



GeoPositioning Solutions



SYNERGY 
POSITIONING SYSTEMS

www.synergypositioning.co.nz
info@synergypositioning.co.nz
Phone 0800 867 266

Topcon GeoPositioning Solutions

Topcon is a leading manufacturer of high-precision GNSS, optical and workflow solutions for the global surveying, mapping and construction industries. The Topcon line of advanced products are designed for a wide range of geospatial applications, providing data-rich results.

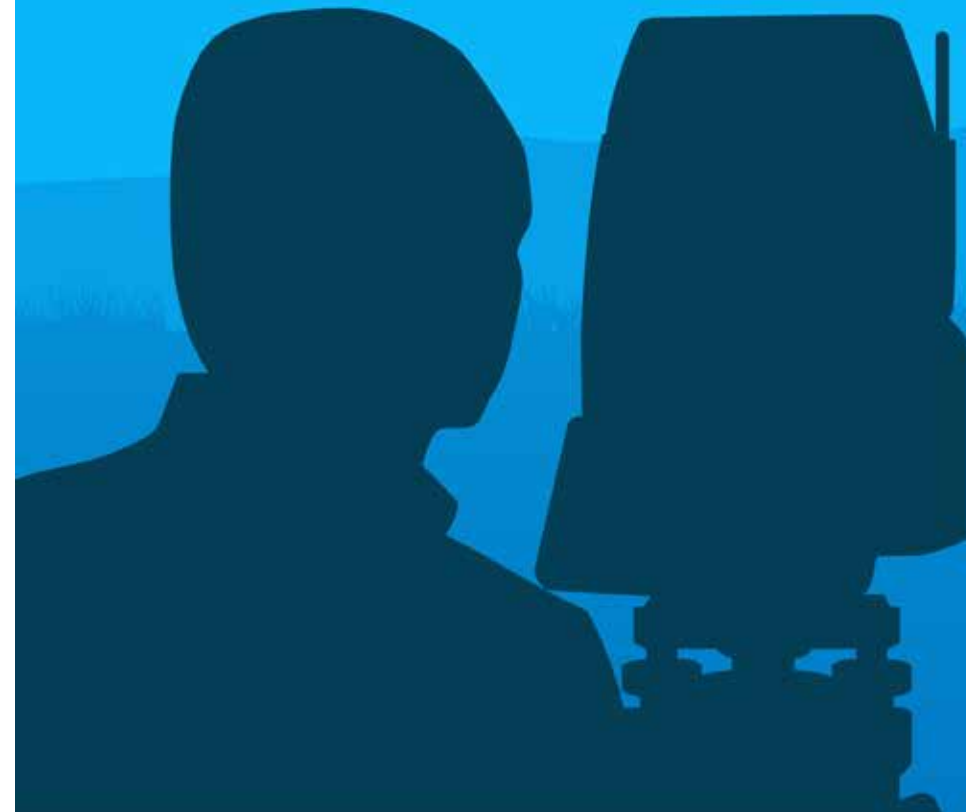
Topcon Enterprise Solution workflow management system, working hand in hand with Topcon GNSS and optical products, is designed to connect all sites, all data, crews and equipment offering constant communication, data sharing, scheduling, updating, supporting and accurate productivity in real time, independently of the field work or the office location.

Topcon is committed to developing solutions with a spirit of innovation that drives precision, efficiency, and productivity.

**YOUR PRODUCTIVITY.
TECHNOLOGY.**

Land and Topographic Survey

Surveying has been an essential element in the development of the human environment. Surveying is used in the fields of transport, building and construction, communications, mapping, and the definition of legal boundaries for land ownership.



The connected strategy

Civil Engineering

After the property boundary is resolved, the next step is civil engineering. Civil engineering deals with the design, construction, and maintenance of the physical and naturally built environment, including roads, bridges, canals, dams, and buildings.

Construction Layout

Construction layout includes staking out reference points and markers that will guide the construction of new structures such as roads or buildings.

Infrastructure Network and Geoscience

Infrastructure network and precise scientific applications include permanent network reference stations, monitoring for buildings, bridges, dams as well as other natural and manmade structures.



