Position Partners – AllDayRTK

High Accuracy Positioning Services

Space Weather Users Workshop – Sydney 2017

James Millner Position Partners


“Position Partners Is Australia's largest company focused entirely on high accuracy positioning services”
- Martin Nix CEO

About Position Partners

- A team you can rely on with diverse expertise: surveyors, engineers, factory-trained technicians
- Support wherever and whenever you need it with branches throughout Australasia & South East Asia
- Partnered with world-leading technology innovators

Core services

Geospatial, positioning and *connected* solutions

MACHINE SYSTEMS

- Compatible with all makes and models of earthmoving & mining equipment
- Automated haul count
- On-Board weighing (scales)
- Automated paving systems

SITE MANAGEMENT (IoT)

- Tokara remote support & tracking
- ***AllDayRTK CORS network***
- Site connectivity hubs
- DynaRoad mass haul & planning
- iVove Intelligent Systems
- Site monitoring

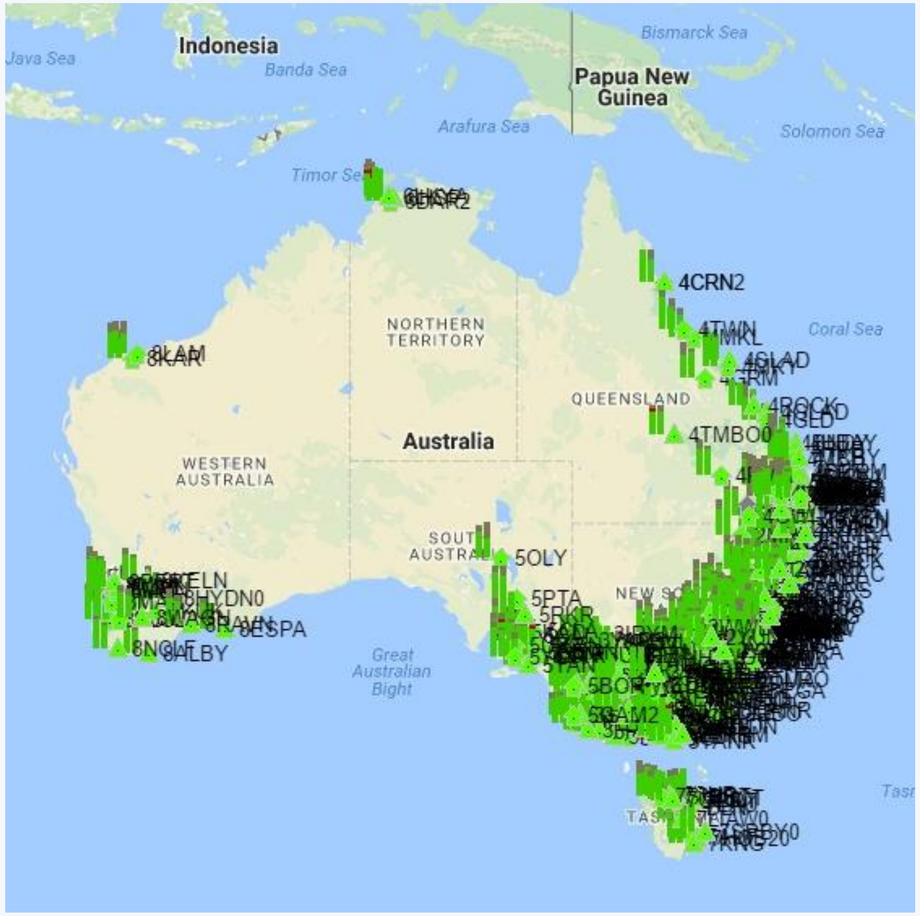
GEOSPATIAL TECHNOLOGY

- Optical & GNSS positioning
- 3D laser scanning
- Unpiloted Aerial Systems
- 3D Mobile Mapping
- Field & Office software
- Deformation monitoring

