

Case study

Award-winning 5G innovation

In pursuit of 5G revenue
opportunities with Optus
down under



ERICSSON

OPTU5G

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Case study:
Optus

Industry:
Telecommunications



Executive summary

In November 2019, Optus launched Australia's first 5G Fixed Wireless Access services, followed shortly thereafter by enhanced Mobile Broadband. Since the launch, the agile service provider has innovated fast – together with Ericsson – to deliver the next generation of connectivity services to Australian consumers and enterprises through world-leading technologies.

Across Sydney and Melbourne today, Optus delivers ultra-high-speed 5G where Australian consumers can experience the full benefits of 5G connectivity, with use cases such as 4K video streaming on-the-go, real-time augmented- and virtual reality and ultra-low-latency 5G mobile gaming.

Through joint innovation, Ericsson is supporting Optus to realize its key strategic 5G business goals: "Our ambition is to deliver Australia's fastest 5G network," says Lambo Kanagaratnam, Managing Director, Optus Networks, "and to win that race we need to be agile, innovative, and relentless in delivering new technology milestones to our customers. Thanks to our technology partnerships both with Ericsson and the wider 5G ecosystem, we remain at the forefront of tech delivering innovative solutions that our customers love.

"One recent example of this continuous innovation, together with Ericsson, in November 2020 we set a new speed record in Sydney and Melbourne and became the first mobile operator in the world to roll out full [commercial 5G TDD-TDD carrier aggregation](#). This exciting milestone is paving the way for Australians to be among

the first to experience the full power of 5G, with commercial speeds in excess of 2.5Gbps".

Co-innovating with the 5G tech ecosystem

Ericsson is supporting Optus to ideate, prototype, stage and test new technologies for Australian consumers and enterprises together with the broader 5G ecosystem. This has resulted in innovation such as Australia's [first 5G drone flight](#), and technology milestones including a [5G data call over 2300MHz spectrum](#), a [2300MHz and 3500MHz dual band 5G network](#), a [5G TDD-TDD Carrier Aggregation call](#) and [low-band coexistence of narrow band IoT and 4G/5G through Ericsson Spectrum Sharing \(ESS\)](#).

To develop the value of these innovations into commercial opportunities, Optus has three dedicated innovation hubs: the [FutureNow enterprise hub](#), the Sydney-based [start-up lab](#) and Australia's first fully-dedicated [5G lab](#). Ericsson is collaborating with Optus' Innovation Team to explore and showcase immersive 5G use-cases as part of their 5G consumer initiatives. Ericsson is also supporting Optus to capture new enterprise

- Subsidiary of the international Singtel Group
- Over 8300 network sites nationwide
- Over 1300 5G sites
- Over 10 million customers across mobile and fixed networks
- Market-first launch of 5G Fixed Wireless Access in November 2019
- Over 1 million households covered by Optus 5G Home Internet
- Over one million 5G devices on its network

Ericsson and Optus

Ericsson and Optus have recently received industry accolades for the businesses' co-innovation and collaboration including such as the [GTI Innovative Breakthrough Mobile Technology award](#) and the [WCA Access Innovation award](#) for the dual-band 5G network.

Today, Ericsson carries the majority of Optus' 5G Radio Access Network (RAN) traffic through its leading [Ericsson Radio System](#) portfolio in addition to other software features such as [Ericsson Spectrum Sharing](#) and [Ericsson Carrier Aggregation](#). Ericsson also provides the backbone for Optus' 5G network through [Ericsson cloud-native dual-mode 5G Core](#) and is working closely with the service provider as it prepares to unleash the new revenue opportunities of 5G standalone network.

New revenue opportunities in the 5G home market

One segment where Optus has been quick to establish a strong market position is 5G Fixed Wireless Access (FWA). In November 2019, Optus launched Australia's first 5G FWA services in 3500MHz spectrum. Today, more than one million Australian households have access to Optus 5G Home Internet.

5G FWA and enhanced Mobile Broadband (eMBB) provide a valuable alternative to traditional fixed-, cable- and fiber connectivity solutions – offering a faster time to market, better return on investment and an overall more sustainable solution. By 2025, the number of FWA connections are forecast to increase threefold worldwide – delivering substantial revenue opportunities for service providers across household- and small- to medium enterprise market segments.

