



Cansel

Emerging Technologies with GNSS



From Field to Finish

Cansel

- The largest distributor of GPS/GIS Mapping technology in North America, and the exclusive dealer of Trimble Mapping GNSS.
- Over **44** years in business, 10 locations across Canada
- Sales, Rentals, Repair, Training, and Technical Support at all locations nation-wide.



Trimble

- Trimble is the leading provider of advanced positioning solutions that maximize productivity and enhance profitability.
- GNSS technology, laser, optical and inertial technologies.
- Over 30 years in business with 2400 employees in over 18 countries



Agenda

- Accuracy
 - GNSS
 - Real-time or post-processed
 - Base Stations
 - Algorithms & Altitude
- RFID and GNSS
- Tips and Tricks from the field

What is GNSS?

- Global Navigation Satellite System (GNSS)
 - United States (GPS), and
 - Russia (GLONASS).
- These satellites orbit the earth every 12 hours, providing worldwide position information.



Photo Courtesy of Department of Defense

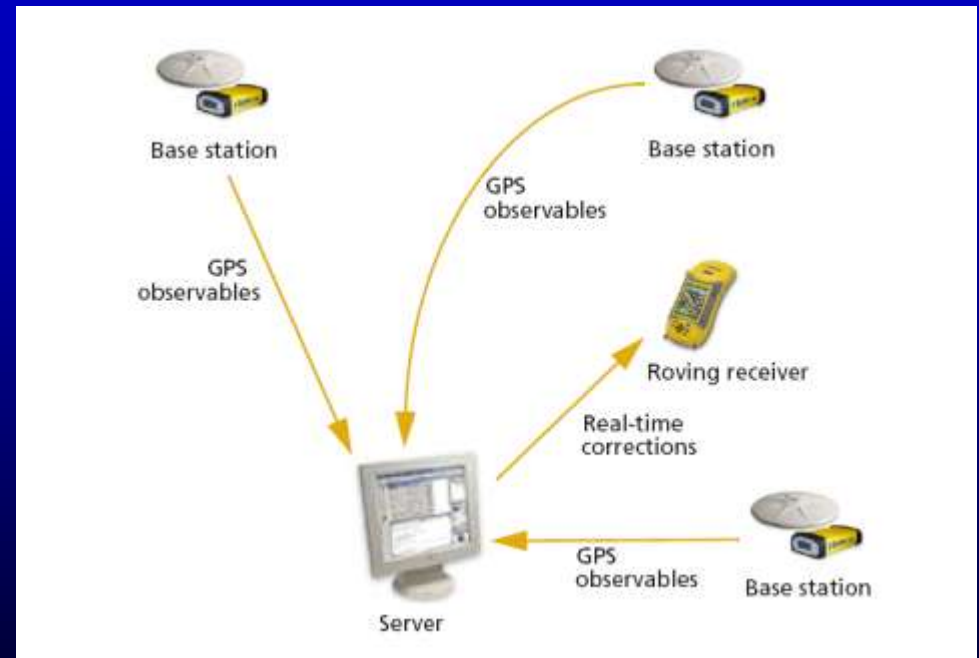
How DGNSS Works

- Base Stations, are put on a point that's been very accurately surveyed and kept there.
- It uses its known position to calculate timing. It figures out what the travel time of the GNSS signals should be, and compares it with what they actually are. The difference is an "error correction" factor.



How DGNSS Works

It is comprised of a series of reference stations across Canada, which provide GNSS data for real-time and post-processed applications.



Real-time

The data is delivered over the Internet and for real-time applications the Internet is linked to GNSS units using cellular wireless technologies



Post-processed

Using post-processing software:

- Connect to a public or private base station via the internet.
- Download the correction data
- Apply the corrections to the data you collected in the field



Base Stations

Public: Meter accuracy

- Free access

Private: Centimeter accuracy

i.e. Can-Net (Cansel), SmartNet (Leica), PowerNet (Sokkia)

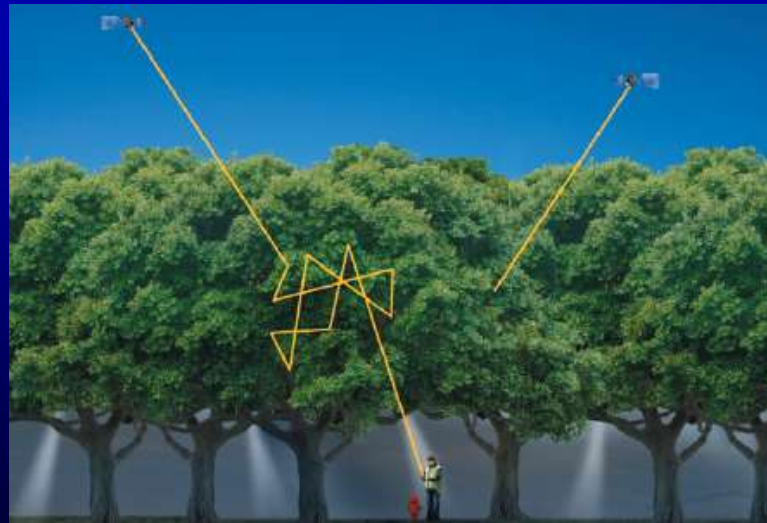
Commercial: Meter to Centimeter

i.e. OmniSTAR



Algorithms & Altitude

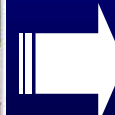
- Advanced tracking algorithms speed up acquisition and ensure stable tracking of satellites
- Altitude can be used to reduce the impact of weak or blocked signals



RFID (Radio Frequency Identification Devices)

Inventory and Asset Management Data captured at Field Level:

- Track the Life Cycle of Events on Assets
 - What is it?
 - Where is it?
 - What happened to it?
 - When did it happen?



Tips and Tricks – from the field.

... on the hardware side.

- Bluetooth enabled devices
- Flashcard slots and USB ports

... on the softer side.

- Storyboard – data collection forms
- Stakeholder buy-in

Bluetooth in Data Collection

Collect, store, organize and manage your field data in one location

- Saves time in the field
- Saves time back at the office



Cameras



Laser Range Finders



Echo Sounders

Flash memory and USB ports

More than extra data storage!

- ✓ Back-up data in the field



Building Data Collection Forms

- Storyboard
 - sketch out form design on paper
 - make a list of default values, range values, pick list contents, etc.
 - build it

Data collection buy - in

- Identify stakeholders
- Define what is required and what is nice to have?
- Identify how data will be used after it is collected

Questions

Brock Kingston

brock.kingston@cansel.ca

647.919.9407



<http://ca.linkedin.com/in/brockkingston>