Managed Services

The Position Partners difference

AllDayRTK National Positioning Infrastructure



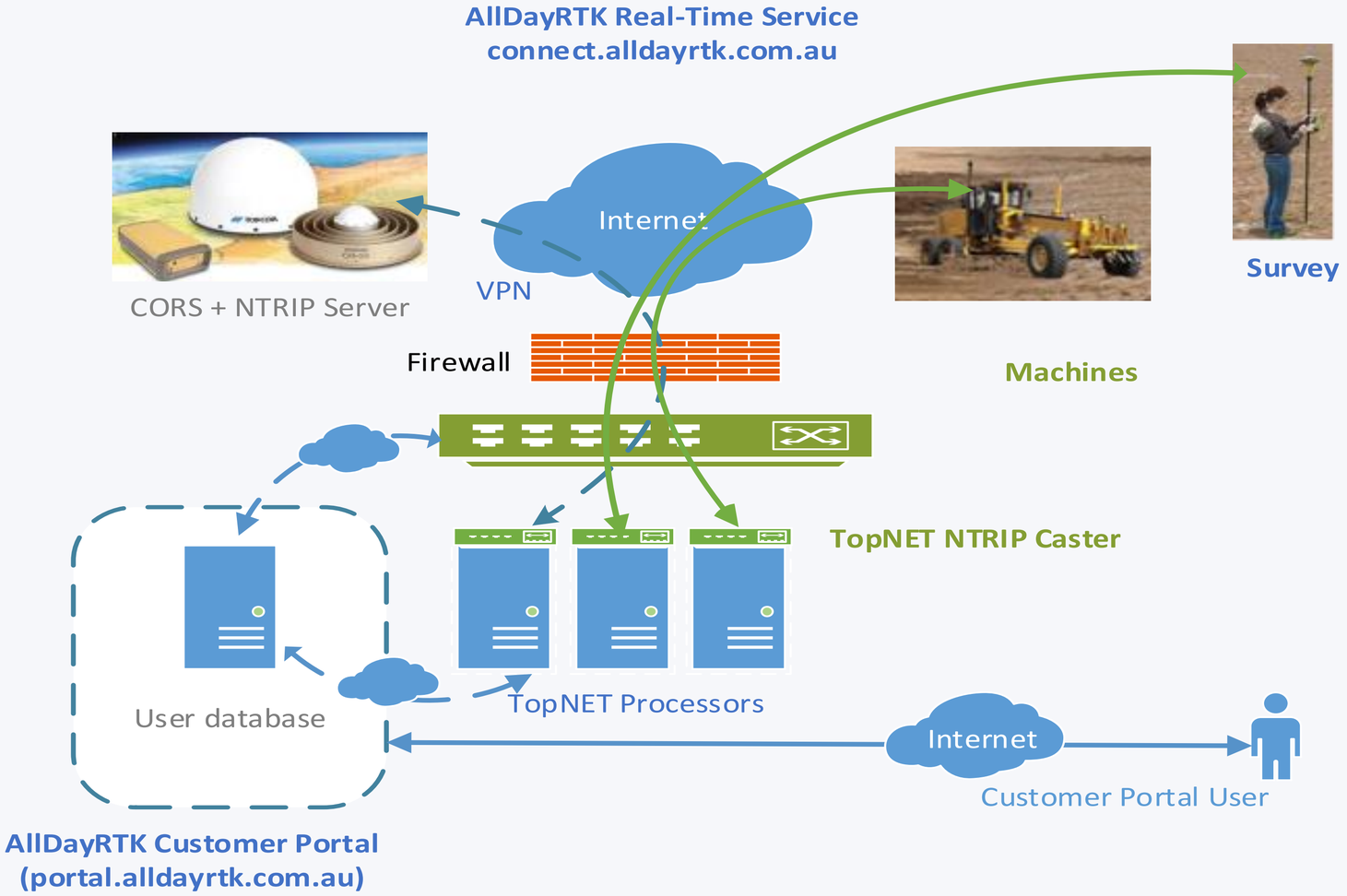
AllDayRTK is a national high accuracy positioning service purpose built to meet the rigour and quality required for the demanding applications of automated machine guidance

AllDayRTK integrates CORS Continuously Operating Reference Stations from all levels of government: Local, State and Federal to provide a seamless network right across Australia

With over one hundred additional privately owned and operated CORS using state-of-art processing techniques from dedicated Primary and Redundant back up data centres – our team offers the reliability to get the job done now and for the applications of the future

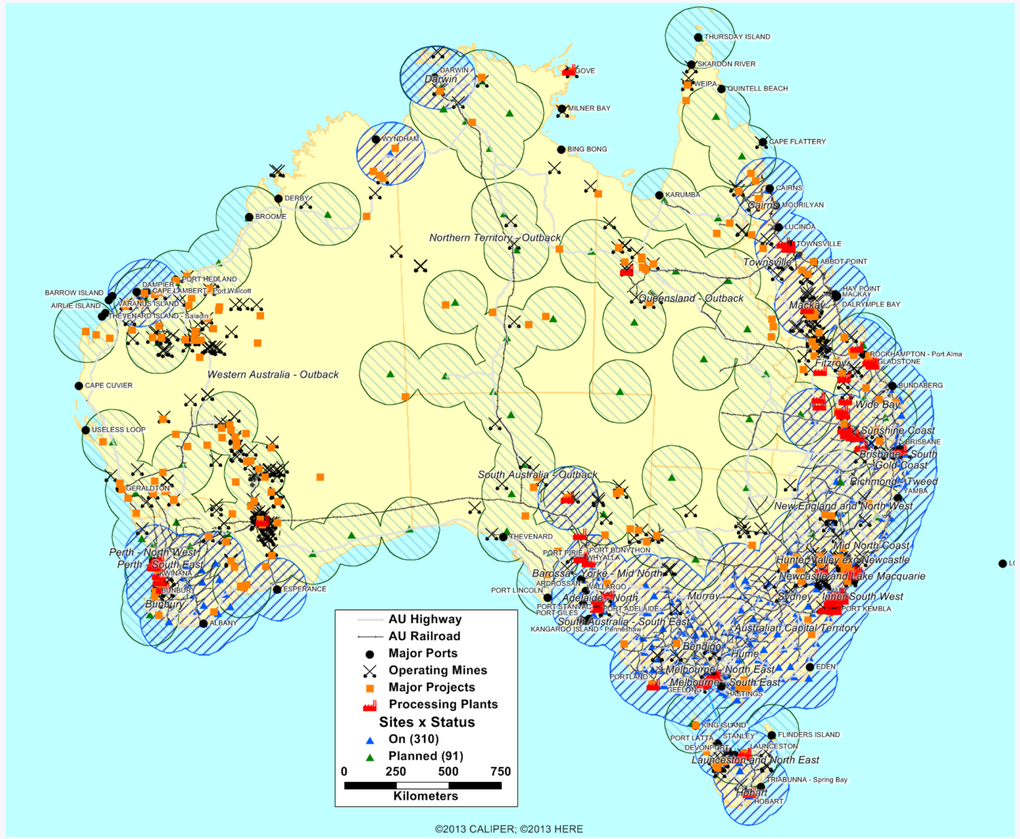
CORS Infrastructure

AllDayRTK generic real-time schematic



Emerging applications

High Activity and priority areas 2018:



