



**MINING
SOLUTIONS**

Aptella
AUTOMATION +
POSITIONING TECH

Why Aptella

We're there when you need us

With more than 30 years' experience in deploying intelligent positioning solutions, Aptella and its founding businesses have continuously broken new ground in the application of technology to enable safer, more efficient and more productive mine site operations.

Aptella's expert team is unrivalled in the industry - our people are passionate about what they do and committed to supporting our customers whenever and wherever they're working.

With more than 350 employees across Australia, New Zealand and Southeast Asia, no other company can deliver the depth of expertise and boots on the ground support that Aptella has to offer. We source the latest and most advanced technology from leading suppliers worldwide, ensuring it is fit for the local market and assisting customers with training, service, calibration and support to suit their unique business needs.



Workshop services

Comprehensive product service, maintenance, repairs and advice are provided via our local service centres with manufacturer-trained technicians. We guarantee all our work and can supply calibration certificates if required.



Training

Our expert trainers are here to help you get productive immediately and enable you to take control of your digital jobsite. Our training is application specific and tailored to your industry, providing the perfect foundations to tackle any task or project.



Hire or lease options

A full range of systems, from laser levels through to machine systems and survey instruments, can be hired or leased to suit any application and reduce capital outlay. Get the flexibility to customise technology to suit unique site requirements.





Remote Access & Support

To give you fast help when you need it, our technicians can remotely access your systems when required to troubleshoot and train users to get you back to the job as soon as we can.

- Access high precision and fleet management devices remotely.
- Send & receive messages to operators, surveyors & managers.



Multiple solutions from a single, local supplier

Simplify your procurement process and select from our range of leading, tried and tested solutions

For all machines & survey assets
Aptella are the retrofit experts, specialising in sourcing and supplying machine-agnostic solutions for your mixed fleet

Site-wide change management
Our team works with you to customise solutions that compliment your existing workflows and simplify your day-to-day operations

Fast support a phone call away
The combination of remote access support and a large, local network of field technicians delivers unrivalled support

Flexible Service Level Agreements

To ensure that your mining solutions are always performing at their best, the team at Aptella is here to support you. Our highly trained specialist technicians are committed to providing the highest quality of service, with a combination of remote and boots-on-the-ground support hubs dedicated to ensuring requests are quickly actioned to maximise your machine uptime.

Our comprehensive Service Level Agreements are fully tailored to your unique requirements, to give managers and operators peace of mind that technical assistance, training and remote updates are available as needed, reducing the need for on-site visits.



Fleet Management System

Production

Haul Cycle Data Logging

Automated data capture in real-time
Enables immediate feedback for effective and prompt decisions:

- > Material
- > Location
- > Paired vehicle
- > Payload
- > Second gear re-weigh
- > Activity & delay codes
- > Vehicle state (loading, travel loaded, dumping, travel empty, stopped, queuing, spotting, re-spotting, etc)

Load Assist

Operator feedback for optimal loading

- > Haul cycle data
- > Load pass tonnages/BCM
- > Target payload
- > Centre of gravity
- > Dump destination

Improve Process Efficiency

Empower personnel at all levels with the information they need when they need it

- > Increase Production Rate – manage your circuits to optimise your rates.
- > Monitor over and under trucking
- > through real-time tracking of production data empowers management to make quick adjustments to keep on track
- > How? Timely automated reports; real-time dashboards; site wide view with iControl



Maintenance

Automatic collection of vehicle health data, fused with iVolve data (position, time, operator etc) for maintenance personnel to act on or investigate events/issues

Interface to on-board vms for real-time health data

- > Machine events
- > Parameters
- > Utilisation
- > SMU

Guidance

Combines the benefits of real-time operational data with the precision of advanced machine guidance.

Extends the FMS to provide seamless 3D operator guidance for dozers and excavators.



Mine4D Go

Get critical operational insights - Data that adds value

For simple, powerful fleet management that delivers operational insights without the complexity of a full-scale FMS deployment, Mine4D Go is a robust and scalable option for mine sites.