Land and Topographic Survey

The foundation of construction, utility management, subdivision design, and any civil engineering projects is land surveying. Land surveying extends beyond land surveyors too; university, scientific, GIS asset management, pipeline survey, and draining studies. The speed and repeatability of GNSS solutions are a demonstrated

asset for modern field data measurement. GNSS systems are a proven part of the crew. Arrive with Topcon GNSS gear on a site without any existing control and immediately begin work with HiPer SR, HiPer V, GR-5 base and rover RTK system.





Civil Engineering

From this “original or natural ground” survey, all utilities and foundations are planned. When it rains, where does the water go? After the design work is complete, the 3D design of the project site is marked with construction staking. The quality of construction staking is controlled by the Topcon software and the user.

The GNSS receiver provides confidence and speed for the precision required at this stage. At any time of the project, Topcon GNSS receivers are flexible enough to perform as either base / rover RTK systems or one-man, instant-on network rovers.





Construction Layout

From road design with basic and advanced staking and reporting of designed data including roads, surfaces, points and lines, to project completion, tolerances need to be met. As a GNSS receiver is being used to stakeout / navigate to a design point, MAGNET Field will instantly notify if field measurements are being met. Topcon field software is customizable for the type of construction layout being performed. It also provides quick confidence checks before a project proceeds to the next stage.

A Topcon GNSS receiver, like the HiPer SR, is very helpful for use in combination with optical total stations to perform a Hybrid Positioning data collection. The “value” is to increase vertical precision from an optical total station. However, the GNSS receiver on top of the prism keeps field crews productive in dynamic project environments.





Infrastructure Network and Geoscience Applications

Infrastructure Network and Geoscience applications require very high measurement accuracy, integrity, reliability and availability. Infrastructure networks or permanent reference stations are based on precision and power. A departure from the idea that you would take the oldest receiver in the closet and make it a reference station. To the contrary, the reference station receiver needs to be

the most powerful part of the network system. The one to track and use all possible satellite constellations and signals, current and proposed. Topcon's GNSS network systems are cloud-based and scalable for the future and support technologies to monitor and deliver high precision measurements.



Workflow

Working with Topcon Enterprise Solutions streamlines the workflow for field crew, office personal, and manager. This workflow is designed to connect all sites, all data, crews and equipment offering constant communication, data sharing, scheduling, updating, supporting and accurate productivity in real time, no matter where the job or the office is located.

A connection to Topcon secured cloud-based software not only benefits field personnel, it also contributes to quality and accurate results providing real time information to decision makers.

Collect

The experience Topcon has in providing positioning solutions for the field is vast. Selecting the best solution is critical to your success. These solutions operate through a colorful, graphical interface – and all connect back to the cloud. All work seamlessly with a variety of file formats for an easy workflow.



HiPer SR



Tesla with
MAGNET Field



FC-500 with
MAGNET Field

Cloud-Sharing

Staying competitive means staying efficient. Once your field work is completed, you can effortlessly upload your data to your company's safe and secured cloud storage. Your field work is then instantly available to office staff. No more missing a critical file or working from a dated version – the collaboration on moving along the project has just started with the field crew and office personnel in communication in real time. The modern workforce leverages the cloud to not only have instant access to project files, but to verify progress of ongoing projects, host their own mobile base receivers, and even cloud surf with Autodesk's AutoCAD 360 service.



MAGNET Office

Productivity

Time is money. Topcon's MAGNET Enterprise environment is the first step for managers to keep projects productive. Topcon's cloud-based software is a proven component to quickly create georeferenced projects, coordinate office and field staff, centralize all project related data, and stay informed. Topcon's cloud-based software provide a secure method to store all project related data within a customer's private Company Account. Through permissive sharing, field crews and office staff have instant access and are empowered to keep the project productive.



MAGNET Enterprise

Hardware Solutions

Topcon is proud to be the world leader in advanced satellite positioning technology. As the original pioneer of dual-constellation with GPS and GLONASS constellation integration, Topcon continues to lead all other manufacturers with the most sophisticated receiver technology and design.

From the low cost and most versatile receiver, HiPer SR, to the most forward-thinking and powerful, NET-G5, Topcon's GNSS cutting edge product line offers flexibility while keeping you on top of the game with your project deadline and budget.



