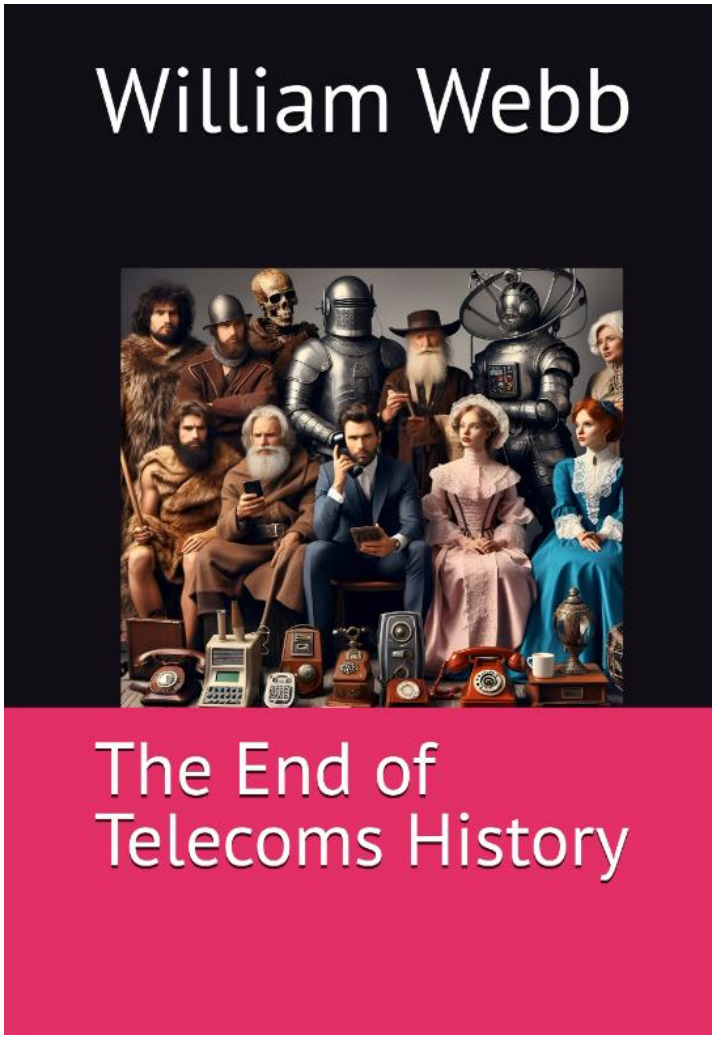
The End of Telecoms History

Professor William Webb

2025



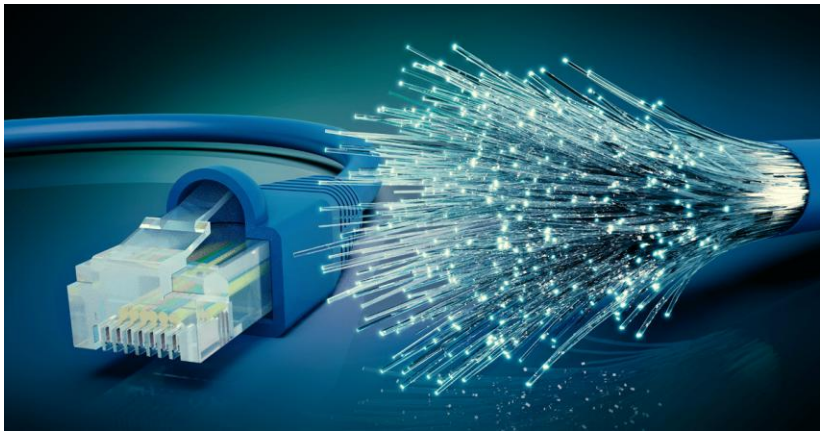
The history is a very long one

Fixed telecoms started in 1844 with Morse's first message "what hath God wraught"

While mobile telecoms got underway with Marconi's first broadcast in 1897 "are you ready"