With access to iControl real-time management software to visualise big picture or detailed views of each machine's production, Mine4D Go unlocks critical insights into your site's operations to enable smart decisions and improve results.

Combining simple in-cab operator input and intelligent vehicle location awareness, Mine4D Go calculates complete production cycles for vehicles. Simple to deploy with minimal components, Mine4D Go provides the foundation for an optimised mining operation that can be readily scaled, for fast return-on-investment.

Mine4D Go extracts, records and presents crucial operational data for the effective management of a mining fleet. With the necessary data available to operators and managers, Mine4D Go enables smart decisions that increase safety and productivity at every level.

Manual Production Capabilities

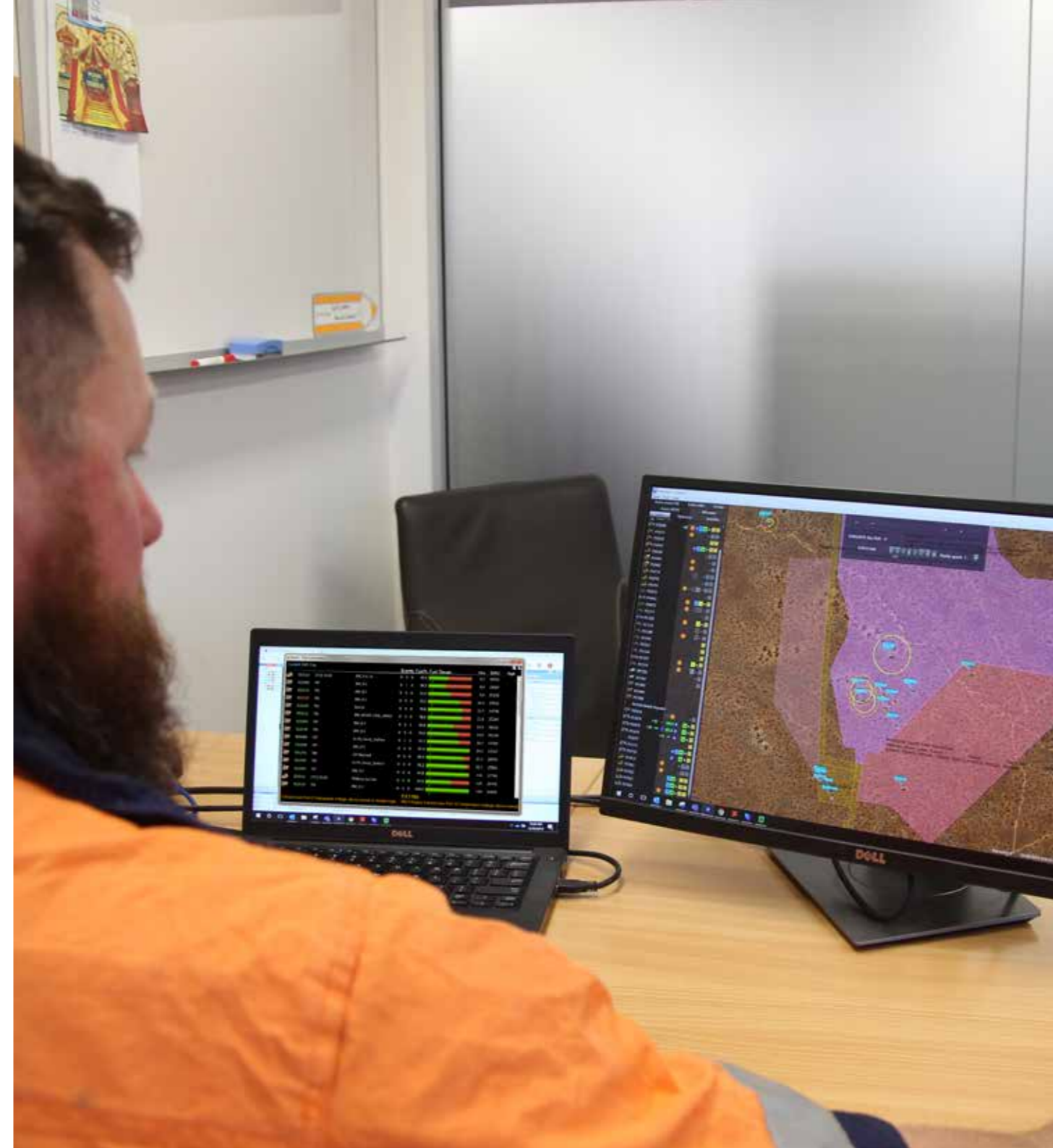
- > Manual load and dump location
- > Manual payload
- > Manual material type
- > Material warnings
- > Dump destination
- > In-cab production statistics
- > Inferred production states