"We are committed to connecting our customers with innovative technology that improves their lives," says Lambo Kanagaratnam. "Our Optus 5G Home Internet helps us to deliver on that vision. With increased throughput, faster downlink speeds and lower latency, 5G FWA not only makes it possible for us to solve traditional 'last mile' challenges – meaning that we can connect more homes and businesses than ever before – but it is simple to install and provides lightening fast speeds.

"When we first launched 5G, we really invested in creating market differentiation with our FWA service – because we knew that our customers would truly love and benefit from this product."

To be first in the market to FWA required fast and wide deployment of high capacity 5G-ready RAN. To support Optus in this mission, Ericsson deployed its modular and 5G-ready Ericsson Radio System (ERS) as an overlay network on top of Optus' existing multi-vendor LTE networks. Today, as Optus looks to deliver even greater network performance, Ericsson and Optus are rolling out ERS deeper across the full network stack.



opportunities directly on-site with customers through 5G Genie – a portable 5G-in-a-box solution developed together with parent company Singtel.

Opening new 5G revenue segments through innovation

Optus' continuous pursuit to improve the radio network is driven not only by a commitment to deliver a world-class network experience to its customers, but to provide a mechanism to monetize new 5G consumer segments such as 5G home, 5G gaming and 5G entertainment services.

"Optus' innovation mindset is underpinned by a strong culture of agility and the willingness to take qualified risks," says Martin Wiktorin, Head of Global Customer Unit Singtel at Ericsson. "5G introduces a new ecosystem and a different way of working. Optus is showing that, by being innovative and creating key partnerships within the ecosystem, service providers can secure a significant market share in early 5G monetization markets."

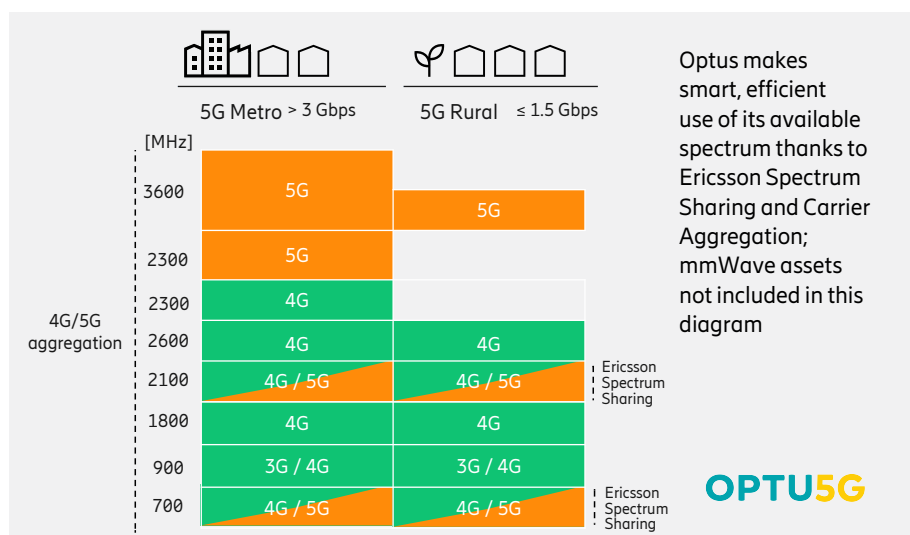
Four firsts which create a pathway into emerging 5G markets

1. Market-first 5G drone flight

In November 2019, Optus and Ericsson teamed up to demonstrate Australia's first teleoperated drone flight on a live 5G network via an edge cloud. The test showcased not only the high-reliability and low-latency power of 5G networks, but also the technological opportunities that arrive with the ability to run applications directly from the edge cloud – in this case, processing video via an edge-cloud graphics engine to enable beyond-visual-line-of-sight drone control.

2. Dual-band 5G and 5G data call over 2300MHz spectrum

In December 2019, Optus and Ericsson became the first in the world to run an end-to-end 5G data call over 2300MHz



mmWave will unlock a plethora of innovative use cases

mmWave delivers large quantities of spectrum and capacity over the shortest distances. They also use massive MIMO to expand capacity and extend coverage. Moreover, they include wide spectrum segments available for 5G along with lower latencies.

mmWave can help meet the increased global demands for high-quality connectivity and facilitate exciting new use cases.