Coverage of High Activity Areas
Target - 99% population/dwellings

Note:
Assumes 3G/4G mobile network or wireless NBN

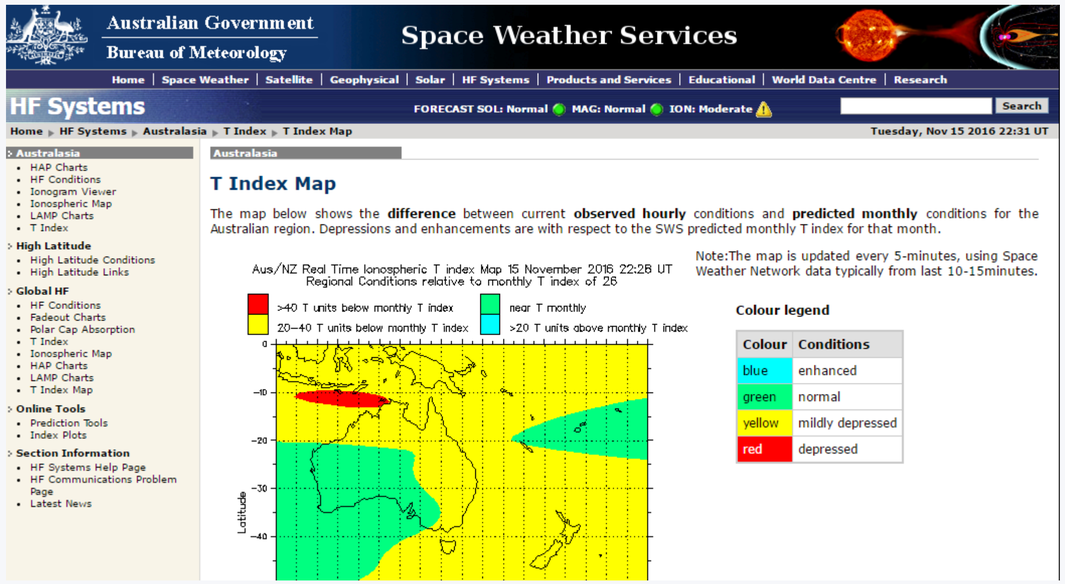
Applications

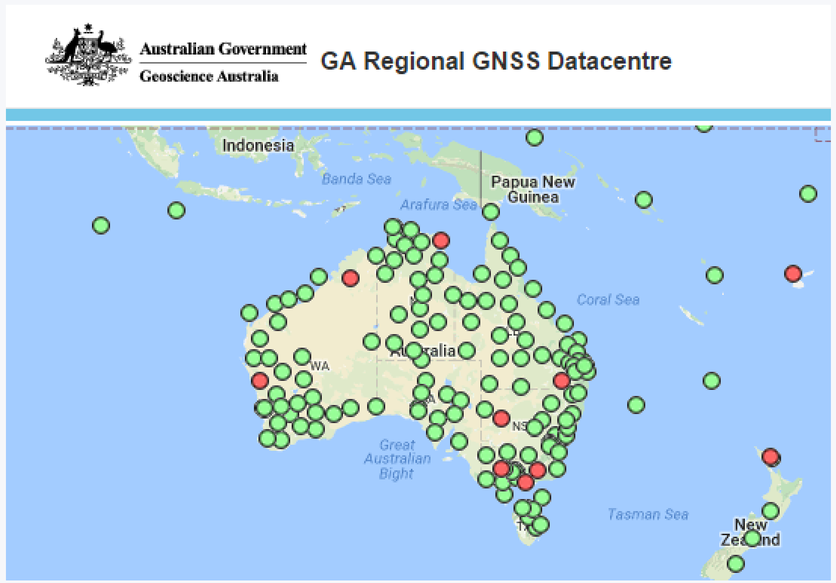
- Agriculture
- Mining / Landfill
- Major Road and Civil projects
- Utilities and LGA's

Areas without mobile require SBAS/ PPP/RTK
See research:
CRCSI QZSS LEX / SBAS test bed
GA/BoM Ionosphere and Multi-GNSS

Research Development Activity

Ionospheric models for PPP/RTK - BoM
National Positioning Infrastructure Processing Centre - Geoscience Australia
Multi-GNSS, Precise Orbits and Clocks, Datum 2020 - CRCSI





Australian Government
Bureau of Meteorology

Australian Government
Geoscience Australia

Research Development Activity

Multi-GNSS and QZSS LEX Delivery – RMIT / JAXA / CRCSI

Case Study looking at industry adoption of PPP-RTK by Masters Student Luis Elneser

