

Pitram Mobile Case Study

Independence Group
Nova Operations, Western Australia



As one of the world's lowest-cost nickel producers, Australia's Independence Group relies on advanced technology and innovation to drive record-breaking performance at its Nova nickel-copper mine.

Upgrading their Micromine Pitram offering from For Voice-Enabled Productivity to the fully automated For Mobile-Enabled Productivity was a crucial step in IGO's quest to future-proof its underground operations.



Project Owner and Location

Independence Group Limited (ASX: IGO) is a diversified mining and exploration company producing metals for clean energy and the manufacture of high energy density lithium-ion batteries. Headquartered in Perth, the company has operations across Australia, with major projects in Western Australia (Nova, Tropicana JV, Fraser Range, Yeneena JV, East Kimberley and West Kimberley JV), the Northern Territory (Raptor and Lake Mackay JV) and South Australia (Copper Coast). IGO is also exploring in eastern Greenland through its participation in the Frontier JV with Greenfields Exploration.

The 100% owned Nova underground mine, approximately 360km south-east of Kalgoorlie, in Western Australia, has been in commercial production since 2017 and is currently producing around 1.3Mt of nickel, copper and cobalt per annum.

Since operations began, the mine has exceeded production targets. In FY19, its second year of production, Nova produced 30,708 tonnes of nickel, 13,693 tonnes of copper, and 1,090 tonnes of cobalt at a cash cost of A\$2.07/lb Ni. In the first quarter of 2020, copper production at Nova reached a record 3748 tonnes for the March quarter, while nickel output reached its second highest quarterly level of 8019 tonnes.

The Problem

The mining operation at Nova required the system to be able to add value and must be able to deliver near term benefits that the mine had not been able to do before.

Additional issues to overcome included;

- Be repeatable, scalable, flexible between mining type/ commodity/departments
- Eliminate waste and duplication while be as simple as practicable
- Deliver consistency through departments and use common language / business logic
- No "blackbox" systems: minimise consultant reliance
- System supports phased approach from manual to automated data capture
- Integrates with current infrastructure and IT
- Data extraction and reporting system supports site autonomy

The Opportunity

The mine control and dispatch facility at Nova had been designed to provide an increased level of shift data accuracy which will improve operational efficiencies through effective management of mining operations based on high quality data.

The system provides improved response to emergency situations and greater control in hazard management, as well streamlines administrative tasks through real time data capture and validation. In FY19 using Micromine software for the seismic interpretation, a breakthrough in the interpretation of the 3D seismic dataset that covered the Nova Mining Lease, enabled IGO to predict the location of mafic and ultramafic intrusions with potential to host Ni-Cu sulphide mineralisation at depths beyond 500m.

Deep drilling confirmed the presence of thick (500m-1000m) mafic-ultramafic intrusions carrying widespread three-phase Fe-Ni-Cu sulphide disseminations and blebs. The discovery has underpinned ongoing exploration and long-term plans for the operation.

Designed with futureproofing in mind, Nova's underground infrastructure is easily adapted to automation, especially for drilling and haulage, resulting in safer conditions for employees and productivity gains for the business.

IGO installed Pitram Voice, from the Micromine software suite, on 11th December, 2018. For the first time, the software enabled Nova's operations personnel to capture insights and data from mobile equipment and underground activities in real-time. Using the mine control system, underground operators called in their activities, locations, and status to mine control, giving shift supervisors the ability to monitor operations and respond immediately.

The Solution

The upgrade from their previous solution to a fully-automated fleet management solution, Micromine Pitram For Mobile-Enabled Productivity provided IGO with the next next efficiency breakthrough enabling ongoing performance across the operation.

Instead of equipment operators using a radio to report in to shift managers, Pitram Mobile captures production data via an automated on-board system or touchscreens in machine cabs.

Equipment data, such as location, pre-start, status and activity, is automatically uploaded to the server as soon as a vehicle is in range of a wireless or LTE (long term evolution) network. The data is then automatically transferred to the Pitram Control Room where results can be analysed, enabling responsive operational decision-making.

Designed to run on rugged touchscreen tablets, with a Windows operating system, Pitram Mobile is compatible with various underground data collection technologies, including Wi-Fi and ELF (Ethernet over leaky feeder). It does not need any proprietary hardware and can be installed on existing compatible tablet and network infrastructure, so there is no need to purchase new hardware.