"5G has the potential to impact many industry verticals, and cross-sectoral partnerships will be the foundational building blocks to develop those use cases. Today, we are exploring many ongoing projects with key industrial partners which we are very excited about. It's an exciting time for Australian industry."



spectrum. This paved the way for another milestone, this time the delivery of dual band 5G services on 2300MHz and 3500MHz spectrum, enabling significantly easier and more flexible deployment options and offering potentially double the speed and greater coverage depths.

Today, Optus deploys Ericsson dual band [Massive MIMO](#) to support both frequency bands in the same active antenna system (AAS), with its new compact design techniques to ensure sufficient antenna isolation and easier deployment.

3. New 5G speed record with 5G Ericsson Carrier Aggregation call

In November 2020, Optus, Ericsson and Samsung set a new Australian commercial 5G speed record with a world-first commercial demonstration of [Ericsson Carrier Aggregation](#) on TDD 2300MHz and 3500MHz spectrum bands. In doing so, the partners demonstrated the power of carrier aggregation in both extending coverage and increasing peak rates – in this instance reaching record-breaking downlink speeds of more than 2.5Gbps in the live network.

Optus, with one of the most advanced portfolios of TDD spectrum in the region, has since rolled out carrier aggregation to increase peak rates at its ultra-high-speed 5G sites, including high-density 5G Home markets.

In March 2021, Optus and Ericsson collaborated to demonstrate another carrier aggregation milestone, this time aggregating

Mid band FDD (frequency division duplex, 2100 MHz) with mid-band TDD to deliver improved network performance, enable faster data speeds, extend TDD 5G coverage and allow for simultaneous use of both 4G and 5G services.

4. Multi-technology on 700MHz spectrum sharing

In June 2021, Optus and Ericsson teamed up to deliver the coexistence of narrow band IoT (NB-IoT) and 4G and 5G services through Ericsson Spectrum Sharing on the low band 700MHz spectrum layer.

By introducing 5G on the same low band frequency as 4G and NB-IoT, the partners demonstrated that it is possible to maintain the same excellent network experience for 4G and NB-IoT carriers, while quickly and simultaneously extending the reach of 5G coverage both indoors and outdoors.

The next steps in network innovation

Unlocking future 5G with mmWave

In April 2021, Optus acquired spectrum in the 26 Ghz [millimeter wave](#) (mmWave) range which will be key to delivering even faster and lower latency connectivity to Australian consumers and enterprises. With mmWave technology, Optus will have even more expansive connectivity experiences such as high-definition simultaneous streaming, augmented and virtual reality,

next generation cloud gaming services and massive simultaneous connectivity at transport hubs and major events.

"We're only at the beginning of our 5G mmWave rollout and are actively testing its capabilities. To date, these tests have shown how mmWave spectrum, integrated into existing 4G and 5G sites, has the capability to significantly boost overall site capacity – which will be a gamechanger for our customers," said Lambo Kanagaratnam, Managing Director, Optus Networks.

The road to 5G standalone

In May 2021, Optus hit another technology milestone together with Ericsson and OPPO when it successfully completed its [a voice call over a 5G standalone network](#). The trial, which demonstrated the ability to serve both voice and data services simultaneously, delivered an early breakthrough for new immersive video and interactive calling services across Australia, with voice over new radio (VoNR) also in the pipeline.

Today, Optus is engaging several key technology partners to help differentiate its customer offerings and take full advantage of upcoming 5G standalone opportunities, including industry verticals such as warehousing, logistics, retail and factories.

Among other benefits, 5G standalone will enable Optus to deliver an enhanced user experience to its customers, increase service creation agility for new innovative applications and improve overall network capabilities.

About Optus

Optus is a leading Australian technology and telecommunications company providing customers with more than 11 million services across Australia each day. With more than 7000 employees across Australia, Optus delivers a comprehensive range of telecommunications products including: mobile and fixed line telephony; fixed and mobile broadband services; multimedia entertainment and technology services; satellite services; and converged business telecommunications applications and solutions.

About Ericsson

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York. www.ericsson.com

