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Wireless Innovation Lab

Improving the accessibility of ultra-fast wireless communications to people and businesses throughout Australia

Background

The Wireless Innovation Lab (WILAB) will be an innovation platform with a focus on next generation wireless technologies, platforms, and solutions.

Focusing on industrial challenges, WILAB will provide a co-creation ecosystem, combining industry experience with research expertise, linking critical research infrastructure with industry testbeds, and fostering immersive opportunities for researchers and graduate scholars within industry.

Working with Victorian partners, WILAB has three major foci:

- / **Accelerated co-creation of innovative solutions** through an innovation accelerator platform established with industry partners and key stakeholders, leveraging the university research competencies
- / **Lighthouse projects** delivering sector-wide benefits in close collaboration with an ecosystem of stakeholders and multidisciplinary research teams, tackling key challenges and showcasing value for technology uptake across a range of industry sectors and locations
- / **Creating a digital talent pipeline** with innovation skills and mindset and industry readiness through programs of innovation fellowships (internships), enhanced research higher degree training, and reskilling through micro-certification.

WILAB is a new initiative that has formed to enable frontier technologies and develop a talent pipeline of graduates with an innovation mindset to support commercial adoption of emerging wireless communications in modern

society. Situated at Melbourne Connect at the University of Melbourne, WILAB will be part of a purpose-built innovation precinct bringing together industry and researchers to develop solutions for our most pressing future challenges. Melbourne Connect will bring together the digital expertise of leading industry and University of Melbourne researchers, redefining how we work together.

WILAB will partner with network providers, technology suppliers, government, end-users and other stakeholders to co-create innovative solutions and build sovereign capabilities. It will foster an enduring relationship between the communications and innovation sectors, creating a unique constellation of cross-disciplinary researchers, network and technology specialists, sector representatives and government. Innovative technology creations will deliver substantive productivity improvements across key sectors including defence and national security, digital health, construction and infrastructure development, intelligent logistics, smart agriculture, food technologies, and digital mining by accelerating adoption of Industry 4.0.

Existing testbeds in key sectors will be leveraged to support innovation in a fail-safe environment. Flagship lighthouse projects will provide exemplars defining technology and business models to accelerate adoption and de-risk broader uptake of 5G and other wireless technologies.





Innovation

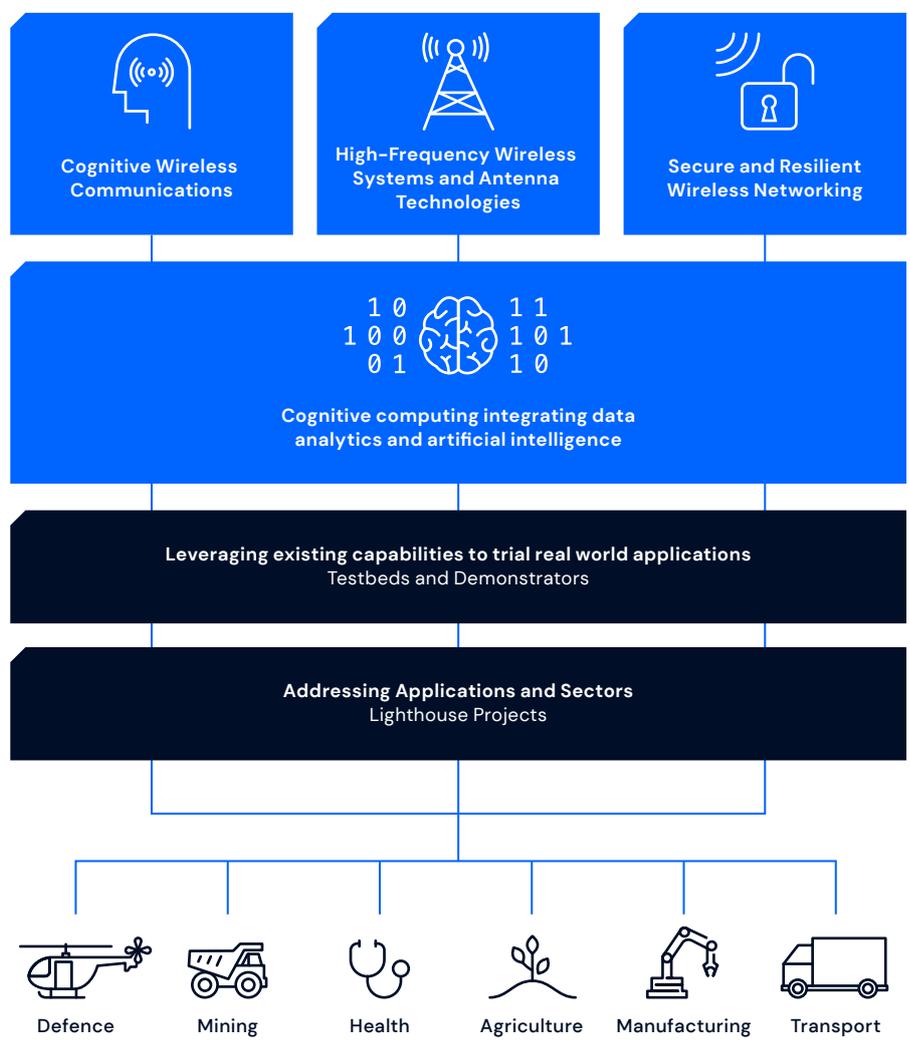
Society is becoming hyperconnected with an unprecedented need for connectivity. Ultrabroadband wireless communications and networking are key enablers of innovation across a range of sectors and bring exceptional economic value creation potential.