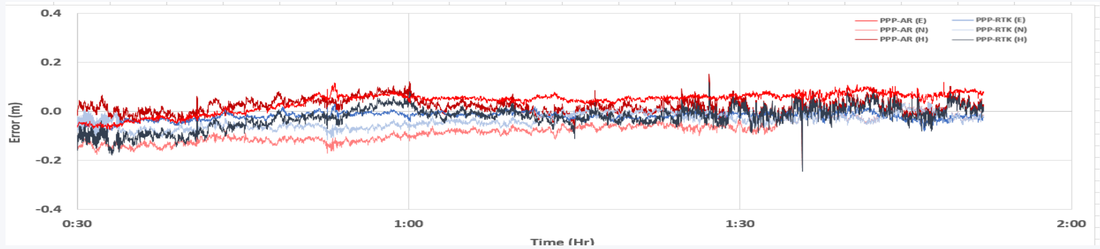
(Results published IGNSS 2016 Presented ION 2017)

- Dozer's navigation system split into different solutions
- Local RTK, NRTK, PPP-AR, PPP-RTK
- Direct comparison with Dozer's navigation system
- Delivery through UHF Radio, Internet, LEX

Preliminary Results: Accuracy

PPP-AR <100mm solution 82% (H), 65% (V)

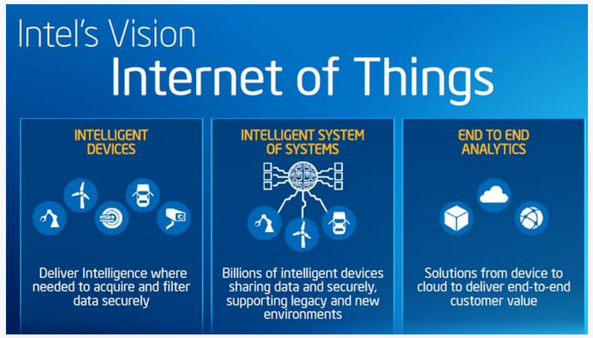
PPP-RTK <100mm solution 95% (H), 86% (V)



Positioning Infrastructure – empowered by “IoT”

The “cloud”

IoT Platform



thinxtra

Empowering Internet of Things

IoT Applications

“GNSS of Things”

AUSTRALIAN smart communities association

Narrowband

Broadband

Scaling up Performance

DEVICE

Monitoring

Geomatics

NRTK + Telematics
+ Remote support

Situational awareness
Collision avoidance

AllDayRTK FOCUS

Industry Applications (Large to small)

Singapore Terminal 4 and 5 development

Changi T5 built on reclaimed land will be bigger than T1, 2 and 3 combined
initial capacity of up to 50 million passengers a year,
with a provision to increase this to 70 million if needed.

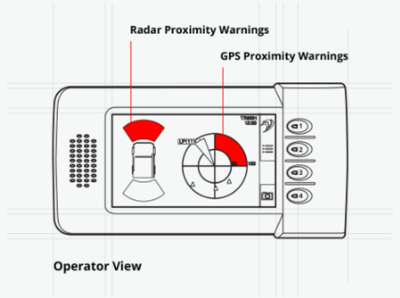
Real-time Intelligent Systems

safety awareness

Safety through Situational Awareness

Enhanced situational awareness for operators of light and heavy vehicles with visual and audible alerts.

Safely reach and exceed production targets while dramatically lowering incident numbers and personnel/plant risk exposure.

