William Webb

CEO of Weightless SIG

Webb Search

Communications in 2027:

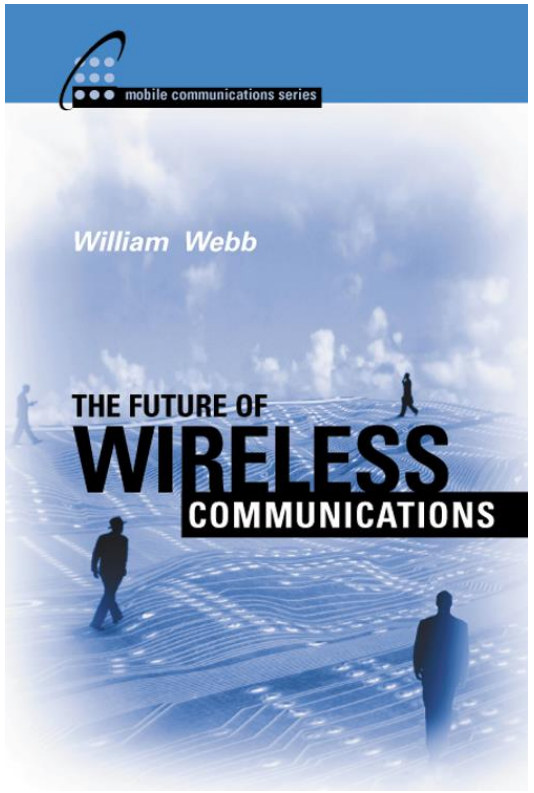
Ever more and ever faster or a plateau in growth?

Professor William Webb

October 2017

Can we predict the future?

Webb Search



Written in 2000

In 2001, Google received a patent for its PageRank mechanism

In 2001 a mere 100,000 homes get high-speed access via ADSL

In 2020 we will…

- Book flights with our personal communicator
- Communicator will work out when to wake us up based on diary
- Have home automation such as coffee machine that pre-heats automatically
- Have a home security system that can automatically lock doors
- Have a personalised news feed to our communicators
- Have robots that cut the grass
- Have excellent speech recognition
- Check in at airports using the phone
- Link communicator to seat-back display on aircraft
- Pre-order coffee at nearest Starbucks ready for collection on arrival, provide directions to get there
- Measure biometrics with sensors integrated into clothing
- Provide recommendations to nearby restaurants and automatically book
- Have average data rates to the home of 60Mbits/s

The 5G community has mapped out the next decade for us, hasn't it?

Webb Search

- Incredibly fast – Gbits/s speeds
- Incredible capacity – 1000x current networks
- Broadband everywhere
- Massive machine connectivity
- Ultra-low latency and complete reliability

5G will be instrumental in the next evolution of connected devices, including cars, smart homes, and wearables, due to its superior network speeds (10 times faster than 4G) and capacity (1,000 times the capacity of 4G). [Business Insider]

There is a general industry consensus which indicates that traffic volumes will be multiplied 1,000 times; 100 times more devices will require connectivity; some applications will demand data rates 100 times the speeds that average networks currently deliver; some will require near-zero latency [Ericsson]

Optus and Huawei have claimed a single user transmission speed of 35 gigabits per second was achieved over the 73 GHz band in a 5G speed trial just completed in Sydney. [Huawei]

Huge change in analytics and productivity

Webb
Search

The curse of the odd generations?