A new array of core technologies must be co-designed and integrated to create disruptive market-ready solutions to meet the evolving needs of specific sectors. Developing a sovereign capability to innovate is critical to overcoming problems in the communications sector. There is an urgent need to create a pipeline of industry-ready engineers and digital professionals with an innovation mindset to develop digital

technologies to fast-track uptake of next generation communications technologies. Delaying uptake of 5G will delay the societal benefits.

WILAB has developed a research program to address the wireless needs of businesses and organisations. It will connect with and leverage existing testbeds and demonstrators in a range of domains to deliver cutting-edge solutions that are proven in safe environments.

WILAB Research Programs



Target sectors



Transport

- / Improved safety for all users via early warning alerts and collision detection
- / Applications for roads and low altitude airspace
- / Reduced congestion and emissions
- / Real-time communication between drivers and control room staff to improve safety, security and operational efficiency
- / Lower logistics costs by improved monitoring and prediction



Agriculture

- / With 5G coverage, farmers will be able to adopt Internet of Things devices such as remote sensors and autonomous vehicles
- / Access to data and tools creates producer control and leads to data-driven decisions in farm management
- / Support growth of Australian agriculture to a \$100 billion sector by 2030
- / Digital agriculture could increase the gross value of Australian agricultural production by \$20.3 billion (*The Next Gen Future*, Parliament of Australia)



Healthcare

- / Expect to be an early beneficiary, providing real-time medical data management
- / Three use cases enabled by 5G: remote patient monitoring, virtual consultations, and connected ambulances
- / Applications involving artificial intelligence and deep learning will be used by healthcare professionals for faster diagnosis
- / In 2019 mobile technology was used to direct live surgery



Manufacturing

- / Transformation to smarter, data-driven flexible manufacturing to enhance competitiveness
- / Improved data speed, latency, efficiency, reliability, capacity and security
- / Real-time feedback, less machine downtime, higher product quality, predictive maintenance and more informed decision making
- / Integrated ecosystem designed to optimize manufacturing, distribution and the product-consumption lifecycle



Defence

- / Transformation through new capabilities in radars, tactical communications and networking, and resilient network solutions
- / Improved data speed, latency, efficiency, reliability, capacity and security
- / Improved security of personnel and infrastructure
- / Smart coordination



Mining

- / Greater safety, productivity and sustainability
- / Connectivity for automated vehicles, advanced robots and machinery
- / 5G reliability that overcomes limitations of wi-fi performance
- / Remote control of mission-critical infrastructure
- / Real-time tracking and coordination of vehicles and personnel
- / Greater efficiency of operations reduces emissions

Partners & Collaboration

As an enduring initiative, WILAB will develop strong partnerships with a wide range of stakeholders in telecommunications and the broader wireless communications industry to support business growth.

Solutions developed by WILAB will generate benefits to businesses and organisations throughout Australia, boosting productivity and creating jobs. WILAB is seeking industry partnerships involving co-investment to identify, co-design and accelerate innovation activities that will be leveraged through government investment.