Operator Capabilities

- > Operator login
- > Tracking data to operators
- > Messaging

Time Capabilities

- > Vehicle location
- > Manual SMU hours
- > Speed alerts
- > Activities and delays



iControl

Map Based Visualisation

iControl® is the iVolve map based visualisation tool displaying your fleets' real-time data for a complete overview of the state of the fleet and assets.

Details such as the location and operational status of vehicles; the quantity of material a vehicle is carrying; and the amount of fuel a vehicle currently has are all examples of the information that can be clearly visualised in real-time on the map and other iControl® views.

Data and image overlay sources include:

- > Aerial photography
- > Vector or CAD drawings
- > Databases and GPS

High Precision Machine Guidance

Dozer

Give your operators the power to mine to the design and reduce downtime. With a simple, user friendly interface that can be used across a multiple machine types, Carlson Grade will increase machine productivity and profitability.

- > Correct floor elevation
- > Up productivity via accurate push strategies
- > Reduce idle time
- > Easily mine to the design
- > Reduce survey cost
- > Increase safety with watch and warning zones
- > Track materials
- > Determine accurate overhaul costs



Drill

Accurate drilling = Better Blasting
 Better blasting = Better Fragmentation
 Better Fragmentation = Lower Downstream Costs

- > Get correct angle and depth of all holes
- > Enable correct hole and row distance at bottom of the blast
- > Significantly reduce the need to mark collar points and depth
- > Retrofit to all makes and models of drill rig
- > Reduces blasting and survey costs
- > Customise proximity and warning zones to keep machines in safe working boundaries



Excavator

Carlson Grade for excavators gives operators greater situational awareness through proximity warnings between machines and fixed assets. It also increases safety for surveyors and engineers by reducing survey time in the field.

- > Build to design for better highwall and proper bench elevation
- > Dig to design utilising surfaces or block models
- > Real-time cut/fill/on-grade to multiple design surfaces
- > Build simple or complex pads and slopes
- > Accurately build to elevation offsets
- > Track single or multiple points



Stockpile

Safety Benefits:

- > Increase operator awareness through proximity warnings between machines and fixed assets - machine to machine peer communication
- > Ability to use 2D and 3D watch zones and warning zones by geofencing infrastructure
- > Increase safety by reducing survey time in the field for surveyors & engineers
- > Historical machine playback for incident analysis

Productivity Benefits:

- > Accurate design info & correct floor elevation;
- > Simple screen display for ease of operations
- > Tag delays
- > On-screen ramp and bench design
- > Operator Login available
- > Accurately generate productivity reports
- > Direct import of DXF/DWG files

Utilisation Benefits:

- > Eliminating delays waiting on survey
- > Rapid response to changes through remote or manual upload of designs
- > Real-time locating and playback of where and how machines are being used;
- > Machine utilisation tracking and task analysis
- > Real-time machine system view and troubleshooting capability from anywhere in the world





Command & Control from Anywhere

Carlson Command is an office software platform designed for data collection, analysis and reporting. Accessible from anywhere that has an internet connection, Carlson Command is a monitoring and data management software solution that transmits data from machines to the office and from the office to machines.