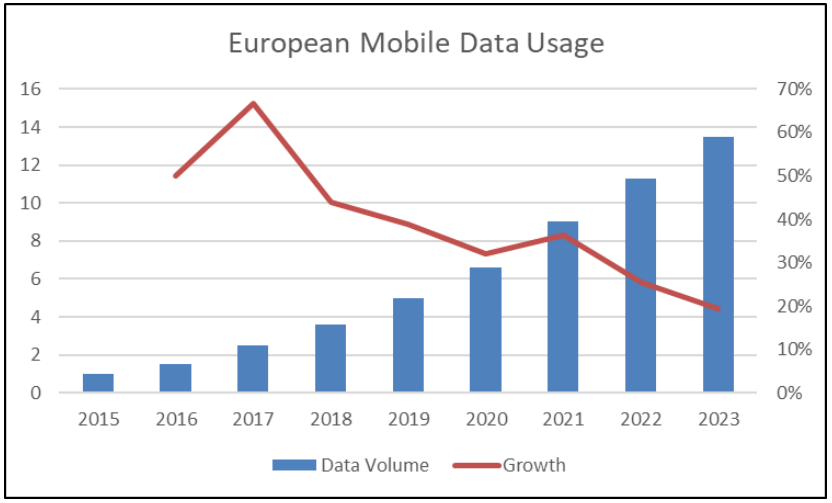
But we are now reaching perfection

Fixed telecoms evolved through copper cables carrying voice, to dial-up modems, ADSL and finally fibre to the home or cabinet



Mobile has evolved through 5 generations of cellular and similarly for Wi-Fi to deliver Gbits/s data rates

All the data points and predictions show mobile data growth slowing



Barclays Research

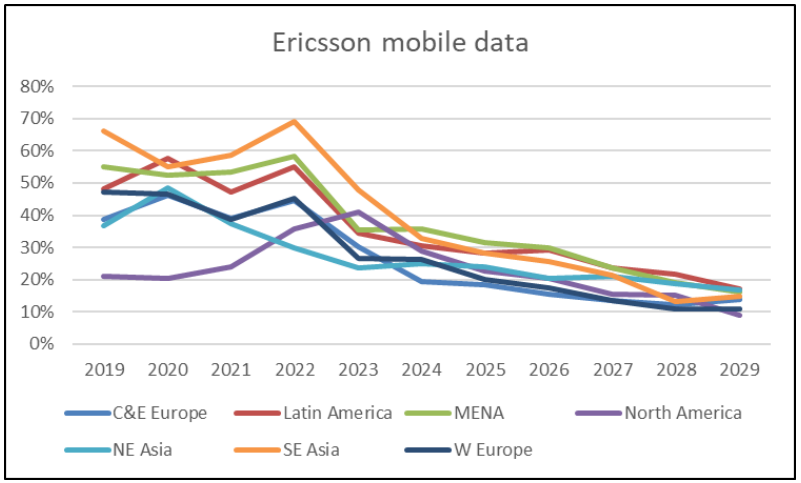
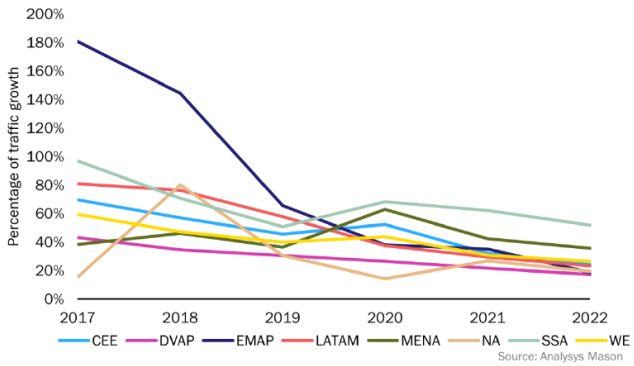
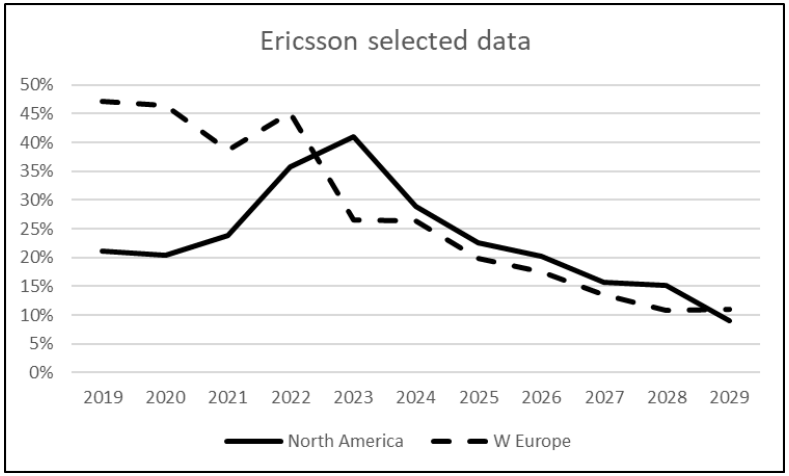