Tablet Field Computer

Topcon Tesla

Designed for rugged job sites. The Tesla field controller with MAGNET Field software connects to the cloud to keep you and your work always up-to-date, always on schedule.

- Waterproof
- Daylight readable screen
- Integrated imaging



Site Receiver

HiPer SR

The HiPer SR is the most compact, rugged, versatile, lightweight and cable free design of any fully integrated RTK precision receiver on the market. HiPer SR makes the perfect affordable, small job sites system.

- Cellular modem option and a dual SIM cellular cards
- LongLink with interference-free communication for up to 300 meter range
- Hybrid Positioning solution with optical total stations



Dual Frequency GNSS Receiver

HiPer V

The HiPer V is designed with a Magnesium alloy housing to be rugged enough to perform RTK measurements in tough construction or survey environments. It is also waterproof IP67 with ports, speaker and battery door completely sealed from dust and water.

- HSPA or CDMA cellular modem
- Spread Spectrum or Digital UHF II Radio
- Voice alert messages to keep you informed of receiver status



Advanced GNSS Receiver

GR-5

The GR-5 is a multi-constellation and fully integrated radio and cellular configuration RTK receiver. The mechanical design of the GR-5 makes it incredibly reliable, ergonomic, and durable with update rates up to 100Hz, the GR-5 is the best GNSS receiver available in the market.

- Integrated UHF/FH915, cellular modem HSPA/CDMA
- Removable SD/SDHC card
- Dual hot-swappable batteries providing a full day of operation



GNSS Reference Receiver

NET-G5

Whether you are installing an all-new GNSS network infrastructure, expanding or upgrading an existing network, looking for a premium campaign receiver or stand-alone RTK base station, the high-performance NET-G5 is designed to provide top of the line solution with its complete system connectivity.

- Power over Ethernet (PoE)
- Measurements up to 100 Hz
- Web interface with advanced receiver management features

Optical Hardware Solutions

Topcon provides the most technologically advanced surveying instruments. With features such as the world's first and only optical robotic communication systems, dual-optical reflectorless operation, on-board Windows® data collection and wireless remote data collection, our priority is your productivity.

Renowned optics and legendary durability combine with cutting-edge technology to maximise your measurement productivity every day. With the most powerful reflectorless system on the market, you get superb prism tracking and built-in security, standard.



Reflectorless Total Station

ES Series

The ES Series of total stations was designed from the ground up to deliver the very latest technological advantages, all in a small, sleek design – you'll appreciate the advantages from the very first measurement.

- Fast and powerful EDM
- Advanced angle accuracy
- Small, compact size



On-board Total Station

OS Series

The OS Series total station is a professional grade compact total station. The advanced design provides an on-board data collection interface, exclusive LongLink communication, and an incredibly powerful and accurate EDM.

- MAGNET on-board software
- Bright on-board screen
- Exclusive LongLink communication



Auto-tracking Total Station

DS Series

A professional grade motorized total station, the DS is a mid-ranged positioning product for the construction or land surveying professional who is looking for productivity enhancements of auto-aiming, tracking, and one-man operation.

- Auto-aiming to prisms
- Auto-tracking upgrade available
- One-man robotic system



Robotic Total Station

PS Series

A professional grade fully-robotic total station. This advanced design provides long-range, one-man operation. Interference-free LongLink communication works with several controller options.

- Available in 1", 3" and 5" angle accuracy
- LongLink communication
- Advanced security with TSshield



Imaging Station

IS Series

A game changer in imaging and scanning robotic total stations. The IS has 2 built-in cameras capable of storing images for each shot, for all-arounds, or for scanned surfaces.

- Scans up to 2,000m
- Coaxial camera through the crosshairs
- Wide angle camera for all-around

Software Solutions

Working with Topcon's MAGNET suite of software products, Topcon GNSS product line streamlines the workflow for surveyors, contractors, engineers and mapping professionals. MAGNET suite covers your whole project and personnel, from the field to the office. You are covered in real time! Topcon offers different RTK correction services; MAGNET Relay and TopNETlive.

Both are subscription based services. One MAGNET Relay license allows you to make your base a "mobile base" and act just like a single-baseline solution between a base station and a rover. TopNET live provides corrections from a network of reference stations that are strategically spaced and designed to provide single-baseline RTK coverage within a certain area.



