

# Better GPS, better mining

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IM uses, as preference,  
SI units throughout, so, for example, all  
tonnes are metric unless otherwise stated.  
All dollars are US unless otherwise stated

The Turnbull Government is investing in more precise global positioning system (GPS) technology that will create jobs and support Australian industry. Minister for Resources and Northern Australia, Senator the Hon Matt Canavan, said the Government is investing over A\$260 million to develop the satellite technology.

“We rely on satellite and GPS technology for just about every aspect of our lives – from Google Maps on our individual phones, through to air traffic control at the busiest airports,” Minister Canavan said. “More precise technology will make Australian businesses more productive, safer and more efficient. More accurate GPS will improve productivity by allowing new technology to be created and used across the economy. Growing Australia’s digital economy will also benefit developed sectors such as mining, transport, construction, aviation and agriculture. This investment will improve competitiveness and secure jobs across the Australian economy.”

Under the package, A\$160.9 million will deliver a Satellite-Based Augmentation System (SBAS) (the technology underpinning GPS) to improve the reliability and the accuracy of positioning data from 5 m to 10 cm across Australia and its maritime zone. A A\$64 million investment in the National Positioning Infrastructure Capability (NPIC) will complement SBAS to improve GPS to an accuracy as precise as 3 cm in areas of Australia with access to mobile coverage.

“Our investment in this world-standard technology will have direct benefits including virtual fencing for farms and better management of cattle and livestock over vast distances,” Minister Canavan said. “It also has applications for regional aviation such as improved access to regional areas by enabling planes to land on smaller airstrips and navigate difficult terrain such as canyons.”

“The increased reliability provided by better GPS will improve safety for aircraft flying into regional and remote aerodromes, such as the Royal Flying Doctor Service fleet. It will reduce the impact of weather on flight cancellations and diversions, and improve the safety of landings. The resource sector will also benefit through better control of mine infrastructure, safety and more precise data for environmental rehabilitation.”

“This is a practical investment to improve the lives of Australians and make businesses more productive. This technology provides instant, reliable and accurate positioning information, anytime and anywhere around Australia.”

A further A\$36.9 million is for Digital Earth Australia, a world-class technology that will give Australian businesses greater access to reliable, standardised satellite data that identifies physical changes to the Australian environment.

“The practical benefits of this investment will extend across our economy. This data will help researchers, governments and business better understand environmental changes, such as coastal erosion, crop growth and water quality,” Minister Canavan said.

“For example, information drawn from satellites is vital to help graziers increase the capacity of paddocks and make their farms more viable and sustainable. Our investment in satellite imagery will ensure a range of

Australian industries have access to data that can help them tailor their investments, create jobs in target regions and increase their competitiveness.”

Moving on the technology developments in the GPS space specific to mining, Modular Mining Systems, a global leader in the delivery of real-time computer-based mine management solutions for surface and underground mining operations, has made the commercial release of its MM2 High-Precision Global Navigation Satellite System (HP-GNSS) receiver. The MM2 HP-GNSS receiver is the latest addition to Modular’s High-Precision machine guidance platform, and is used to determine centimetre-accurate location and positioning for its ProVision® Machine Guidance solutions for drills, shovels, loaders, and dozers. The MM2 supersedes Modular’s previous version, the MM1, to provide vastly improved satellite coverage – even in deep or otherwise challenging pits – by gaining access to and utilising all four GNSS constellations (GPS, GLONASS, BeiDou, and Galileo).

“Mines that previously had intermittent GPS coverage due to geographic location or pit geometry will benefit from more dependable and accurate positioning,” said Michael Lewis, Vice President, Product Innovation at Modular. “Increasing the availability of their mission-critical position-based applications translates directly to a lower cost per tonne.”

The receiver, powered by Topcon, a leader in precision measurement technology, will also serve as a critical component for optimising the performance of Modular’s latest and future innovations, including the ProVision Guided Spotting system, which guides haul truck operators as they reverse for loading at the shovel.

The MM2 High-Precision receiver has undergone extensive field testing in North America, South America, and Australia; in all cases, the MM2 improved satellite availability, approaching 100% even in the most challenging deep pits.

The PIM7500 from Hexagon Mining is a dual-frequency, high precision GNSS module that is scalable to offer sub-metre to centimetre-level positioning using Hexagon Correction Services. This single-sided, surface mount package solders down directly, eliminating the need for connectors and mounting hardware. Optional SPAN GNSS+INS support provides access to continuous 3D position, velocity and attitude. The PIM7500 has a compact, lightweight form factor available in volume quantities making it ideal for use in autonomous vehicle fleets.



Paul Moore

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