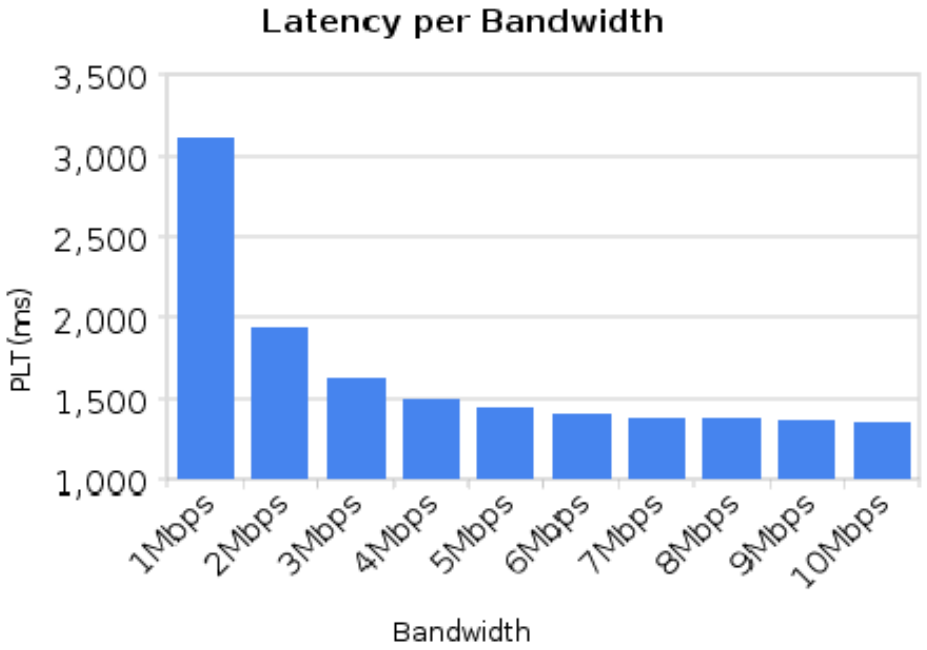
Webb Search

1G	A good first try but many flaws and roll-out costs high	$
2G	Digital fixes security and adds capacity	$
3G	A network designed for data – but not optimised and insufficient capacity	$
4G	A fix to 3G with all-IP and more stability	$
5G	A network designed for something new, but not sure what	??

This world preserves the status quo

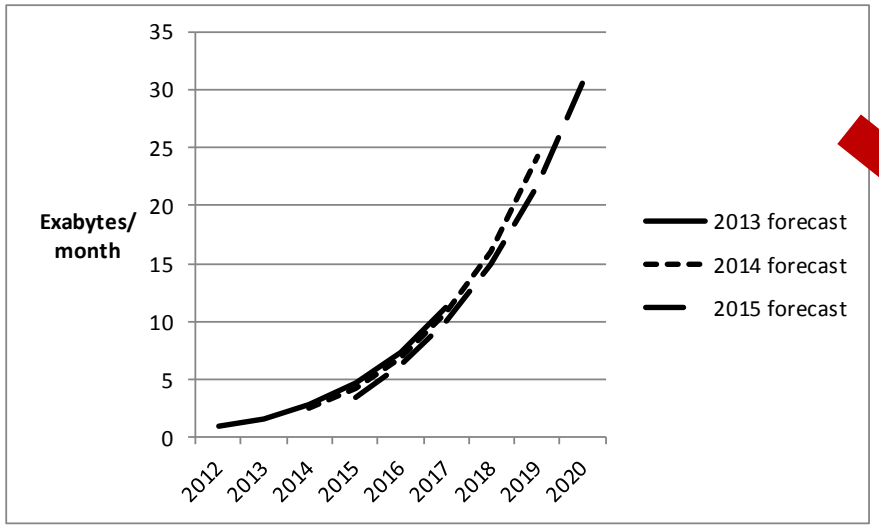
- Just as the transition from 3G to 4G left the industry structure unchanged, the same would be true with this vision of 5G
- Regulators only need to ensure some additional spectrum is provided
- Vibrant competition will come OTT with new apps and new verticals