Figure 1: Cellular data traffic growth rates by region, 2017–2022



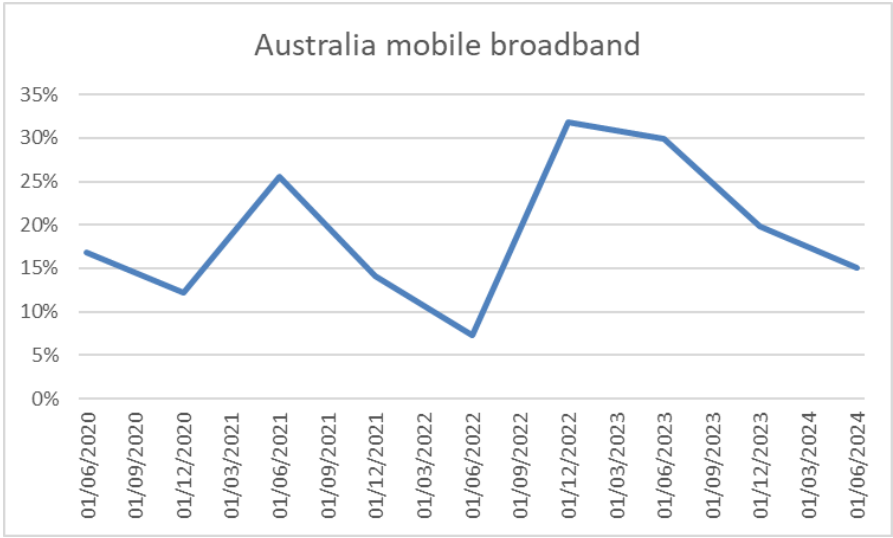
CEE = Central and Eastern Europe, DVAP = Developed Asia-Pacific, EMAP = Emerging Asia-Pacific, LATAM = Latin America, MENA = Middle East and North Africa, NA =North America, SSA = Sub-Saharan Africa, WE = Western Europe

Analysis Mason



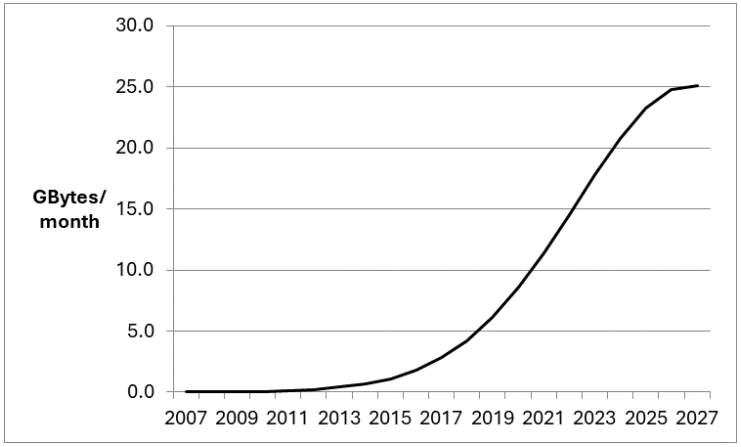
Australian data doesn’t fit the same pattern

