

Investment Strategy Update #31

5G technology: Reimagining the world & its possibilities

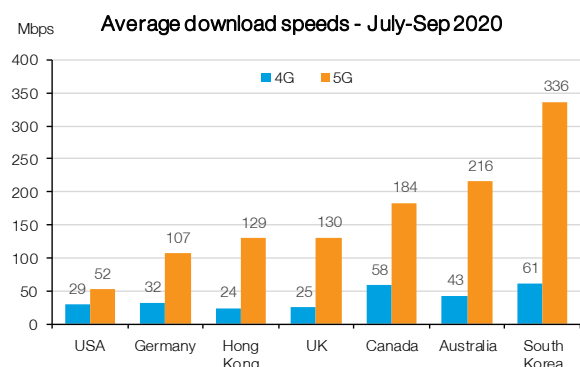
- The launch of Apple's (AAPL) first 5G iPhone is likely to be the catalyst for a global handset replacement (super) cycle as well as the accelerant for the adaption and proliferation of 5G technological benefits.
- 5G will provide faster speeds, higher bandwidth (handle more devices) and reduced latency (response times). It is expected that 5G will allow the "*connectivity*" of everything (billions and billions of devices) and in turn fuse the physical with the digital, in real time.
- This may sound futuristic, but this wireless technology is expected to be the accelerator for the fourth industrial revolution and with it, the potential to drive (almost) boundless possibilities via advancements that lead to outcomes such as smart cities and industries (i.e. agriculture, manufacturing), autonomous vehicles, telemedicine, virtual reality and more broadly the 'Internet of Things' (IoT).
- At this stage, the most obvious exposure is via chipmakers / hardware providers, telcos (SPK, TLS) and retailers (JBH). Longer-term use-cases should see accelerating demand for data and artificial intelligence and we look towards more broad exposure via RBTZ, MUA0002AU and NIK1854AU.

We expect the launch of Apple's 5G compatible iPhone to drive the first global 5G handset upgrade (super) cycle. The roll-out of 5G wireless technology has been a long time coming and intermittent coverage suggests the benefits to both consumers and businesses will be constrained for some years to come.

However, the consumer handset upgrade cycle will increasingly raise the awareness of the extent to which 5G technology will impact the world via real time connectivity. If 3G / 4G was focused on the consumers mobile experience, 5G can be considered as spreading the benefits to business via the connectivity of everything. 5G has been described as the accelerator of the fourth industrial revolution (1.0: steam, 2.0: electricity, 3.0: information technology, and 4.0: the internet) and with the potential to drive boundless and currently unthought of possibilities.

For some, this might appear a set of grandiose statements, but it has been said that 5G will offer the potential to seamlessly fuse the physical with the digital world in real time and, via connectivity that allows the collection, transmission and sharing of near limitless data, allow us to reimagine a world which could be safer, smarter and faster (futuristic? ... yes).

Australian consumers can expect much faster speeds

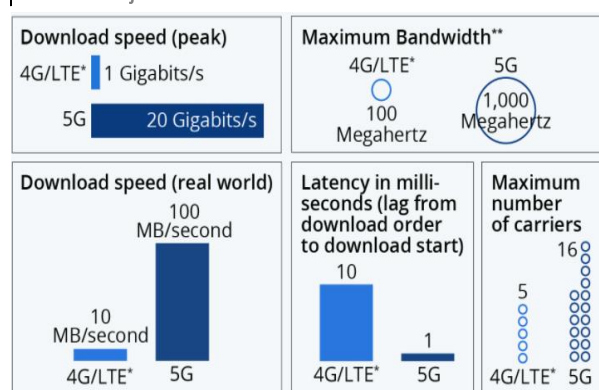


Source: OpenSignal, MWM Research, October 2020

What is 5G?

The 5G network is the fifth generation of cellular technology and the next innovation in the wireless internet space. This new technology is expected to be a gargantuan leap forward from the current 4G network in terms of speed, latency (time it takes for data to be transferred), reliability and ubiquity. Importantly, 5G should facilitate a more seamless connection of multiple devices to the internet without detriment to bandwidth capacity and/or availability.

5G is a major advancement over 4G



Source: Statista, October 2020

5G is projected to have the ability to deliver data 10 to 100 times faster than the current 4G wireless data transmission. However, this will be limited by factors such as network coverage and spectrum access which should result in a progressively better experience in the coming years.

What will 5G look like in Australia?

All three Australian mobile networks have commenced the rollout of 5G networks in major cities across Australia. However, the rollout is at an early stage with coverage patchy in the major cities and mostly not available in rural areas. Australia is a vast country and it will take years for 5G to be widely available across the country and become the new mobile standard.

To access 5G, users will need:

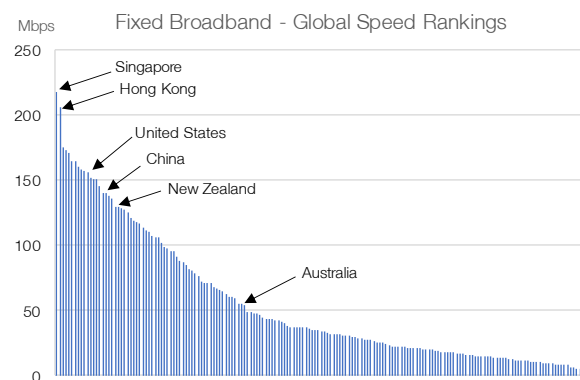
- a 5G device (such as an iPhone or 5G modem)
- a 5G plan from a network provider (Telstra, Optus)
- to in an area where 5G is covered by the network provider (mostly Metro currently)

Consumers should see material improvements to 5G in the year ahead. Telstra has the most advanced 5G network, covering 41% of the population and expects to cover 75% of the population by June 2021. Optus and TPG / Vodafone are also investing aggressively in their 5G networks.