- > Productivity analysis
- > Data management of single or multiple sites
- > Direct machine-to-machine communication and data sharing with live and historical 3D machine playback
- > In-cab monitoring and training from the office
- > Full design mapping with real-time cut, fill and elevation information
- > Create and customise tasks, delays and down codes



Top New Features

- > Modern, powerful protocols for machine connection and data transfer to enable lightweight user install
- > Send projects, installs, files and configurations to a single machine or your whole fleet with confidence
- > Advanced data input and real-time transfer means accurate, up-to-date records
- > Required task feature ensures operators are logging their time accurately
- > Manage, view, and create custom reports of multiple As-Built surfaces within the site linework

User-Friendly Web Interface

- > Quick, Easy Report Customisation
- > Cloud Data Management
- > Management of Multiple Sites
- > Scheduled Reporting with Automatic Emails
- > Comfortable, Clear Interface

Powerful Management & Reporting

- > Individual Machine Volume Metrics
- > Dozer Push Metrics
- > Time Reporting
- > Drill Reporting
- > Productivity Analysis
- > Surface Colour Mapping
- > Cut/Fill Colour Mapping
- > Rover Position Trace
- > Historical Replay

Dynamic Productivity Tools

- > On-the-move data exchange (machine to machine)
- > Surface updating
- > In-cab monitoring
- > Tasks & delays/down-codes
- > On-site proximity warnings & avoidance zones

Rajant Kinetic Mesh Networks

Rajant's Kinetic Mesh® is the only wireless network that autonomously adapts to operational and environmental changes in open-pit and underground mines.

In over 230 mines worldwide, Kinetic Mesh networks dynamically evolve to keep applications, equipment, and mine production running on the surface and underground, with no fibre or mobile phone towers needed.

Rajant Kinetic Mesh® provides a mobile mining network that enables mining operators to meet continuous production and industry safety mandates with unwavering network availability. The unique nature of our Kinetic Mesh architecture allows open-pit and underground mines to easily introduce, relocate, or remove network infrastructure – without causing any network downtime – to deliver highly adaptable coverage and continuous connectivity. It's the only network for mining autonomy that runs without fail.

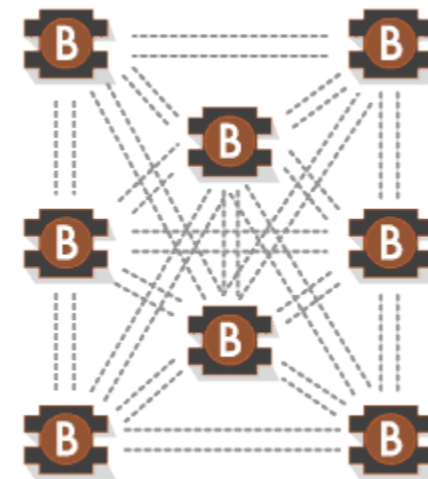
Kinetic Mesh® networks work autonomously to provide optimal connectivity across an organization's dynamic environment of fixed and mobile assets, delivering robust applications in real-time.

- > Total Mobility
- > Proven Resiliency
- > Maximum Bandwidth Utilisation
- > Rapid Scalability
- > Extreme Ruggedness and Security

Backed by Local Support

Aptella provides local support and on-site configuration of your Rajant Kinetic Mesh networks. Our experienced team has deployed numerous Rajant networks successfully for our mining customers.

Backed by Madison Technologies, Australia's B2B wireless network specialists, no other company can offer the expertise and responsiveness of our team to support your mesh network needs.



High Precision Collision Avoidance System

High Precision Collision Avoidance System (CAS) by Torsa is a system designed to avoid collisions and reduce the risks when operating with machinery in the mines.

CAS will analyse with centimetric precision the interaction between every vehicle and the surrounding machinery (including heavy and light vehicles), as well as between the vehicle and untagged objects such as people, lighting plants, bunds, etc. This will assure the safe operation of the vehicles in day-to-day operations in a mining environment.