MAGNET Enterprise

The heart of MAGNET Enterprise is a web browser environment which allow complete configuration of how you like to work, Enterprise lets you create geo-referenced projects for team-based collaboration as well as exchange data between project site and office in real time through the cloud.

- Secure Cloud Storage with real time exchange
- Asset Manager for tracking instruments
- Viewing of points and lines on top of Google Map® imagery
- Live Chat with members

Services

MAGNET Relay

MAGNET Relay is a Real Time Kinematic (RTK) corrections forwarding service that allows users to safely and securely connect their mobile base stations within MAGNET Enterprise. Using MAGNET Field data collection software, up to ten rover receivers are able to connect within MAGNET Enterprise and receive RTK corrections.

- Easy base setup
- Up to 10 rover receivers
- Low cost monthly subscription service

TopNET live Networks

TopNETlive is a subscription based, real-time GNSS Reference Network delivering high quality, GNSS correction data to rovers used for surveying, construction, GIS mapping and agricultural application.

- Network RTK solution saves money; easy to set up with only 1 rover
- No local station to purchase or setup
- Higher and more consistent accuracy



MAGNET Office Tools

MAGNET Office Tools is cloud-enabled data processing software that enables users to generate final coordinates from, MAGNET Field, Pocket 3D files, as well as Topcon total stations, levels, and GNSS raw data files.

- Autodesk® RealDWG inside for seamless exchange with AutoCAD®
- MAGNET Ribbon within Autodesk Civil 3D
- Microsoft Bing® satellite image background



MAGNET Office

MAGNET Office is a stand-alone processing and CAD solution for surveying and grading applications. The ability to collaborate within your private, safe, and secure account places MAGNET Office software above the competition.

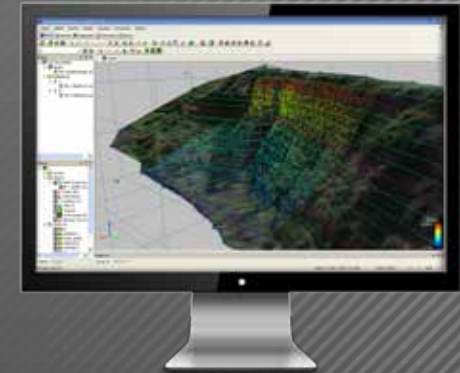
- Supports all surveying and construction applications 3D-MC
- Full road design and resurface functionality



MAGNET Field

MAGNET Field is a powerful and intuitive field application software that will increase your productivity and connect you to others in the field as well as in the office. MAGNET Field enables users to collect survey mapping data, perform construction and road layout using total stations, levels, and GNSS, and permit easy data exchange and quick chat.

- Highly powerful and intuitive software
- Direct connectivity to your Company Account
- Microsoft Bing Map® for real-time background images



ImageMaster

ImageMaster software is the ideal pairing with the IS, Imaging Station. ImageMaster processes point cloud scanned data, and photogrammetry files.

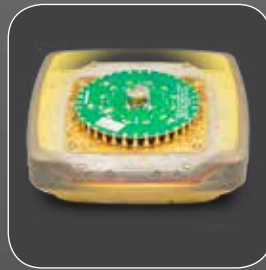
- Process point clouds
- Live Video control of IS
- Standalone photogrammetry software

Topcon Technologies



Vanguard

Vanguard Technology is a collection of advanced and fully-integrated technology solutions that are all found inside Topcon's latest 226-channel Vanguard ASIC, which is capable of tracking all current and upcoming GNSS signals with superior accuracy and sensitivity. The Vanguard ASIC's system-on-chip design provides multiple embedded cores, integrated memory, and extensive peripheral interface support that increases board-level flexibility and reliability while reducing system complexity and size.



Fence Antenna

Topcon's patented Fence Antenna® design brings superior signal sensitivity and multipath rejection in a compact and lightweight package. These advantages are clearly demonstrated by the Fence Antenna's performance when tracking low elevation satellites and in foliage. This technology enables stronger and cleaner signal tracking, allowing Topcon systems to deliver consistently accurate positioning in all conditions.



