Impact Case Study

Wireless technology having profound global impact

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At the heart of the most popular way to connect computers without wires is a CSIRO success story

thechallenge

Prior to the 1990's a major challenge facing communications companies around the world was to work out how to reliably communicate large amounts of data without wires in an indoor setting. Achieving this would give users the freedom to move around and stay connected to a high speed computer network, and be able to send and receive information.

When CSIRO began research in this area, indoor wireless network systems ran very slowly and performance was extremely limited. A significant challenge was overcoming obstacles of the indoor environment.

theresponse

CSIRO's team **solved the main problem of wireless networking indoors** – combating reverberation - where radio waves bounce around in the surrounding environment causing echoes and fades that impede clear reception. This breakthrough came from pioneering work in radio astronomy involving complex mathematics and detailed knowledge about the behaviour of radio waves in different environments. The research culminated in an invention of CSIRO's wireless local area network (WLAN) that allowed indoor wireless communication between electronic devices at high data rates.

theimpact

It is hard to imagine an Australian-invented technology with greater global impact. WLAN technology has revolutionised communication and is used in an estimated **four billion devices** worldwide including phones, televisions, cameras, laptops, printers, routers and games consoles. By the end of 2013 this will grow to more than five billion devices.

Widespread adoption of this technology has enabled a global revolution in mobile computing and communication. CSIRO has licence agreements with more than 20 international companies and has received around **$430 million in licensing revenue**.

CSIRO inventors Dr John O'Sullivan, Dr Terry Percival, Mr Diet Ostry, Mr Graham Daniels and Mr John Deane created this technology in the 1990s while working in the CSIRO Division of Radiophysics, now known as CSIRO Computational Informatics. As a result of this work, in 2009 Dr John O'Sullivan was awarded the Australian Prime Minister's Prize for Science. The CSIRO WLAN team has also received **worldwide recognition** including the European Patent Office Non-European Inventor Award for 2012.

CSIRO is now working to develop further generations of wireless technology called Ngara that can be used outdoors over larger distances, and can complement current fibre optic and cellular phone networks.

Contact us

FOR FURTHER INFORMATION
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