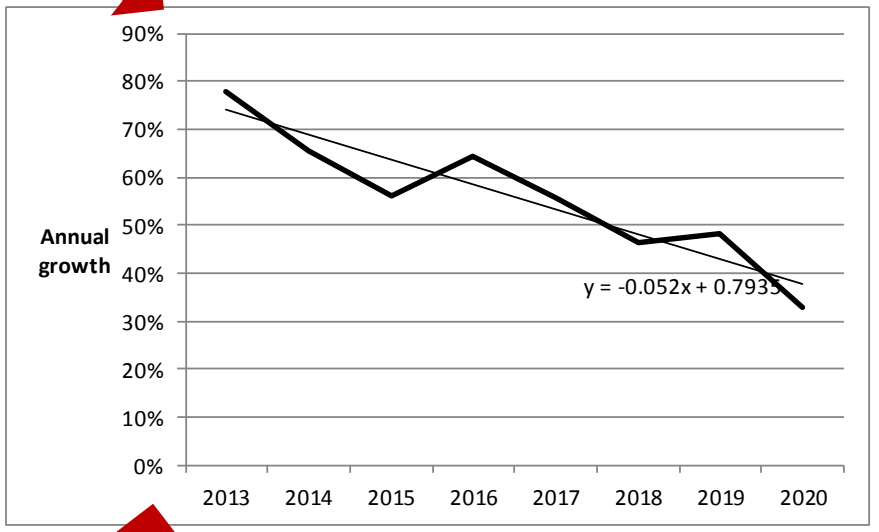
Why higher speed might not be needed

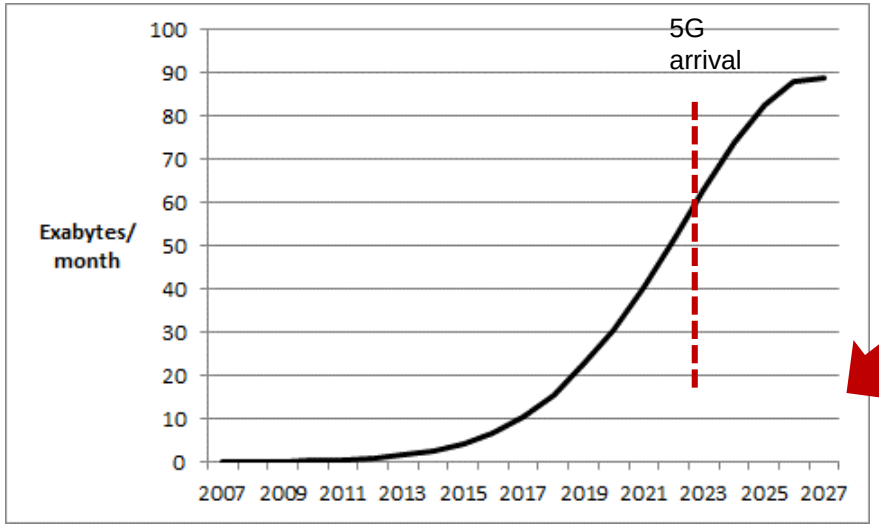


BCG said: “Put simply, telcos have overrated the role that speed plays in customer satisfaction. For video, we saw that once speeds reach 1.5 Mbps, further increases have little or no impact on users’ perception of performance.”