UTC

The 226-channel Vanguard ASIC with Universal Tracking Channels is the industry's only fully scalable tracking technology that permits each individual GNSS channel to be fully optimized. Universal Tracking Channels allow Topcon receivers to track any of the available satellite signals that are supported in modern GNSS receivers. Whether it's a GPS, GLONASS, Galileo or BeiDou signal in any of the L1/E1/B1, L2, or L5/E5/B2 frequencies, each Universal Tracking channel can use it.



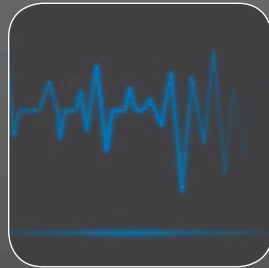
GNSS Optimization Tracking

The Topcon Vanguard ASIC uses the most advanced GNSS signal tracking and processing architecture available in the market today. Measurement and positioning improvements that are made possible by the integration of GPS, GLONASS, QZSS, SBAS, Galileo, and BeiDou (BDS) signals will be available in Topcon's precision GNSS products through updated receiver firmware and through Topcon's Option Authorization Files (OAFs)*



LongLink

LongLink RTK technology provides 1,000+ ft. (300+m) short-range RTK communication from a base station to multiple rovers. LongLink offers reliable, interference-free, RTK base-rover communication that doesn't require an FCC license to operate. LongLink RTK technology provides superior performance in the toughest radio environments such as close to airports or city centers.



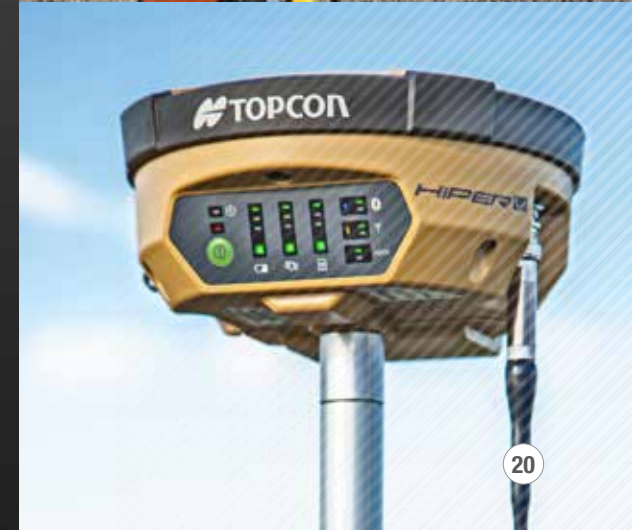
QLL

By using state-of-the-art feedback loops, Topcon's patented Quartz Loop Lock continuously monitors system behavior to detect and to remove any fluctuations that may cause tracking problems. This allows for a clean, stable timing reference signal to be preserved even through strong acceleration, high vibration and bumps. This exclusive QLL technology allows Topcon receivers to provide uninterrupted satellite tracking and precise positioning across a wide spectrum of vibration frequencies, at intense magnitudes and in any orientation.



Hybrid Positioning

Topcon's Hybrid Positioning leverages GNSS and optical positioning data for increased production and field efficiency. Utilizing Topcon's revolutionary GNSS signal processing, advanced Robotic tracking and powerful EDM performance plus Topcon's MAGNET Field software. Topcon provides seamless productivity in the most demanding conditions. Migrate easily between robotic line-of-sight measurements and GNSS when line-of-sight is disrupted.





Extended Range Site Receiver

The design of the HiPer SR provides a great deal of versatility, allowing the HiPer SR to be configured in a variety of ways depending on your project requirements.

HiPer SR is also a great low-cost static GNSS system that can be pre-programmed and operated in the field with just one button. Use as a job site base and rover with interference-free LongLink communication up to 300m or base and rover with MAGNET Relay cellular communication RTK up to 35km baselines. You can also utilize the HiPer SR as a network RTK rover by adding network functionality and a cellular enabled controller. Using TopNET live GNSS reference network, an HiPer SR becomes an affordable network rover.

HiPer SR integrates seamlessly into Topcon's Hybrid positioning in conjunction with a robotic instrument.



HiPer SR

- Versatile
- Compact
- Rugged
- Affordable





Flexible GNSS Receiver

Designed as a perfect network RTK rover, which can also be used in a base/rover setup as well, the HiPer V gives you the option of an internal GSM, HSPA, or CDMA cellular modem. With its completely integrated design, the HiPer V eliminates the hassles of external modems and cables, all in a lightweight, rugged design.

