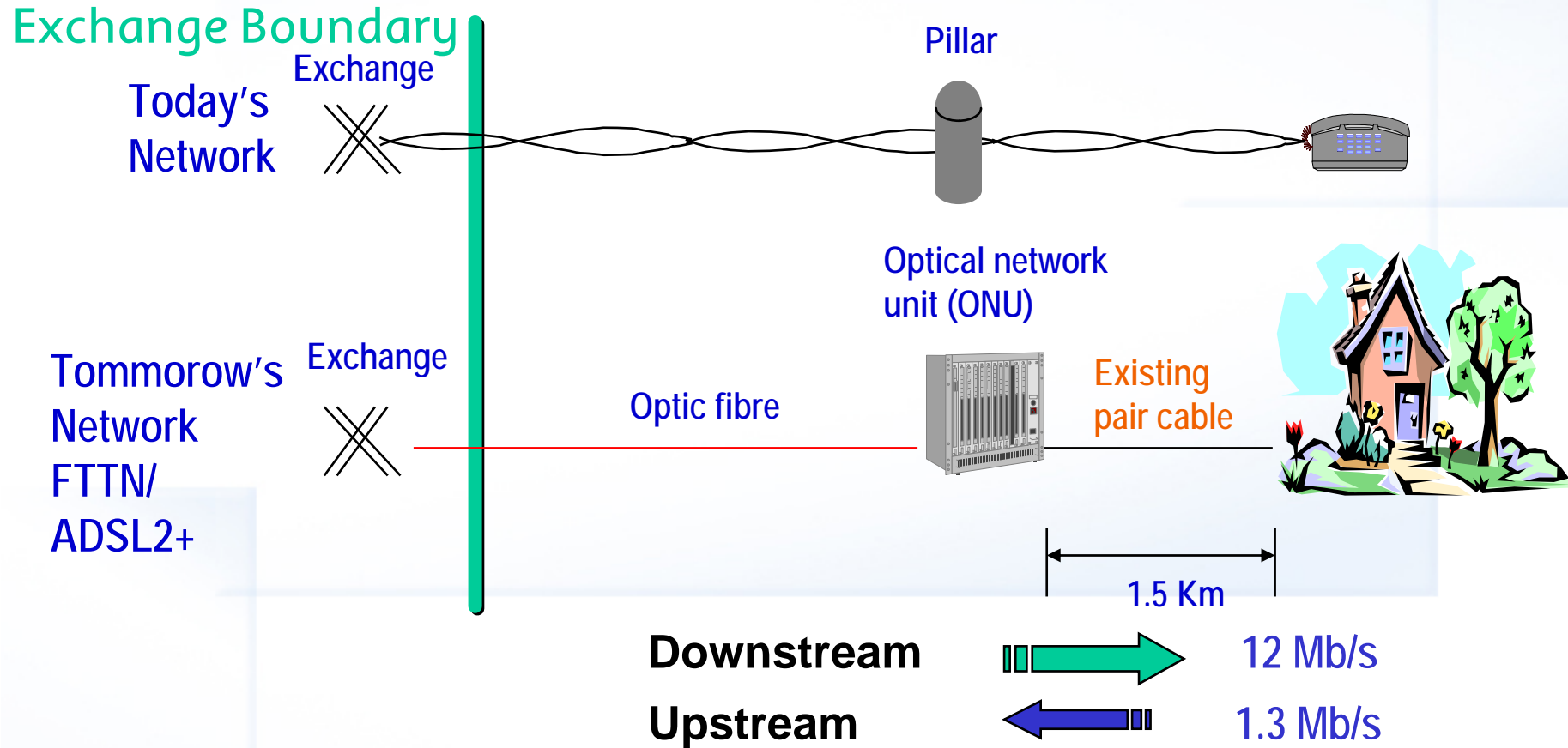
Access

constrains peak rate per user

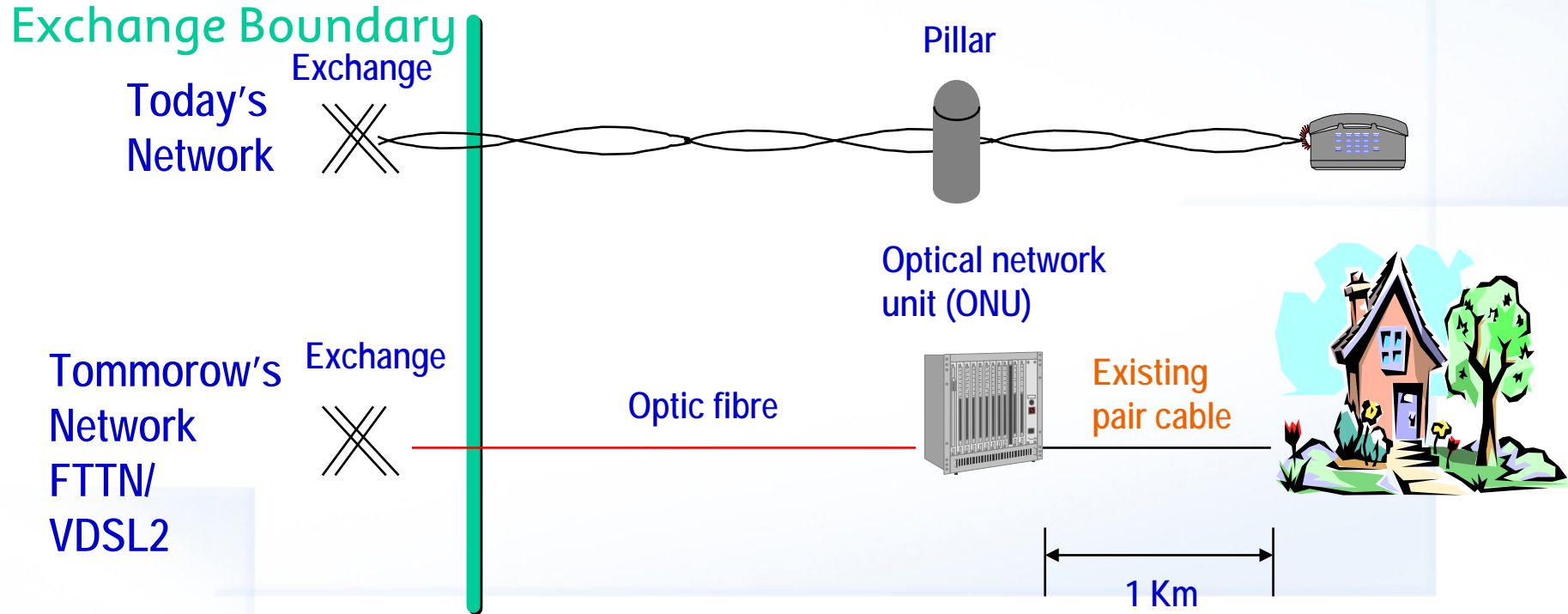


Wireless network

FTTN (Fibre to the Node)



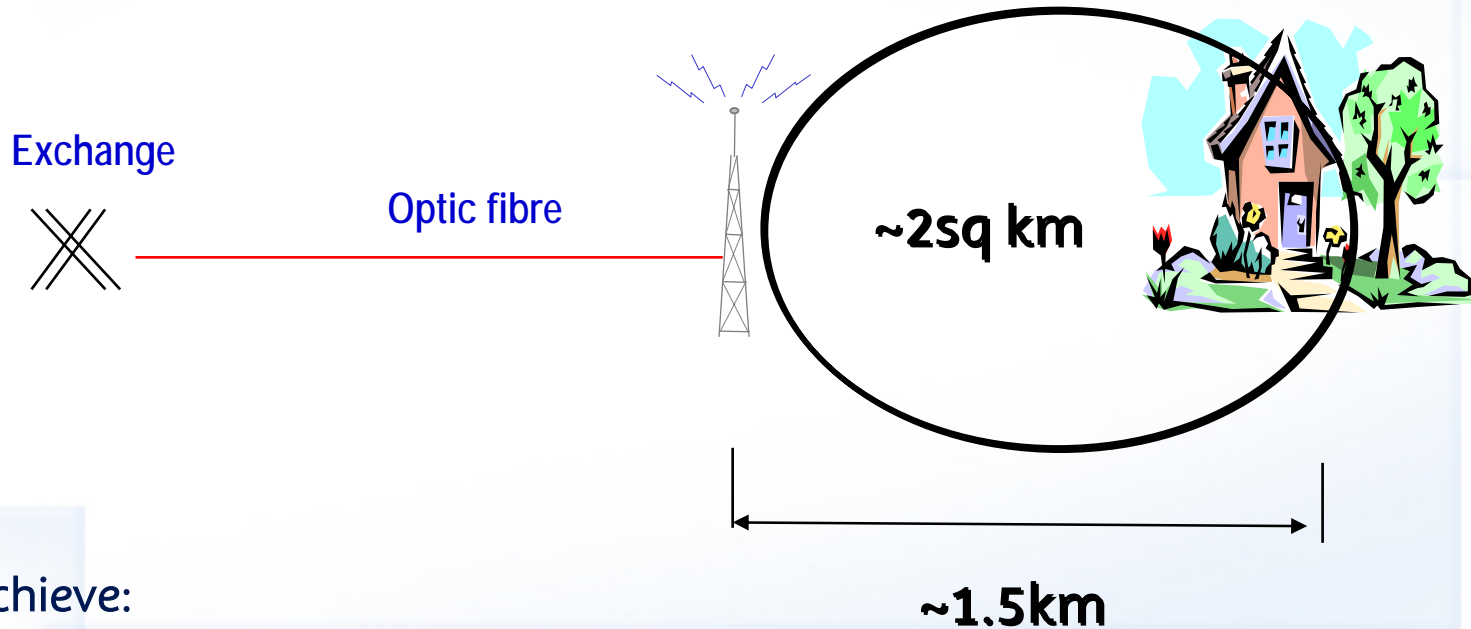
FTTN (Fibre to the Node)



Option 1: Asymmetric	Downstream		22 Mb/s
	Upstream		3 Mb/s
Option 2: Symmetric	Downstream		6 Mb/s
	Upstream		6 Mb/s



The long term challenge for Wireless Systems



- Achieve:
 - 10's of Mbps peak rates per user
 - Multi-Mbps short term average rate per user
 - ~400 users in a cell
 - Cell coverage ~2sq km
 - Sector diameter ~1.5 km

Conclusion

- As the technology evolves, so do the customer requirements
 - Web 2.0 points the way for “TV 2.0”
- Next Generation Infrastructure is emerging to serve a new generation of customer requirements
- The challenge is on for wireless networks to keep pace with user demands

Questions?