

# Wireless broadband coming to the bush

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The first half of CSIRO's Ngarra rural wireless broadband technology allows several users to upload material at the same time without compromising the data rate of 12 Mbps each. (Photo: Geoff Ambler)

A major CSIRO breakthrough in wireless technology designed to bring broadband to people living beyond the optical fibre network, will be unveiled in Sydney tomorrow.

The first half of CSIRO's Ngarra technology will enable multiple users to upload information at the same time, without reducing their individual systems' data transfer rate of 12 Mbps.

"Someone who doesn't live near the fibre network could get to it using our new wireless system," CSIRO ICT Centre Director Dr. Ian Oppermaann said.

“They’d be able to upload a clip to YouTube in real-time and their data rate wouldn’t change even if five of their neighbours also started uploading videos.

“But the really impressive part is the spectral efficiency our team has achieved.”

The radio spectrum is a finite and highly valuable, natural resource.

CSIRO’s spectral efficiency is three times that of the closest comparable technology and the data rate is more than 10 times the industry’s recently declared minimum standard.

Spectral efficiency is about packing as many bits of information as possible into the channel (frequency range) allocated for its transmission. CSIRO’s 12 Mbps, six-user system works in the space of one television channel, which is seven megahertz (MHz) wide.

CSIRO is achieving spectral efficiency of 20 bits per second per Hertz (20 b/s/Hz).

“Even with just half of our system completed, CSIRO is already helping define the future of [wireless technology](#),” Dr. Oppermann said.

Wireless Research Director for Gartner, Robin Simpson, said the most promising aspect of CSIRO’s Ngarra technology is that it aims to re-use old analog TV channels.

“This means any rural property or business that can currently receive TV signals could in future connect to high-speed internet just by using a new set-top box,” Mr Simpson said.

CSIRO is currently completing the research and testing of the downlink

part of the system, which will also run at 12 Mbps per user.

Ngara is a word of the Darug people meaning to listen, hear and think. The Darug people are the traditional owners of the land on which the ICT Centre's Sydney lab sits. This project is supported by the Science and Industry Endowment Fund.

Provided by CSIRO

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