Automated data capture offers significant benefits:

- Reducing disruption to primary activities (personnel time and effort is reduced)
- Automatically transmitting data from equipment and personnel, increasing accuracy of time-sensitive information, and providing greater visibility
- Alleviating potential data entry errors with near 100% data accuracy
- Providing an adaptable user interface for integrating shift planning
- Greatly reducing call volumes and demands on radio networks
- Providing live information for in-shift decision-making

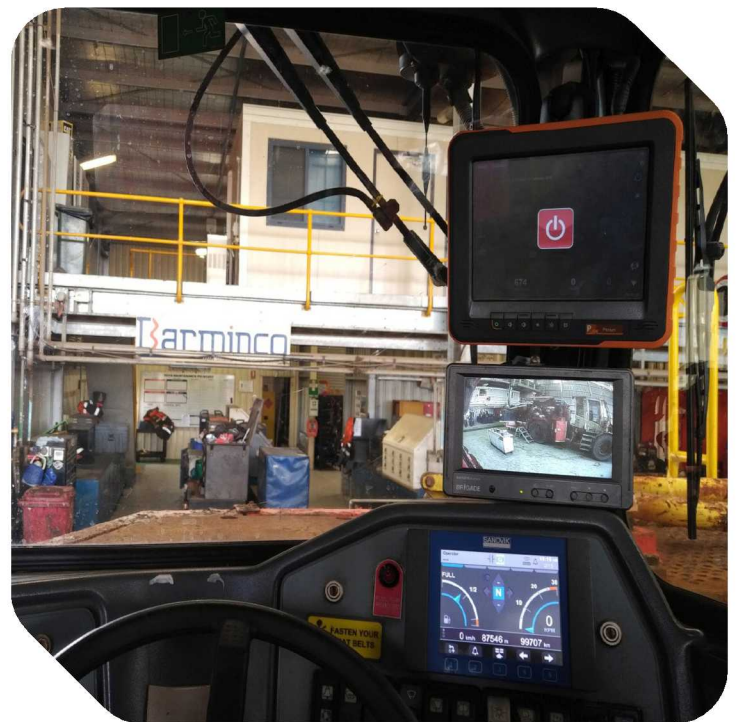
Micromine deployed a specialist team to the Nova site to provide technical support, training and coaching to ensure the upgrade was seamless.

As each of Micromine Pitram's offering use the same production and reporting database, the upgrade from voice-enabled productivity capture to automatic digital capture was simple and cost effective. This allowed IGO to quickly and measly deploy the new solution without having to invest in new or modified systems.

“Key to the success of the Micromine Pitram implementation was the level of engagement between MICROMINE, Nova, and the mining contractor (Barmenco). This ensured the project had minimal disruption to mining operation but more importantly, safety was maintained.”

– Laf Fesolai, Micromine Pitram Project Manager

Touchscreen tablets were installed in vehicle cabs to integrate with the Micromine Pitram software and facilitate data transfer between on-board computers and the Pitram Control Room, the central interface for full fleet management insights and analytic functionality.



The Outcomes

By upgrading from a voice-enabled fleet management system to an automated mobile solution, IGO has gained critical efficiencies across its Nova mine site, streamlining operations, improving safety, and positively impacting the company's bottom line.

In addition to reducing the administrative load through real-time data capture and validation, the Pitram Mobile system improves the speed and accuracy of emergency response and hazard management.

Precision reporting from the workforce means operational decisions are backed by accurate, high quality data supplied almost immediately by the automated system.

Micromine Pitram's mobile solution has been applauded by IGO and its main underground services supplier Barminco because of the advantages it delivers in terms of:

- Integrating with Nova's fleet management system providing a better picture of vehicle positioning and situational awareness
- Reducing mine radio traffic – enhancing safety and operational activities through automatically transmitting critical data from equipment
- Apply automated business rules to shape relevant data
- Maintaining safety on site through information communication and access control
- Identifying areas of improvement

Three years into production, Nova was recognised as the lowest cost nickel producer in Australia and one of the lowest cost producers in the world. Advanced fleet management technology is playing a key role helping IGO improve safety, reduce environmental impacts, and drive continuous cost savings and more efficient operations.

"The mine control and management reporting system was instrumental in sharpening output rates as underground operations stepped up, helping Nova to optimise production while improving safety and control room transparency." Peter Christen, Nova Mine Manager.

"Pitram Mobile has enabled our people to be more in control of the data generated and that means we are seeing greater ownership and uptake of the system. It allows our mine control operators to validate information quickly and they spend less time on the radio."

– Peter Christen, Nova Mine Manager

For more information,
visit our website at www.micromine.com