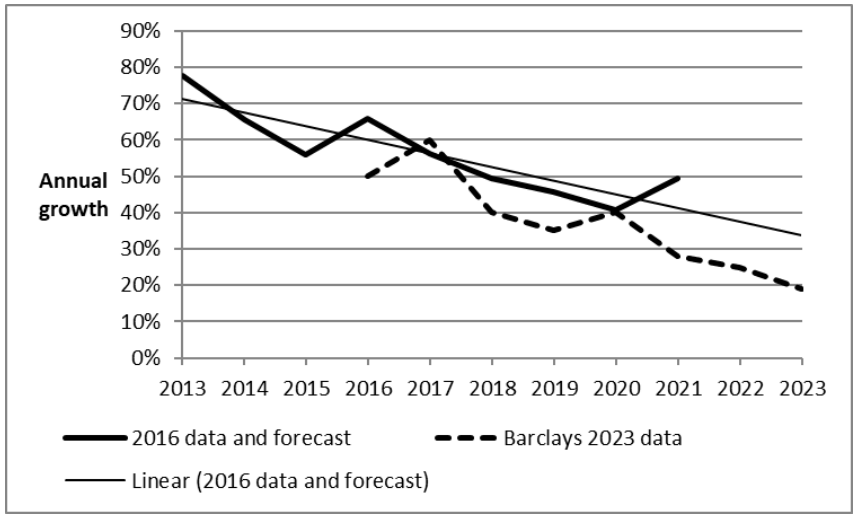
Mobile broadband growth was relatively low until 2022 so there may be some catch-up and the 2024 numbers are in line with the global average



The global trend is very much in line with an S-curve adoption that is now reaching a plateau

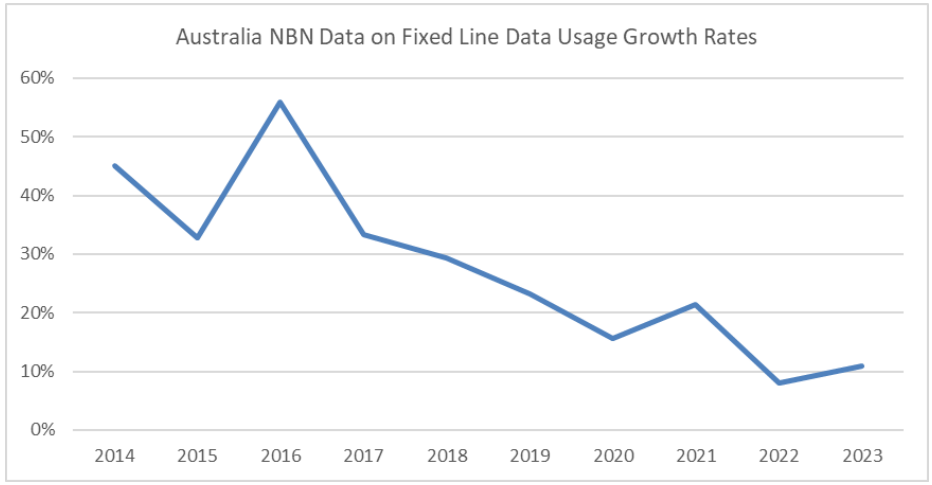
In 2016 I predicted that mobile data consumption would follow an S-curve. Since then it has been tracking quite accurately against my predictions