A collaboration with WILAB may be tailored to suit the nature, scale and timeframes to best align with your company's short, medium and long-term strategic priorities. There are a range of WILAB engagement models depending on your company's needs.

Innovation Fellows

Access emerging talent to energise innovation projects and solve short-term problems.

- / Cross-disciplinary teams of students as interns or fellows
- / Embedded within partner organisations
- / Organised by WILAB as internships as part of course requirements

Innovation Accelerator Projects

Suited to medium-term projects deploying specialist expertise.

- / 6-12 months
- / Shared Resources towards accelerated development of solutions

Challenge Projects

Driven by longer-term strategic priorities, these projects typically develop intellectual property to create a new market offering and to establish a competitive advantage.

- / 1-2 years, single partner
- / Dedicated Resources
- / Embedded teams
- / Researcher immersion at Melbourne Connect
- / Projects tackling challenging problems defined by Partner

Lighthouse Projects

Focus on grand problems shared by a wide range of stakeholders who pool their resources in an innovation ecosystem.

- / Duration 1-2 years, multiple stakeholders
- / Pooling of investments and resources
- / High-profile exemplar projects validating solutions with sector-wide application
- / Cross-disciplinary teams

Research Scholars

Access world-class research excellence to develop cutting-edge solutions for complex projects that are central to your organisation's core operations.

- / 3-4 years, single partner
- / Up to 2x leveraging of direct investment (typical) via industry grant schemes (Industrial Transformation Research Program, CRC-Ps, Linkage Projects)
- / Up to one-third of PhD student's candidature immersed in Partner Organisations
- / Long horizon research problems
- / Access to teams of researchers and facilities



Benefits

01

Tailored partnership

Tailor your partnership with WILAB to best align with your company's short, medium and long-term strategic priorities.

02

Engage with research excellence

Access leading researchers and research infrastructure. Join testbed environments and lighthouse projects deploying frontier technologies. Work with world-leading researchers who bring novel perspectives to industry relevant issues. Embed researchers within your company to solve industry-defined problems.

03

Improve your business profile

Enhance visibility and achieve broader industry exposure. Associate your company's brand with research excellence.

04

Build research networks

Link with companies partnering with WILAB. Engage with interdisciplinary researchers relevant to your company.

05

Value for money

Scale your research investment through State and Commonwealth industry grant funding opportunities by up to 1:2 (industry:grant) on cash alone. Be part of an ecosystem of different stakeholders with shared goals for further leveraging of your investment.

06

Grow your business

Access a talent pipeline of world-class, industry ready students and research fellows with specialist skill sets. Gain an early mover advantage in new market opportunities made possible through innovation. Access business models based on evidence-based outcomes that are relevant to next-generation technologies. Co-develop industry training courses including micro certifications to upskill your staff. Receive support from exceptional business development and technology transfer teams to facilitate commercial translation of IP developed through WILAB.

Leadership & Capabilities

WILAB is a multi-institutional collaboration involving the University of Melbourne and the RMIT University. WILAB's core innovation enabler team comprises academic experts with a broad range of wireless technology expertise.

Across both institutions, researchers have access to state-of-the-art facilities for design, implementation, and testing wireless network solutions as well as experience and capabilities to develop software and applications.

Steering Committee

The Steering Committee is responsible for engaging with industry to identify innovation opportunity to advance wireless technologies through education and research projects.

- / **Professor Thas Nirmalathas** (Lead), University of Melbourne
- / **Professor Kandeepan Sithamparanathan** (Deputy Lead), RMIT University
- / **Professor Chris Manzie**, University of Melbourne
- / **Professor Jamie Evans**, University of Melbourne
- / **Professor Len Sciacca**, University of Melbourne
- / **Dr David Heath**, University of Melbourne
- / **Dr Gerry Roe**, RMIT University

Members of the WILAB Steering Committee and the interdisciplinary research team from both universities may be found in the following links:

University of Melbourne node
unimelb.edu.au/wilab/team

RMIT University node
rmit.edu.au/wilab/team



Contact

WILAB will be headquartered in the new Melbourne Connect building due to open in 2021.

For enquiries regarding partnership opportunities or for further information please contact:

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