Why data demand might plateau

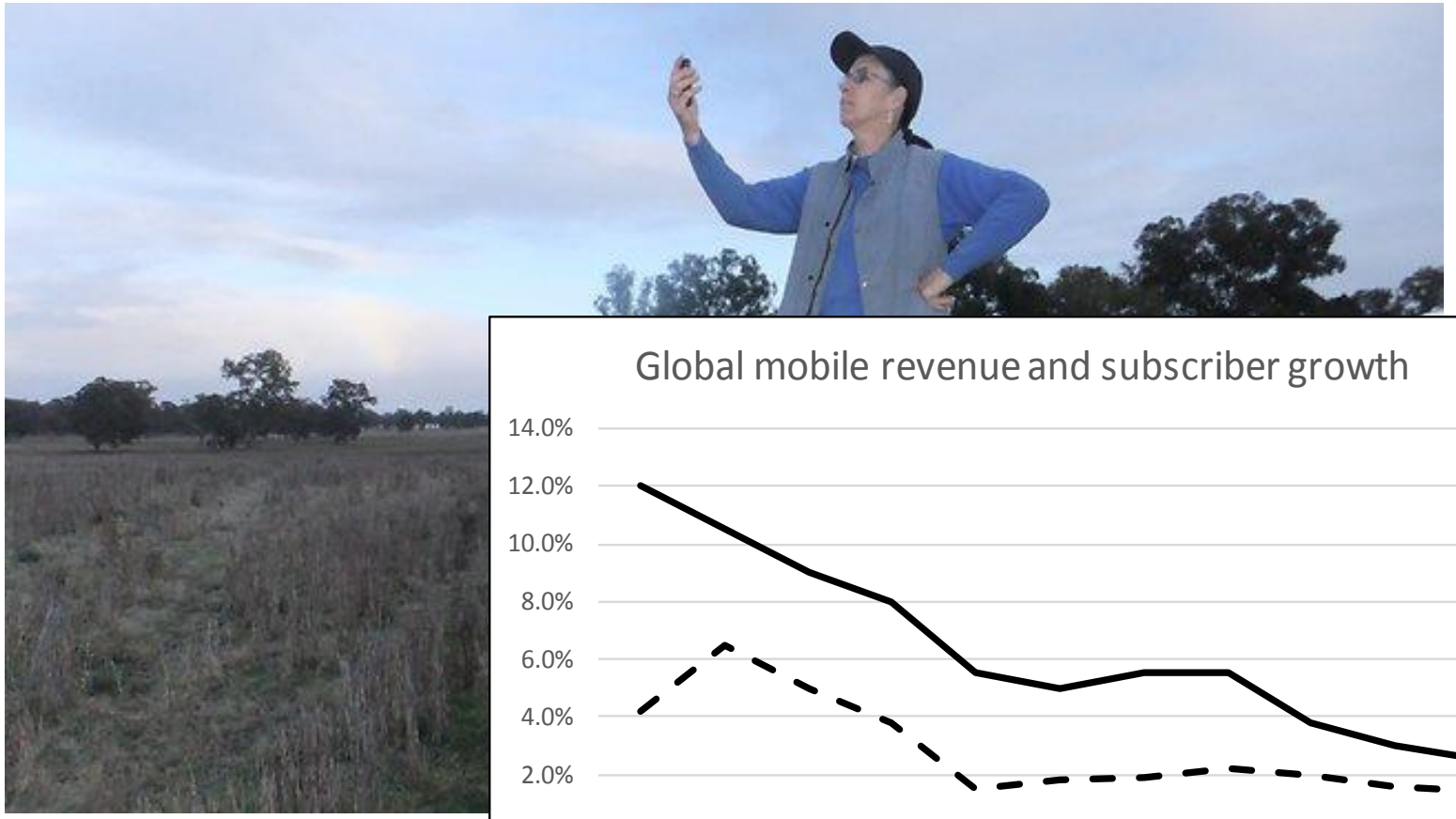


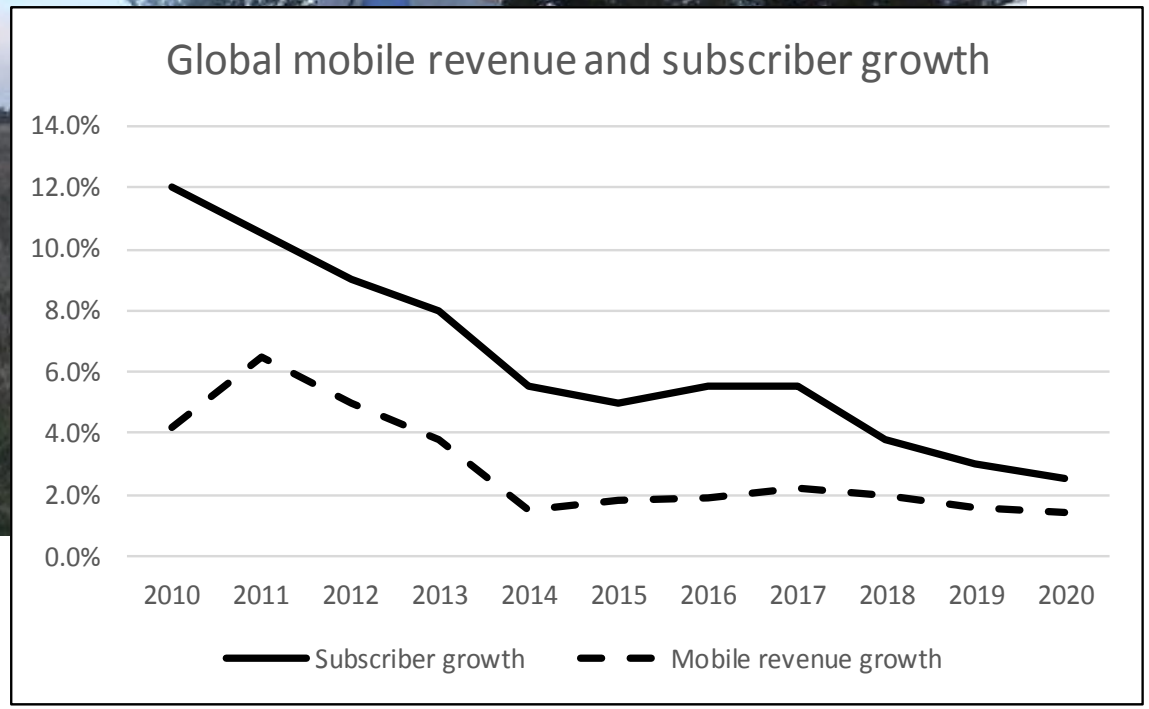




The 50 billion devices add 0.03% to network load

More of a problem is coverage





Broadband everywhere can be achieved with Wi-Fi and LTE

Webb Search

- Trains – Wi-Fi
- Buildings – Wi-Fi
- Rural and third world – 700/800MHz LTE (ideally with long-range mode)
- Integrating Wi-Fi well into 4G is critically important (eg Google Project Fi)

Massive machine connectivity is easy

- Can be achieved today with NB-IoT
- Only adds 0.03% loading to network
- Might also want unlicensed (eg Weightless)

Ultra-low latency is too expensive

- For what purpose?
  - Not needed for automotive, other applications typically indoors
- Impossible to achieve in many practical situations due to need to reach servers 100's of miles away
- MNOs cannot afford it unless users pay a lot more

What's left?

- 10x capacity increase with **consistent connectivity everywhere** delivered with 4G and Wi-Fi
- IoT delivered with 4G/NB-IoT
- Does not require additional expenditure from MNOs
- Does require some Government intervention – it can be their 5G spend
- 5G becomes anything interesting that happens after 2018…which isn't much

Regulatory and Governmental implications for this alternative world

- **Spectrum**: more focus on unlicensed and shared for IoT and Wi-Fi and better monitoring and management

- **Competition**: Relax competition rules to enable new players to aggregate WiFi capacity, deliver IoT solutions, provide small-cell systems, and allow MNOs to adapt and merge

- **Investment**: Pay for uneconomic coverage in some manner

The future could be bright

- So which future will transpire?
- Can the Government / regulator sit on the fence or is a decision needed?
- Is there any advantage in being a leader in either scenario?