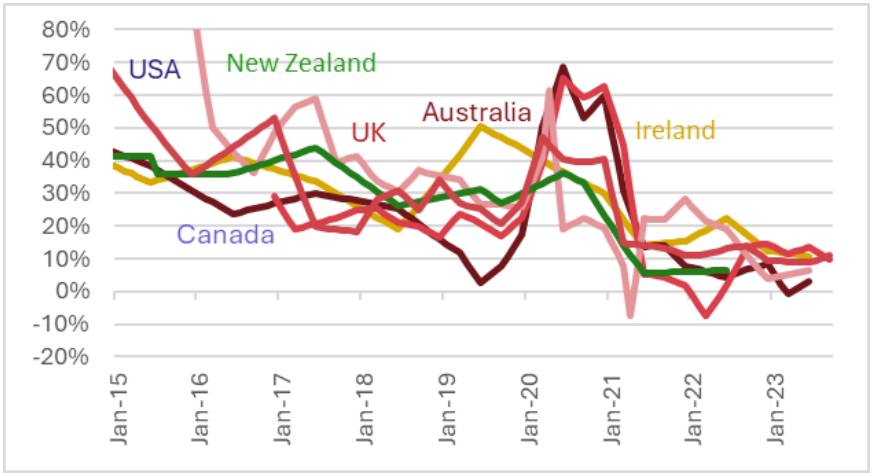




Growth rates in data usage are in steady decline and will reach zero before the end of the decade

The same is true for fixed data



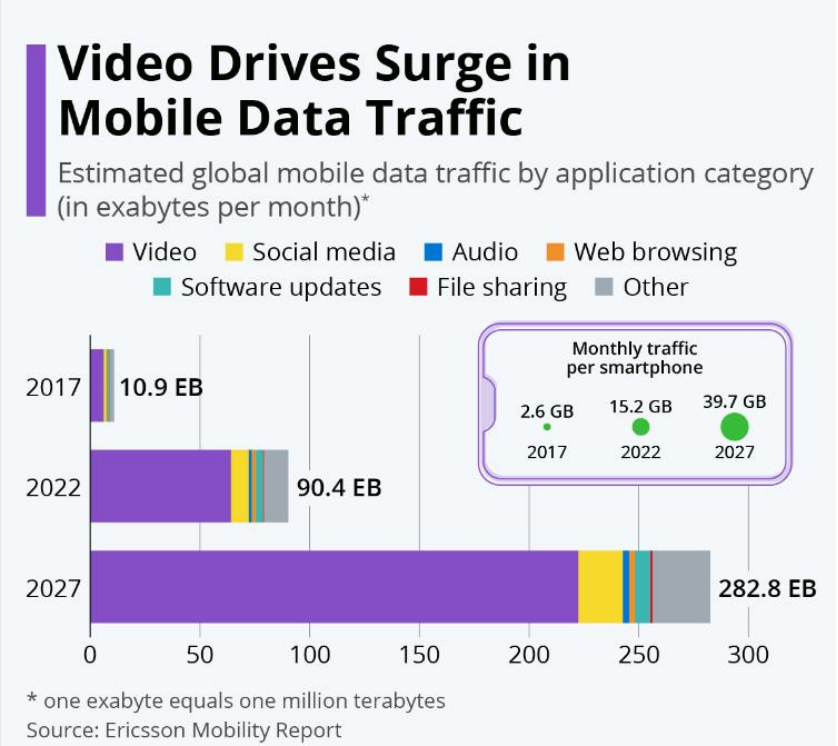


Communications Chambers

Communications Chambers global average

Why is data growth slowing?

- By far the highest use of data is video (not just streaming but video within social media feeds, video calls, etc)
- There is only so much video we have time to watch and many have reached that point
- Video bandwidths are also falling as better compression is used
- Possible new applications like VR are still, broadly, video