If you start your HiPer V investment with static only receivers, they can later be upgraded to include radio and cellular modules.

Multi-lingual, clear-tone voice messages notify the users of critical receiver information and status such as satellite signal interruption, radio interference, low battery, low memory and more. This feature improves your efficiency by providing information without having to look at the LED display or controller screen.

Topcon's HiPer V comes standard with a detachable Li-ion rechargeable batteries located safely behind a sealed battery cover. A large volume of data from long term survey projects can be stored onto the popular SD cards or SDHC cards with 4GB or larger capacity.

HiPer V

- Flexible
- Hermetically sealed and waterproof
- Multiple options for communications
- All day operation





Advanced Premium Receiver

Topcon's GR-5 is ruggedized, high-accuracy, state-of-the-art GNSS technology for the most demanding Construction, Surveying and Civil Engineering jobs. Topcon's exclusive Technology portfolio is in full blast with the GR-5. The GR-5 is designed to deliver ultimate field performance even in challenging environments while maintaining unmatched accuracy, speed of initialization and fix reliability for RTK solutions. And best of all Topcon's GR-5 won't become outdated when constellations become available including Galileo, Beidou (BDS) and QZSS.

Other GR-5 features include both cellular and radio communications for radio and/or network based RTK work, long-range UHF radio, hot-swappable rechargeable batteries and optional alkaline pack. With GR-5, you can have it all!



GR-5

- Superior
- Rugged
- Multiple options for communications
- Futuristic



Compact, One-man, Precision Layout System

The DS series is a motorized total station. The operation is simplified with MAGNET Field software on a ruggedized handheld controller. Take the DS series, one-man robotic system into any project for both precise layout, topo and as-built documentation. The DS robotic system is ideal for both interior and exterior construction layout.

Further upgrades, such as Hybrid Positioning can benefit outdoor projects, combining both GPS and total station measurements. Versatility to meet your needs.



DS Series

The DS series robotic instrument can be configured as a mid-range, on-board collection, auto-pointing total station, and later upgraded to fully robotic, one-man system.





Dual Camera, Imaging System for Layout and As-built

The IS-3 is ideal for both construction layout and documenting existing conditions of the project site. Consider adding geo-referenced images of the project to the model. The ability to collect existing conditions as a photo field book adds to the office understanding of the site conditions. In addition, dispute resolution is much simpler when you have a photo record of layout and as-built conditions. The IS-3 is perfect for the modern job site.