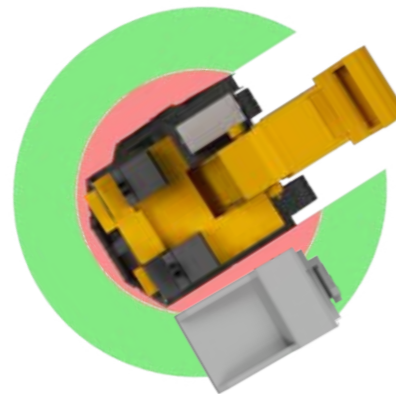
Using a user-friendly interface, operators are aware of all the vehicles and obstacles around them. The system will alert the operators if there is a risk of an actual collision, making the CAS a very effective tool to reduce risks.



CAS For Shovels, Loaders & Draglines

TORSA has a High Precision Collision Avoidance System for Shovels based on LIDAR 3D technology. This system analyses the interaction between vehicles and the shovel itself with 01 cm of precision, guaranteeing safety in the loading operation.

The objective of the system is to inform the operator of the machinery about the type, position and distance of the different vehicles and obstacles around the shovel.



CAS For Haul Trucks

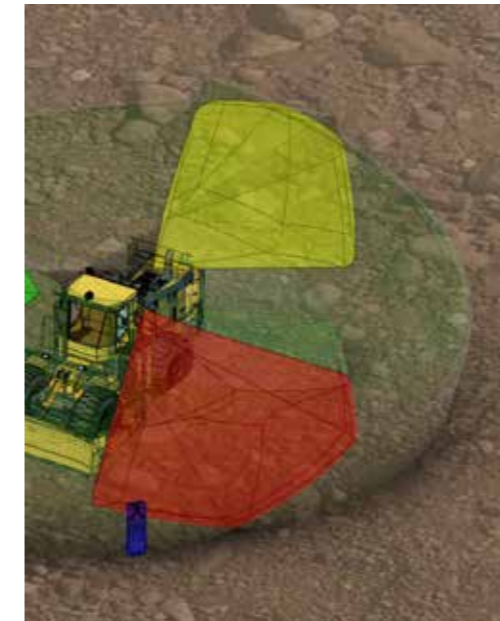
TORSA's Collision Avoidance System for Haul Trucks, Auxiliary and Light Vehicles analyses interactions between vehicles and people to avoid collisions and accidents in mining operations. The system informs the machinery operator about the type, position and distance of the different vehicles, obstacles and people around.



CAS for Underground

TORSA's Collision Avoidance System (CAS) for underground mining operations also has high detection precision and is also capable of acting over the machinery (Level 9) to avoid a possible run over or collision.

TORSA's high precision collision avoidance system for underground mining operations is mainly focused on covering scoops, auxiliary and light vehicles and operating personnel.



Managed GNSS Correction Services

AllDayRTK Focus is a managed service specifically designed for site-wide, reliable correction services to deliver network GNSS positioning with maximum reliability and accuracy.

By supplementing existing AllDayRTK network infrastructure with dedicated site bases, AllDayRTK Focus offers a tailored network positioning solution with managed signal access for specific project teams.

Hosted on a secure, Australian server and backed by Aptella's national team of positioning experts, AllDayRTK Focus delivers ultimate network stability, rapid deployment and project support.

AllDayRTK Focus enables easy, reliable connectivity for all machines and survey rovers requiring accurate positioning services.

AllDayRTK Focus Advantages

- > Support for local, GDA94 and GDA2020 Datums
- > Access to all Multi-GNSS Signals (GPS + GLONASS + QZSS + BeiDou + Galileo)
- > Project wide RINEX data
- > Web support tools, Live status for sites, machines and rovers
- > Sub administration module for detailed management of log-ins and sub-contractors
- > Geo-fence features for automatic access to sites

✓ Ultimate network stability

✓ Fast deployment

✓ Remote and Field Support

Helios Mobile Base Station

Mines often require various bolt-on solutions to enhance their operational efficiency, safety, and compliance. Here are some common bolt-on solutions that might be valuable.