Near-term impacts from 5G will include:

- **Faster mobile speeds** – this will vary depending on various factors (location, network, hardware etc) but current data suggests Australian's should experience a material increase in download speeds (country differentials reflect differences in spectrum, networks etc). The upcoming 1Q21 Federal Government auction of ultra-fast 26 GHz spectrum (mmWave) will see speeds increase further to >1Gbps. We note the iPhone 12 will only support mmWave technology within the United States i.e. Australian consumers may want to wait for the iPhone 13.
- **Fixed wireless access (FWA)** – is essentially home internet over a 5G network and will be a viable substitute for consumers with a poor NBN experience. Australia's notoriously slow internet speeds (ranked #61 globally) should see decent traction for 5G home internet with Telstra suggesting initial speeds of 50-300Mbps (many NBN users are on ~40Mbps).

Australia's slow internet will support fixed wireless



Source: Factset, MWM Research, October 2020

- **Increased competition** – Early pricing for 5G plans looks reasonable which should drive increased competition. For example, fixed wireless home internet plans at ~\$80/month will not only appeal to NBN users on slow speeds (<50Mbps), but also those on premium NBN plans paying >\$100/month. 5G access is already included in

mid to high-priced mobile plans (>\$50/month) with 5G leadership to be an important differentiator in a highly competitive market.

Expect competitive pricing for 5G plans

Network	Cost per month	Speed (Mbps)	Data (GB)
Home Internet - NBN			
Telstra	\$80	50	Unlimited
Telstra	\$100	100	Unlimited
Telstra	\$130	215	Unlimited
Home Internet - 5G			
Telstra	\$85	50-300	Unlimited
Optus	\$75	>50	Unlimited
Mobile 5G - example plans			
Telstra	\$65	230	80
Telstra	\$85	230	120
Optus	\$59	170	100
Optus	\$79	170	120

Source: Telstra, Optus, OpenSignal, October 2020

Future use cases

The rollout of 5G connectivity will be a game-changer for the way consumers access and download information and digest content in terms of accessibility, speed, volume and quality. We expect developments in currently novel innovations become more mainstream including widespread industrial automation, immersive experiences (augmented / virtual reality), autonomous / self-driving vehicles, vastly improved security and monitoring capabilities (e.g. HD streaming) and eventually smart cities (e.g. automated traffic management) and the broadscale adoption of the Internet of Things (IoT).

Investment recommendations:

We think the early beneficiaries of a 5G rollout will be telcos (as infrastructure owners), chipmakers (as hardware manufacturers) and retailers (as distributors of consumer devices). Longer-term the rise of 5G will accelerate existing demand for artificial intelligence, cloud computing and data consumption / storage while emerging industries such as autonomous vehicles will become more prominent.

Telstra (TLS) has aggressively invested in its 5G rollout and is the clear market leader claiming coverage of ~40% of the population with a goal of 70% coverage by mid-2021. Telstra has just launched its 'fixed wireless' product which will provide a viable alternative for consumers struggling with slow NBN speeds. Importantly for Telstra (and other telcos), this will be a much higher margin product as there will be no need

to pay NBN wholesale rates. Optus has also invested heavily in its 5G network recently, but is lagging behind Telstra, while TPG/Vodafone is looking to play catch-up.

Spark New Zealand (SPK NZ) - is the largest telco provider in New Zealand. Spark has just released its new 3-year strategy with a goal of becoming a primarily wireless business, backed by a nation-wide 5G rollout which will provide much higher speeds and capacity. Spark has identified longer-term opportunities ('future markets') of Digital Health, Internet of Things, and Sport which will provide longer-term growth for the business.

JB Hi-Fi (JBH) – Macquarie analysts expect ongoing strength in JBH's telco category as 5G rolls out. JBH has already benefited from Apple store closures, prompting a 'phenomenal' period in Apple products, and should continue to benefit as Apple implements strict COVID store restrictions. We expect the rollout of 5G (across Apple and Samsung phones as well as tablets) will spur a bigger cycle of upgrades than has been seen in years. This will be supported by the structural shift to Work from Home (WFH). We believe we will see a faster cycle of upgrades to products that support faster internet connections.

RWC Emerging Companies (CHN8850AU) – RWC is one of our preferred emerging market equity funds. The fund is growth-oriented, investing in thematic areas with structural tailwinds with 5G the fund's second largest theme at 16% of the portfolio. Hardware and chip manufacturers are viewed as the initial beneficiaries via investments in TSMC, Mediatek and Samsung Electronics.

Many of the future use cases of 5G are either yet to be developed or in an early stage of development. Allocating towards long-term growth/disruption funds will provide an allocation to these future industries as they emerge and develop. We like the **BetaShares Global Robotics and Artificial Intelligence ETF (RBTZ)**, **ETFS Robo Global Robotics and Automation ETF (ROBO)**, **Munro Global Growth Fund (MUA0002AU)** and **Nikko AM ARK Global Disruptive Innovation Fund (NIK1854AU)**.

Jason and the Investment Strategy Team

The report was finalised on 19 October 2020

Recommendation definitions (Macquarie Australia/New Zealand)

Outperform – return >3% in excess of benchmark return

Neutral – return within 3% of benchmark return

Underperform – return >3% below benchmark return

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