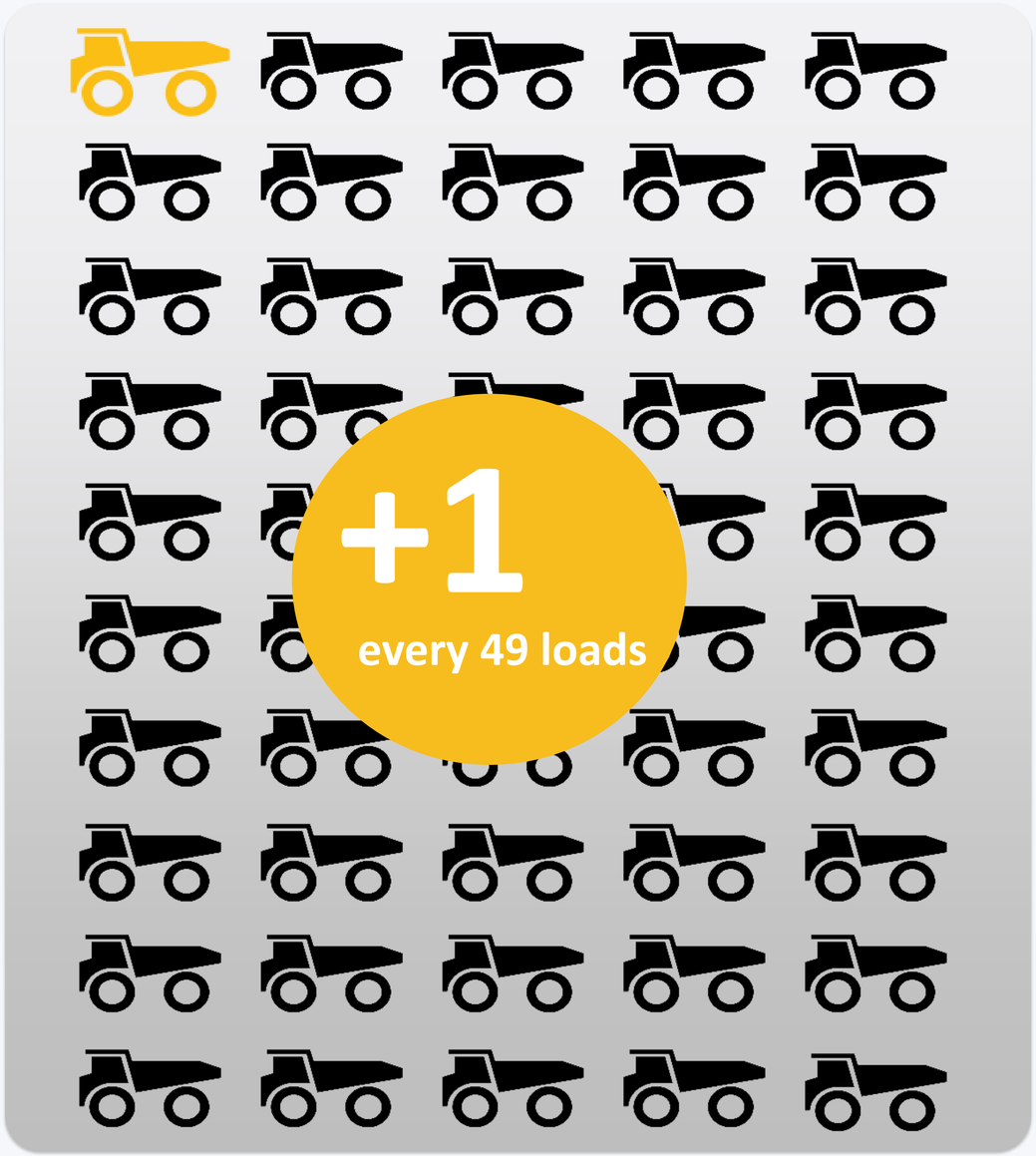


IVOLVE.COM

OPTIMAL TRUCK LOADING

IVOLVE.COM

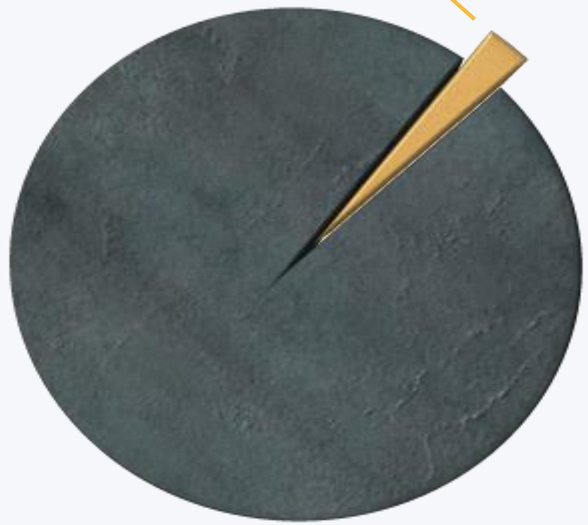
Position Partners



Scenario:

If trucks are being under-loaded by only 5t (2%) each load cycle.
(245t for 250t target)

Additional 324,000t / month

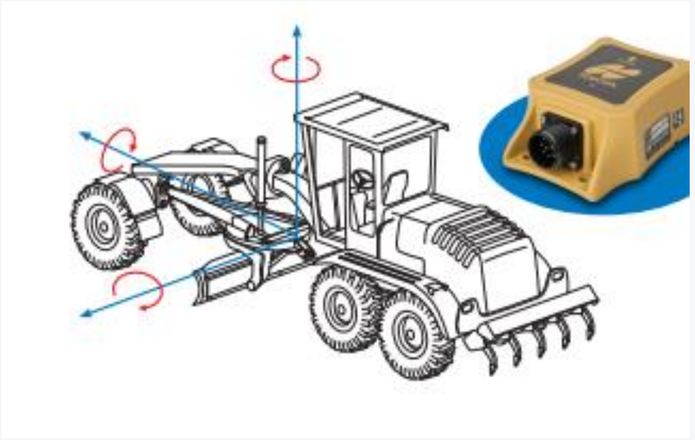


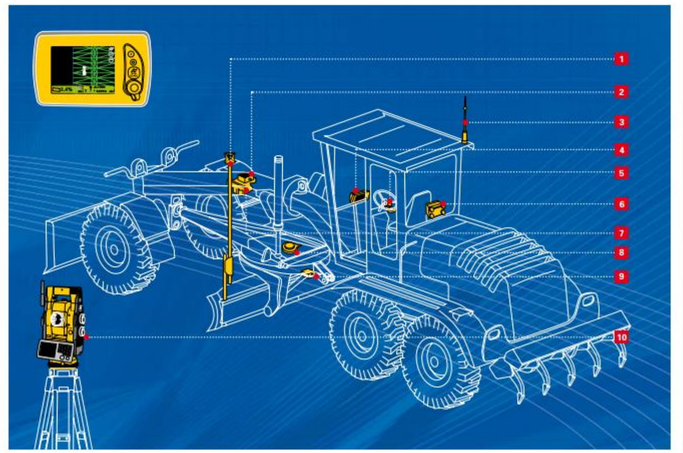
Statistics:

- 15 min cycle time = 4 cycles/hr/truck
- 9 hours working time/shift = 36 loads/shift/truck
- 250t target trucks = 9000t/shift/truck
- 30 truck fleet
- Nominal tonnage per shift = 270,000
- Nominal tonnage per month (30 days) = 16,200,000

Paving without pegs

Graders for civil works require lots a kit





3D Dozing

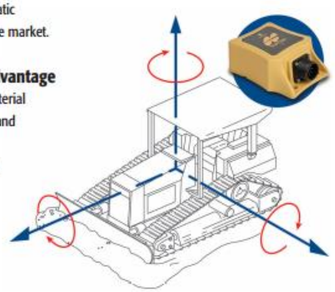
How it works

3D-MC² combines the Topcon GX-60 control box, GNSS antenna, MC-R3 receiver and a revolutionary inertial sensor and pairs them with an advanced control software to provide an overall system 10 times more responsive than previous 3D machine control systems. This configuration measures movement and rotation in all directions to provide the most stable and responsive automatic control system available in the market.