- > **Wi-Fi and Communication Systems:** Reliable internet and communication systems for operational coordination, remote monitoring, and communication between personnel.
- > **Dust Monitoring Systems:** Real-time monitoring of dust levels to ensure compliance with health and safety regulations and to protect worker health.
- > **Environmental Monitoring Systems:** Systems to monitor environmental parameters such as air quality, water quality, and noise levels to ensure regulatory compliance and minimize environmental impact.
- > **Security Cameras and Surveillance Systems:** Enhanced security through CCTV and surveillance systems to monitor the site, prevent theft, and ensure safety.
- > **Remote Monitoring and Control Systems:** Systems that allow for the remote monitoring and control of equipment and processes to improve efficiency and reduce the need for on-site personnel.
- > **Emergency Response Systems:** Emergency alert systems, including alarms, fire detection, and emergency communication systems.
- > **Lighting Solutions:** High-efficiency LED lighting systems for safe nighttime operations.
- > **Weather Monitoring Systems:** Systems to monitor and forecast weather conditions, helping to plan and mitigate weather-related disruptions.
- > **Water Management Systems:** Systems for the efficient use and management of water resources, including recycling and purification systems.

Implementing these bolt-on solutions can significantly enhance the operational capabilities, safety, and compliance of a mining site.



Wireless Deformation Monitoring

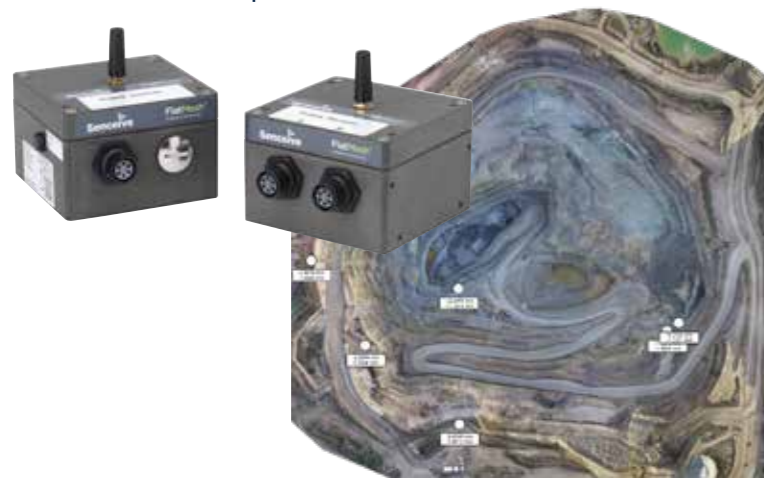
Accurate, High Resolution, Stable And Repeatable

- > Only use high precision, stable sensors
- > Easy to use web based visualisation
- > Multi-level text and email alerts

Innovation And Intelligence

- > Innovate and collaborate closely with / for clients
- > Integrated and triggered imaging and wireless solutions
- > Intelligent solutions support decision making

Our systems are remotely configurable and customisable. They facilitate predictive remote asset knowledge and understanding to improve predictability ahead of failure, assets can be repaired, replaced or maintained ahead of catastrophic failures.