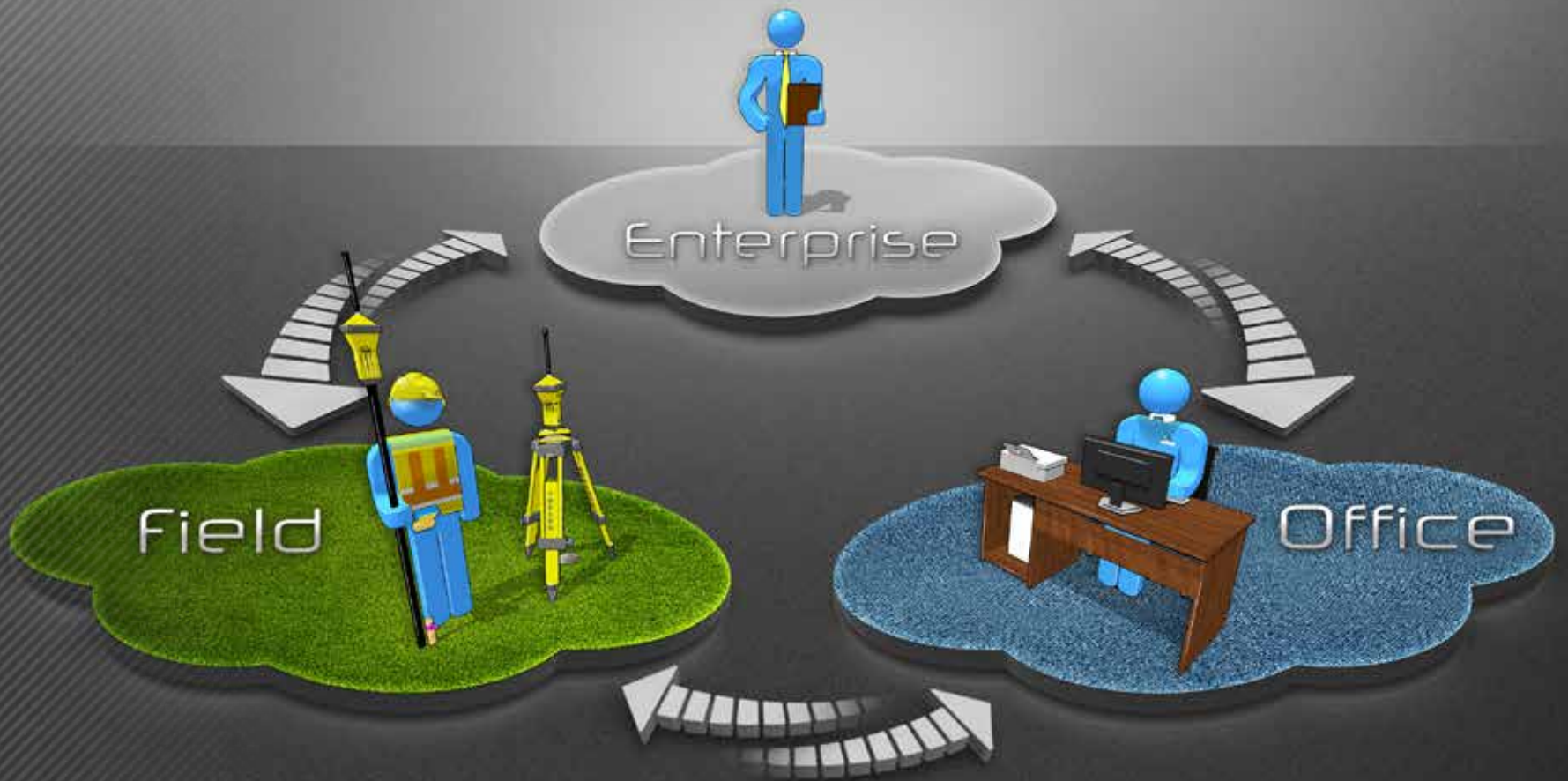
IS-3

The IS-3 Imaging System uses cameras to “see” the site.

Operators use a tablet PC or field controller with live video display to layout points and collect as-built QA/QC features. Remote live video is easier than looking through the eyepiece and aiming.



MAGNET™



Suite of Software Solutions

The MAGNET suite of software is ready to increase productivity in every construction and survey layout project. MAGNET keeps the office and the field connected through MAGNET Enterprise. Enterprise is available to all managers and supervisors to review work progress and evaluate changes in the schedule. Login from any internet browser and see the project site in action. All field crews and office CAD staff contribute to the data manager inside MAGNET Enterprise. In addition, Enterprise connects directly to Autodesk's AutoCAD 360 cloud service for file review and sharing. Project files are shared immediately in the cloud.

The field crew benefits from constant connection to the office staff. If a design change is made, the office staff simply posts a new file and sends a chat message to those working on the project. Never layout old positions when you stay connected to the latest design. And when a conflict is detected in the field, that crew person can send updated field data back to the office for further evaluation.

MAGNET

The MAGNET suite of software covers the office, the field, and the connection through the cloud. These complimentary products cover the entire project workflow and can be licensed in annual, monthly or permanent activation licenses.



TotalCare

This online resource comes with real people ready to help. Get expert training from Topcon University's large collection of online materials, and expert help directly from Topcon Technical Support.

Access software and firmware updates, current publications, and guidance from the experts at Topcon all right from your computer or mobile device.

Please visit the TotalCare website to learn more.

topcontotalcare.com





SYNERGY 
POSITIONING SYSTEMS

www.synergypositioning.co.nz
info@synergypositioning.co.nz
0800 867 266

Specifications subject to change without notice. All rights reserved. 11/14 P/N: 7010-2067 RevA ©2014 Topcon Corporation
The *Bluetooth*® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Topcon is under license.
Other trademarks and trade names are those of their respective owners.