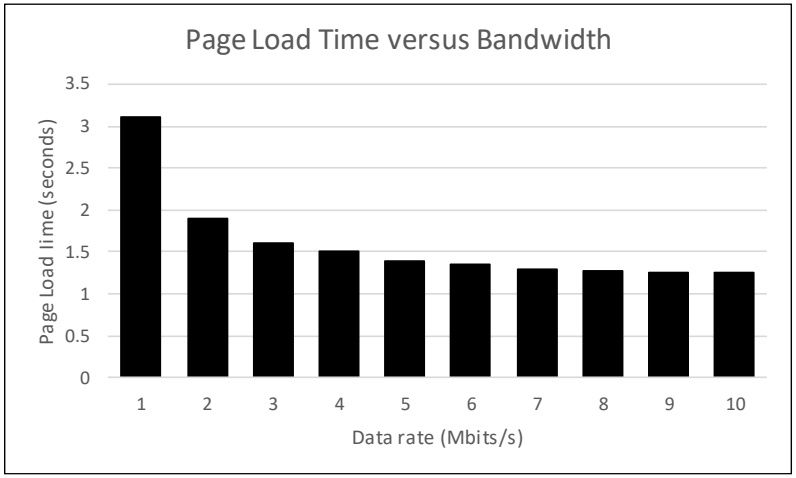


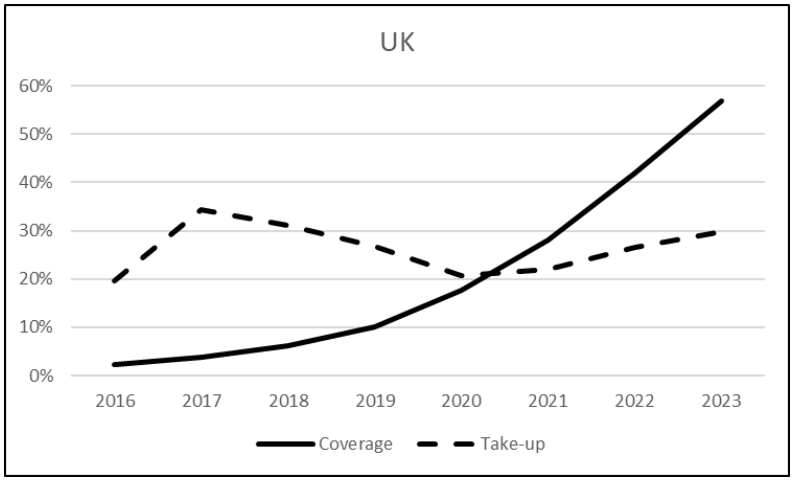
And there is little interest in higher data rates

For those who have broadband connections in excess of ~10Mbits/s per person, the benefits of faster rates are minimal. This is the reason why 5G has been of little interest to most. Good 4G systems offer around 20Mbits/s.

It is the reason why fibre take-up is often relatively low since the existing fibre/copper solutions are often perfectly adequate.

Some argue that new applications will emerge that require higher data rates or more capacity. Of course this is always possible, but it is very hard to envisage what could require more bandwidth than video and be used for many hours a day.



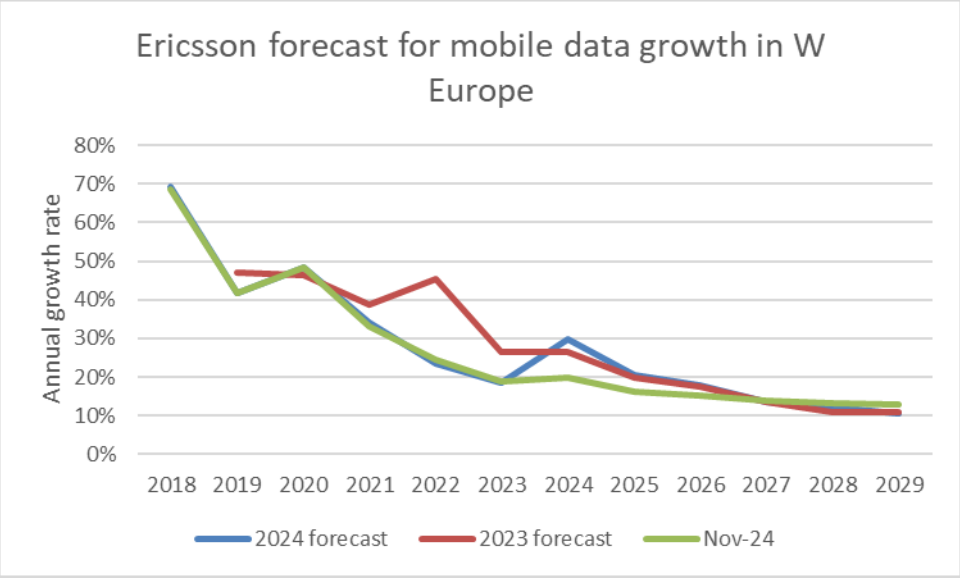


The NBN debate

- NBN reacted strongly against the idea that circa 50-100Mbits/s per home was enough but only came up with two applications
  1. Downloads to PS5 playstations would take 4-8 hours over a 50Mbits/s link but only 20 minutes at 1Gbits/s. But these can happen in the background or overnight and have low societal value.
  2. Using Apple's VisionPro VR headset while streaming content at the highest possible resolution requires 100Mbits/s, but the VisionPro appears to be discontinued and had minuscule sales