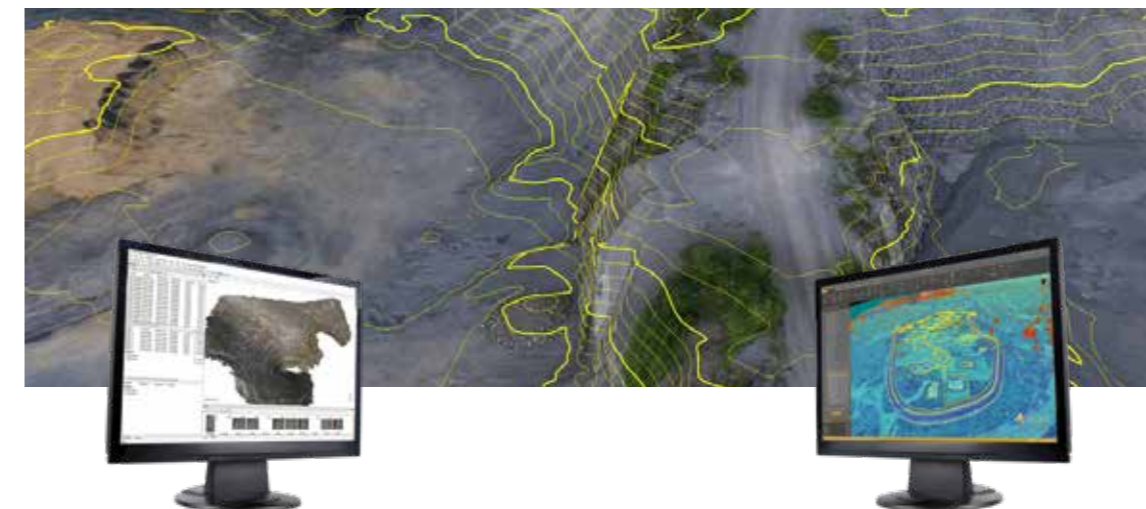
Mine Grade Survey Drones

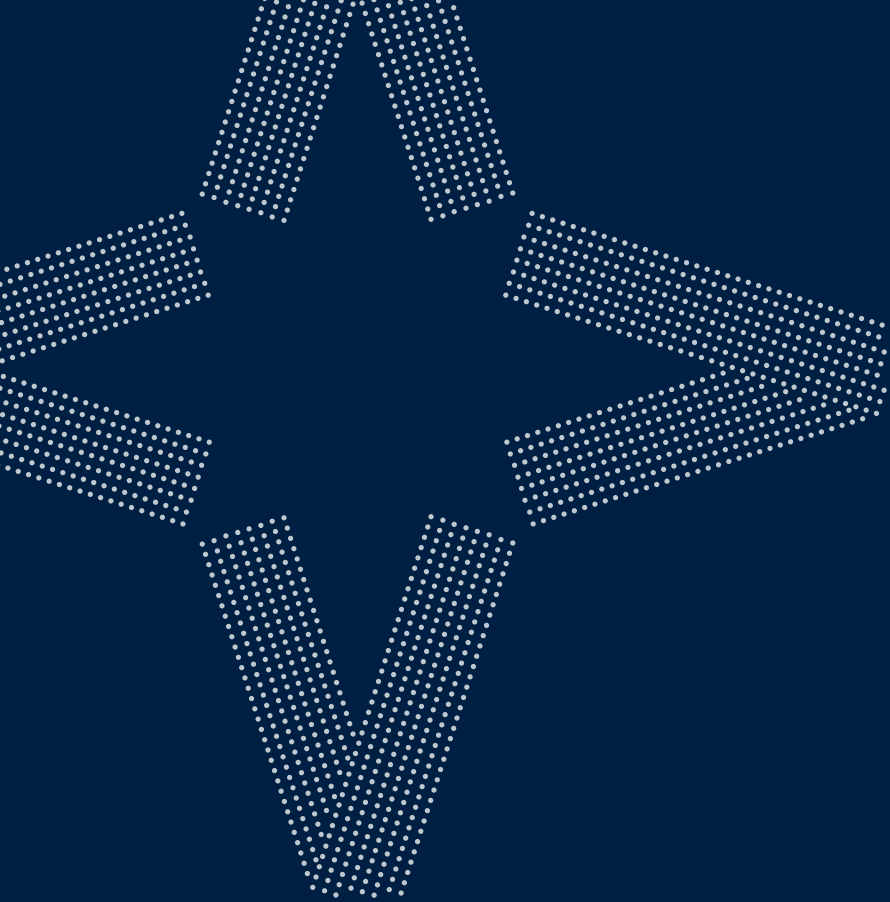
Remotely Piloted Aircraft Systems (RPAS)

Aptella has an expert RPAS team to assist with training and technical support of your survey drone technology. With complete packages that cover hardware, photogrammetry software and visualisation tools, we ensure you have a robust solution backed by superior customer service and dedicated support.

From the Trinity F90+ Vertical Take-Off and Landing (VTOL) aircraft to map large areas with high accuracy, to a range of multi-rotor drones ideal for stockpiles and inspections, Aptella will work with you to find the best solution for your aerial mapping needs.

As the first company to introduce survey drones for mapping applications in Australia, we offer end-to-end, field tested solutions.





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➤ SOLUTION READY

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