The Topcon 3D-MC² advantage

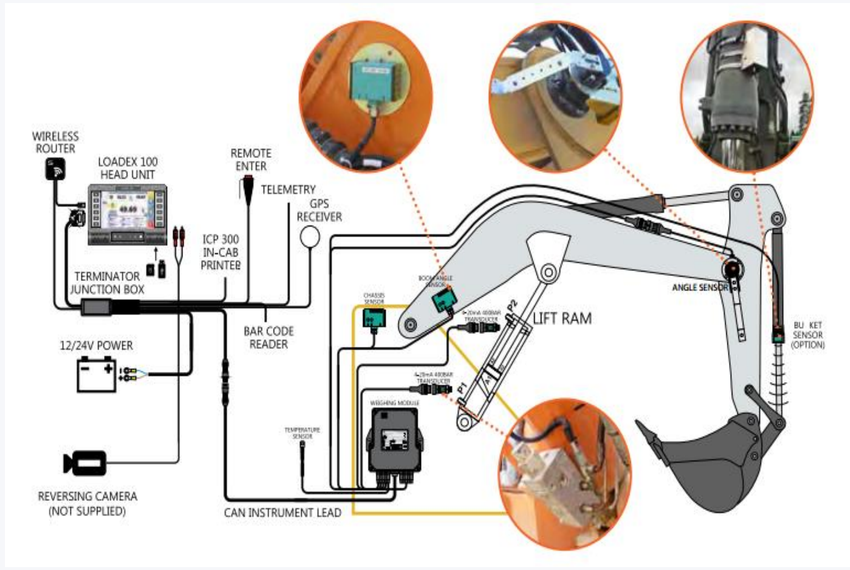
Now you can move more material at higher speeds, accuracies and with fewer machines.

That's the Topcon advantage.



- Single or dual antenna
- Eliminates the need for GNSS antenna mast and cables for the blade
- 6-way blade control
- Increased blade response
- Accurate as-built data for volume and productivity reporting

On-Board Weighing Systems (scales)



Telematics site management and remote support

Tokara Link - Connect in real-time

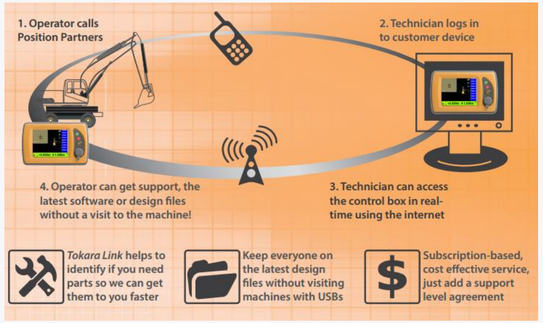
Your link to increased productivity for earthworks & civil construction projects

Tokara Link is an Australian-designed telematics solution created specifically to improve efficiency and productivity for earthworks and civil construction projects.

Using a modem installed in the machine, Tokara Link connects your machines to the office, provides access to Position Partners' technical support and links you to any GPS network required for the job. It's a must-have money saving tool for every Topcon machine controlled machine!

Your link to instant support

Save money by reducing service callouts and solving issues remotely - simply choose the right Support Agreement to suit your needs and receive instant support from qualified support technicians, wherever you're working.