Fibre should be justified on cost grounds

- The fact that few subscribers take up the higher data rate services is strong evidence that they have little value (although there is complexity around what consumers believe depending on prevailing messaging)
- But this does not mean fibre is a bad idea, just that it should be justified on through-life costs not data rates provided
- Interestingly there has been very little push back elsewhere
  - Manufacturers have been very quiet, and quietly revising down their forecasts



Is there anything that could re-ignite growth?

- To make a material difference – one that might require more spectrum, more cells or some other major change – would require another 10-15GByte/month per person on the network to make such a difference. If it were video-based it would need to generate about an hour of video per day per person.

The current suggestions look mostly like a repeat of the 5G hype from 2015 and include:

- XR
- AI
- IoT and digital twins
- FWA
- Autonomous cars

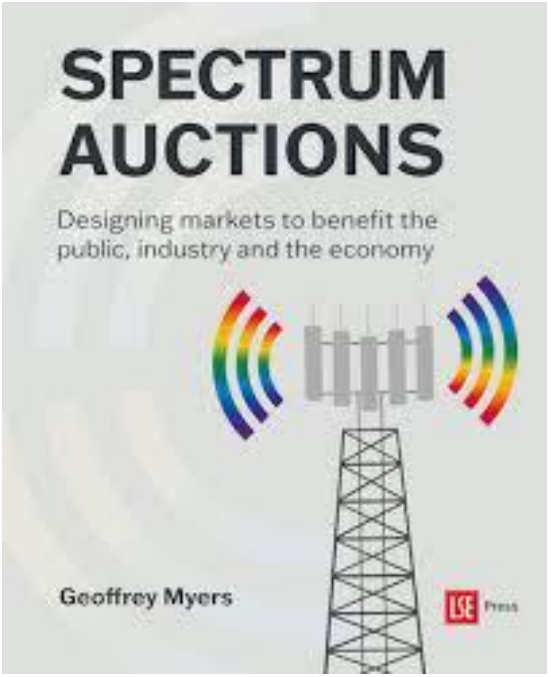
These applications (and others) are readily dispensed with. They are either unlikely (XR at scale, AI in telecoms, autonomous cars) or will not generate much traffic (IoT and digital twins). Only FWA might make a difference but this is not data growth, rather transfer of data from fixed to mobile

Implications – Regulators

Regulators will no longer need to find new spectrum bands for cellular every few years and then conduct auctions.

A different way to manage spectrum will be appropriate to deliver quality national networks rather than to use markets to optimise the use of spectrum.

Regulators may also have to consider whether fewer operators may be better for a country, with perhaps only a single underlying fixed and mobile network in many places – just as we only have single network for electricity, water, gas, sewerage, rail, road and other utilities.



Implications – Politicians

Politicians tend to get fixated on “sound bite” headlines of the latest technology such as “gigabit connectivity”

Their interventions have been unhelpful

- Funding 5G testbeds has achieved nothing
- Requiring fibre to everyone has delayed those in rural areas getting adequate broadband
- EU calls to hit inappropriate targets now threaten inappropriate industry and regulatory consolidation

Politicians should instead fixate on making sure everyone has access to sufficient connectivity – 50Mbits/s broadband and ubiquitous 10Mbits/s mobile.

We should celebrate

- We should celebrate the end of telecoms history. It has been an amazing journey from a time where contacting another person took days or months to a world where most can contact most others on the planet from a device kept in their pocket and can access almost any information, book, film or music, instantly from almost anywhere. It is an incredible achievement.
- We should focus efforts where they are now needed - into ubiquity, ease of use and suitable technical and economic structures. The industry will likely need a period of painful adjustment with the greatest opportunities for those who best understand how to benefit from the end of (telecoms) history.