Our precise new world

Satellite data will soon allow people to pinpoint their location with such accuracy, there will be long-term benefits for the economy, writes Christopher Jay.

Utilising navigation breakthroughs, strawberry and grape growers will be able to target individual fruit. PHOTO: CRAIG ABRAHAM

Most people would be under the impression satellite positioning provides pretty accurate location information. The technology is becoming ubiquitous in Australian private and commercial vehicles. And who hasn't been impressed by the accuracy of the blue "you-are-here" dot on a smart phone map? But for most applications, the technology has a positional accuracy of two to three metres, at best.

Imagine an accuracy of just two centimetres. For strawberry growers, the two centimetre accuracy already available in some parts of the country lets harvesting equipment navigate the tightly-packed rows of strawberries without the machinery straying and crushing the valuable fruit.

In New Zealand, wine growers are looking to this extraordinary two centimetre tolerance to identify individual grapes from particularly favoured parts of vineyards for selective marketing of premium bottles.

Now Australia's on its way to having coverage of two-centimetre positional accuracy over virtually the whole of the country. This is thanks to a program being implemented as the National Positioning Infrastructure Strategic Plan – in concert with New Zealand.

Several studies have spelt out in convincing detail huge improvements in productivity and growth from a country-wide location network with such extremely granular qualities. A 2013 study from ACIL Allen Consulting estimated that by 2020 Australia's real GDP could be anything up to $13.7 billion higher than otherwise. Beneficiaries will include agriculture, mining, construction, utilities, surveying and land management apart from the obvious transport and logistics industries.

A key date in the calendar of departmental and research technologists orchestrating the two centimetre program is 2020.

By then a whole set of new satellite navigating systems from Japan, Europe, China and India will have joined the American GPS Navstar and Russia's Putin-rejuvenated GLONASS constellations in a bewildering variety of orbits.

By 2020, Australian skies will be criss-crossed by locational data.

This means that, in contrast to the present relatively sparse availability of satellite signals, Australian skies will be criss-crossed by locational data.

This allows six Australian universities, and other specialists co-ordinated through the Melbourne-based Co-operative Research Centre for Spatial Information, to harmonise the differing frequencies, inject ground-based corrections and deliver pinpoint accuracy to users anywhere in the country. The key is expanding the network of ground based stations (called Continuously Operating Reference Stations or CORS) which do the processing work.

Chief executive of the spatial information CRC Peter Woodgate says Victoria already has virtually complete coverage, NSW pretty well has its eastern half covered, and Queensland has good coverage in its south east corner and high value areas such as the Fitzroy Basin.

The cost of a CORS installation varies from quite modest sums near urban centres – where basic services like power are already available, up to $100,000 in outback locations needing solar panels and batteries for power.

Happily Woodgate says the program is unaffected by the provisions of the recent federal budget.

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