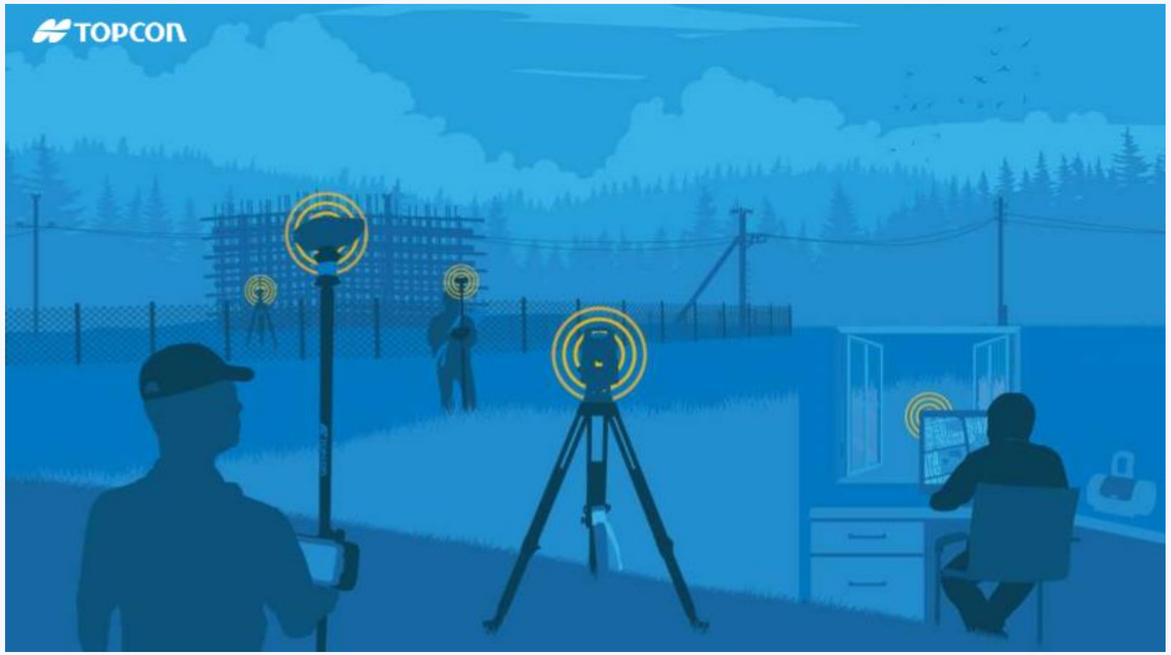
Tokara Tracking - Optimise your fleet

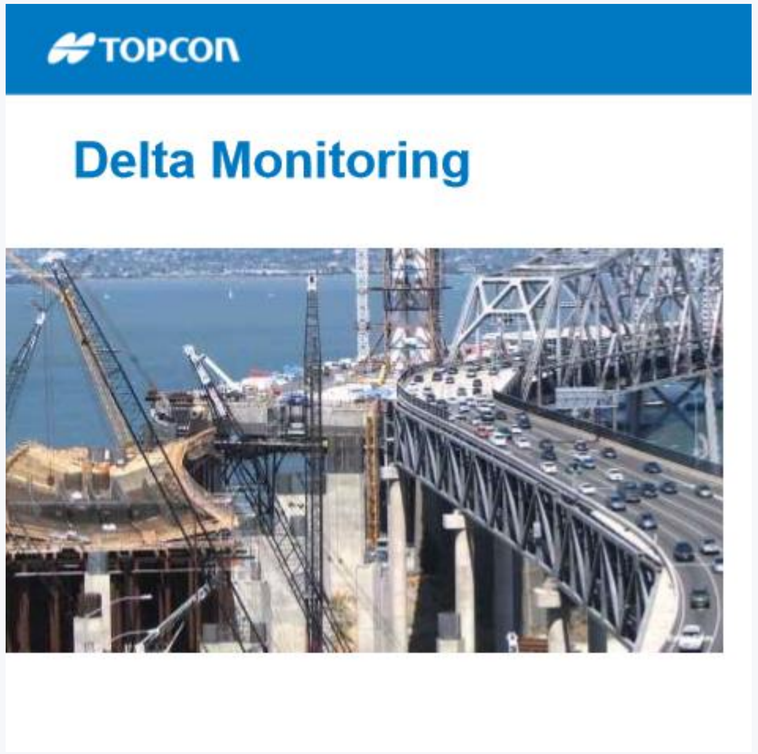
Total Job Site Management System

RPAS – “Start to finish” survey

Video: RPAS bundles Video youtube
https://www.youtube.com/watch?v=mU1I_CK9IWg

Deformation monitoring detecting changes





“Tiny Surveyor” (line marking robots)

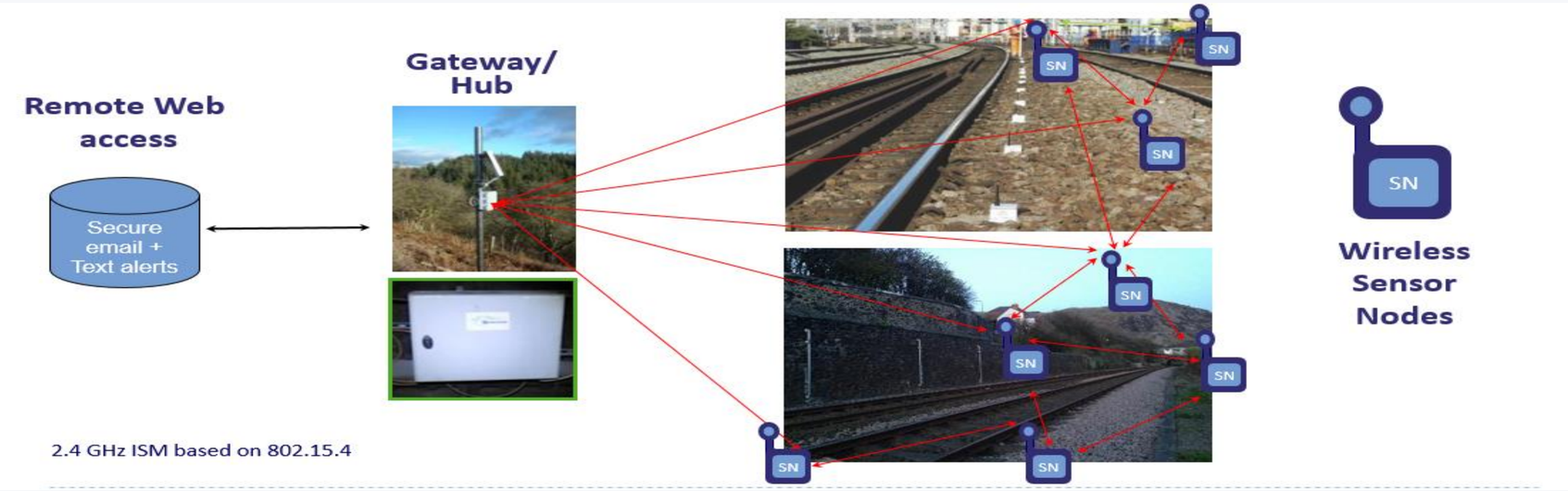
- Weatherproof
- Long-range remote controller
- Reads data from USB stick
- Works for eight hours on one battery
- Integrates with survey GNSS receiver
- Automatically marks points and lines

