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
Automation - Geospatial, with 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
• Tokara remote support & tracking (IoT)
• AllDayRTK CORS network (IoT)
• Site connectivity hubs (IoT)
• DynaRoad mass haul & planning (IoT)
• iVove Intelligent Systems (IoT)
• Site monitoring (IoT)

GEOSPATIAL TECHNOLOGY
• Optical & GNSS positioning
• 3D laser scanning
• Unpiloted Aerial Systems
• 3D Mobile Mapping
• Field & Office software
• Deformation monitoring
Our Partners
World-leading technology innovators
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.
AllDayRTK Current Operational Status:
Sydney High Availability Data Centre (DC)

Production Servers
Sydney high availability DC
• Primary: over collaborative 300 sites
• Focus (Managed) Services: over industry 70 sites

Disaster Recovery
Perth DC hot/hot replication
Test environment
Perth DC – National Positioning Infrastructure NPI

Current Coverage ~98% population and dwellings east coast
Target coverage - High activity project areas and all NPI sites (new 2020 datum)
National Positioning Infrastructure: Datum 2020

Perth DC - Disaster Recovery - Multi-GNSS test platform and Datum 2020 Integration

National Network
All sites operated by Geoscience Australia:
NT/SA/QLD/WA/TAS

Integrate ITRF Datum 2020
Multi-GNSS and Ionospheric test platform

State Networks
NSW/LPI Spatial Services Department of Finance, Services and Innovation
VIC/DELWP
Land Use Victoria, Department of Environment, Land, Water and Planning

Integrate ITRF Datum 2020 and multi-GNSS
High Activity and priority areas 2017:

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

Note: assumes 3G mobile network or wireless NBN

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

Areas without mobile require PPP/RTK
See research: QZSS LEX
GA/BoM Ionosphere and Multi-GNSS
AllDayRTK generic real-time schematic

- AllDayRTK Real-Time Service: connect.alldayrtk.com.au
- CORS + NTRIP Server
- VPN
- Firewall
- Machines
- TopNET NTRIP Caster
- TopNET Processors
- User database
- AllDayRTK Customer Portal: portal.alldayrtk.com.au
- Internet
- Survey
- Customer Portal User

Emerging applications

START TO FINISH Survey Solution
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 to be published IGNSS 2016)
- 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
La Trobe Valley Coal

Case Study looking at industry adoption of PPP-RTK

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, satellite communication (QZSS-LEX)
La Trobe Valley Coal

Case Study looking at industry adoption of PPP-RTK

“AR” Ambiguity resolved PPP Preliminary Results: Accuracy /Time
“RTK” SSR method + local Slant-TEC

Convergence time
PPP-AR  <100mm ~20min (H), ~30min (V)
PPP-RTK <100mm ~6min (H), ~18min (V)

Accuracy
PPP-AR  <100mm solution 82% (H), 65% (V)
PPP-RTK <100mm solution 95% (H), 86% (V)

further information contact Luis Elneser LElneser@positionpartners.com.au
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

further information contact James Millner jmillner@positionpartners.com.au
Positioning Infrastructure - Height Augmentation
Case study Paving systems

mmGPS on C&G machines
Flexibility on the Jobsite
Topcon SmoothRide – finished surface is critical factor
profiling and paving solution for Singapore Changi Airport T4 / T5 developments

The SmoothRide product uses a combination of technologies for Paving and Profiling operations on the new T4 and T5 Changi East developments allowing 135 million passengers by 2025.

Collect > Design > Control
CORS (Net-G5) scanners > Profile (Spatial) > point clouds of existing surface > design software constantly displaying value and tonnage of material > compare existing surface to design allowing variable thickness > Consistent smooth surface

further information contact Jeff Bratton JBratton@positionpartners.com.au
Positioning Infrastructure - empowered by “IoT”

Increasing speed of data transfer

Increasing number of devices connected

Reduced power and reduced cost

Further information contact James Millner jmillner@positionpartners.com.au
“GNSS of Things”

Narrowband
- SIGFOX
- LoRa

Decreasing Power
Scaling down Complexity

Broadband

Increasing Power
Scaling up Performance

Monitoring
- UNB
- LoRA

Situational awareness
Collision avoidance

Geomatics
- TOPCON

NRTK + Telematics + Remote support
Design > Build > Control

Sensceive
- Wireless sensor monitoring

AUSTRALIAN
- Smart city solutions association

Geotechnical, Structural & Environmental sensors

ivolve
- Real-time machine intelligence

CISCO
- Jasper

Tokara Link - Connect in real-time

All Day RTK

FOCUS

5G Mesh network at Port of Brisbane for bulk commodity – each machine was a “node” in the 5G network mesh

Further information contact Andrew Granger AGranger@positionpartners.com.au
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.

The system utilises the following integrated technologies:

1. Long-range GPS-based collision awareness system which has evolved directly from the aviation industry, is the primary Proximiti system, and provides long-range collision awareness alerts at high vehicle speeds.

2. The short-range radar-based collision awareness system is the secondary Proximiti system and provides close range proximity detection alerts at low speeds.

3. iVolve's Nexis™ provides the integration and communications platform for the Proximiti system. Intelligent switching between long-range/high-speed GPS and short-range/low-speed radar is managed by Nexis™ based on a number of parameters including vehicle speed and satellite communications availability - in the event of loss of sufficient satellite bounce for the GPS system, Nexis™ automatically alerts the vehicle operator and switches Proximiti alerting to the radar system until satellite visibility is once again available. This has specific implications for mining in work areas close to open-pit high-walls.

Further information contact Andrew Granger AGranger@positionpartners.com.au
NRTK + telematics for site management

3G and 4G wireless networks for telematics and site management: Design > Build > Control

further information contact Aaron Krenske AKrenske@positionpartners.com.au
Deformation monitoring

Delta Link Communications options include Ethernet, Wi-Fi, and SIM

further information contact Heath Low HLow@positionpartners.com.au
Senceive Wireless Condition Monitoring

Wireless Mesh Integrated camera and wireless nodes with automatic image triggering
Example used on Toowoomba Range 2nd crossing project

Further information contact Heath Low HLow@positionpartners.com.au
Products: Senceive monitoring solutions
Thixtra - IoT example Sens’IT

Established System providers involved with IoT

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Wearables

Connected Home & Smart Buildings

Industrial IoT

Smart Utilities & Energy

Agricultural IoT, Remote Sensors

UAV/Drones

Healthcare

Connected Car & Fleet

OBJECT DATA

SIGFOX NETWORK

SIGFOX CLOUD

CUSTOMER IT
RPAS - “Start to finish” survey

Video: RPAS bundles Video youtube
https://www.youtube.com/watch?v=mU1l_CK9lWg

further information contact Gavin  GDocherty@positionpartners.com.au