

# Ngara\* Wireless Information and Communication Technologies

SCIENCE AND  
INDUSTRY  
ENDOWMENT  
FUND

## SIEF supports high performance and efficient wireless communication

**the challenge** The rapid take up of mobile smart phones, coupled with the expected explosive growth of Internet-enabled devices (Internet of Things), is driving an unprecedented demand for wireless data connectivity. However, the wireless spectrum available to support this growth is rapidly exhausting. A Spectrum Crunch is imminent unless innovative ways are found to make spectrum use more efficient. Further, there is a growing digital divide between those who live in metropolitan areas and those in remote and rural areas when it comes to access to reliable, high-data-rate broadband communications. This divide locks people living in these regions out of the Digital Economy, hence lowering social equity.

**the response** The Ngara\* Research project was established to accelerate the development of advanced wireless technologies to address these challenges. The initial research focused on delivering high-data-rate, spectrally-efficient broadband services to rural and regional areas. The aim of this research was to demonstrate the world's most spectrally efficient point-to-multi-point access technology and the world's highest capacity microwave point-to-point link.

**the collaboration** CSIRO is now partnering with several prominent local manufacturers of telecommunications equipment to commercialise the initial Ngara technology. CSIRO is also collaborating with a significant telecommunication service provider and a leading university to investigate further applications of the Ngara technology.

**projected impact** Australia's success in the Digital Economy will depend largely on its ability to deliver reliable, high-data-rate broadband to all Australians. The technologies developed in the Ngara program will facilitate more efficient use of existing wireless infrastructure and increased connectivity across the country. The economic and social benefits of the Ngara technologies will include:

- Increased data capacity through higher spectral efficiency in fixed and mobile wireless broadband networks mitigating the impact of the spectrum crunch on Australia's economic, social and environmental fabric.
- Reduced network infrastructure costs compared to fixed broadband alternatives.
- Fewer wireless infrastructure sites, and resulting reduced visual and environmental impact.
- Increased value from our limited spectrum, by enabling high-data-rate applications to operate over existing narrowband spectrum, e.g. video-capable narrowband public safety communications networks.
- Reduction in the digital divide between metropolitan and regional and rural Australians.

\* Ngara – a word of the Darug people meaning to *listen, hear and think*. Darug elders gave their permission to use the word at a ceremony at CSIRO's laboratory in the Sydney suburb of Marsfield – part of Darug lands.

## Contact us

For further information  
SIEF Manager  
t +61 3 9545 7952  
e [sief@sief.org.au](mailto:sief@sief.org.au)  
[www.sief.org.au](http://www.sief.org.au)

## What is SIEF?

Spanning a history of over 85 years, the Science and Industry Endowment Fund (SIEF) provides grants to science and scientists for the purposes of assisting Australian industry, furthering the interests of the Australian community and contributing to the achievement of Australian national objectives. In 2009 this unique and esteemed funding arrangement was rejuvenated by a gift from CSIRO, made possible due to the commercial success of CSIRO's fast WLAN, or Wi-Fi technology. Thus past accomplishments are reinvested into new science and innovation for the nation.