Weighs 18 kg
Speed 7 Km/h
Capacity 750 ml (paint)

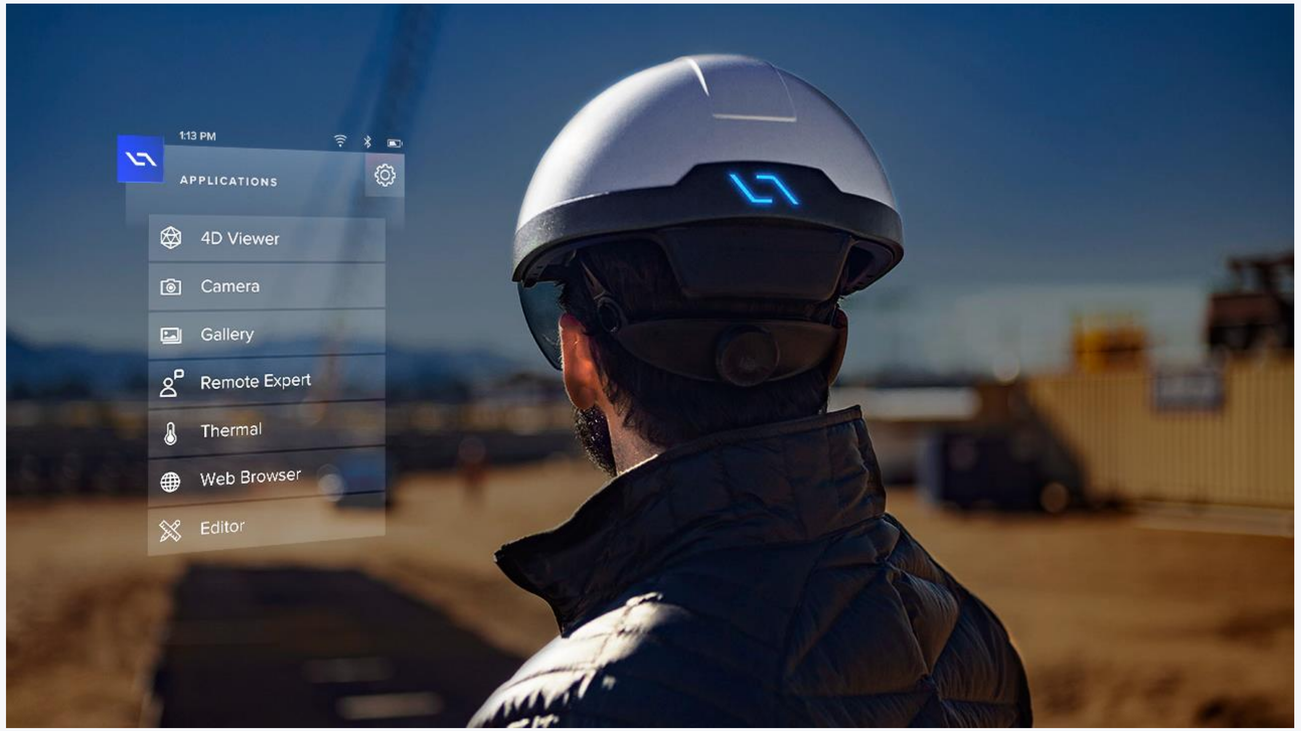
Senceive IoT devices for geotechnical movements

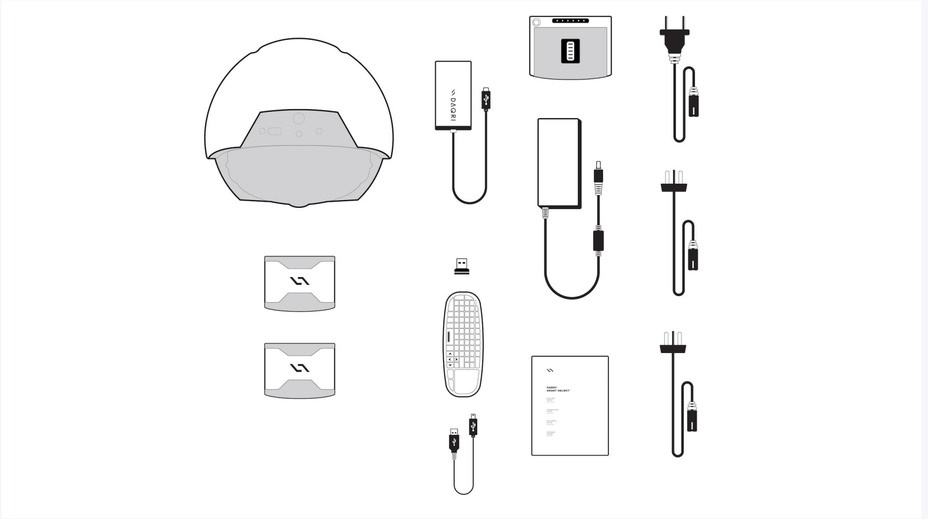
Integrated camera and wireless nodes with automatic image triggering

Senceive monitoring solutions



Smart helmet – future or now?





https://daqri.com/