Trimble

Leon Reynders- Western Coastal Sales

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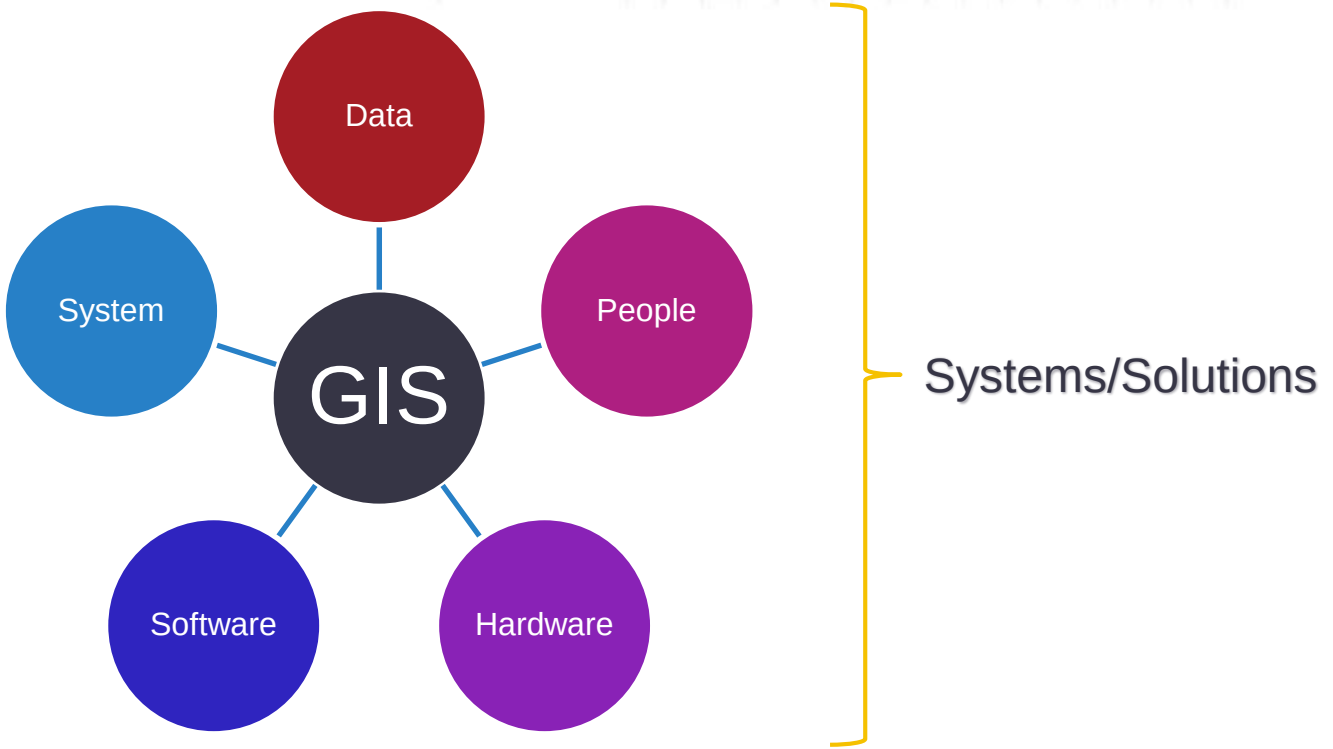
Unpacking New Technologies & Equipment for GIS

Components of GIS



We have a GPS!


DON'T WORRY. MY GPS SAYS THERE'S A ROAD HERE.
ed STEIN '12
www.USAGold.com

We have a Map – a Map with Intelligence

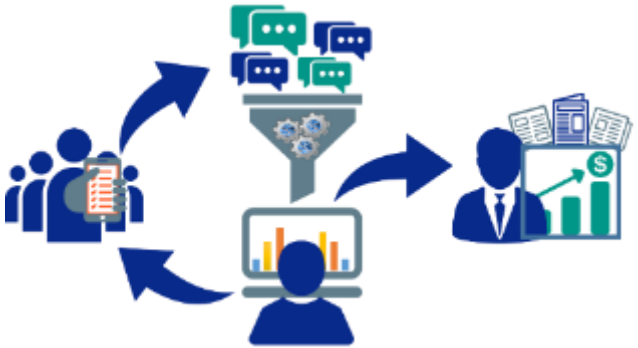
OPTRON

What is GIS?

- Geographic Information System:
  - Location
  - Collaboration, Decision Maker
  - Integrated

Data Collection

- Data is an **important asset** in an organization
- **Intellectual property** and infrastructure data are just as important as actual infrastructure
- Sourcing accurate data is necessary to **effectively make decisions**



Bad Data

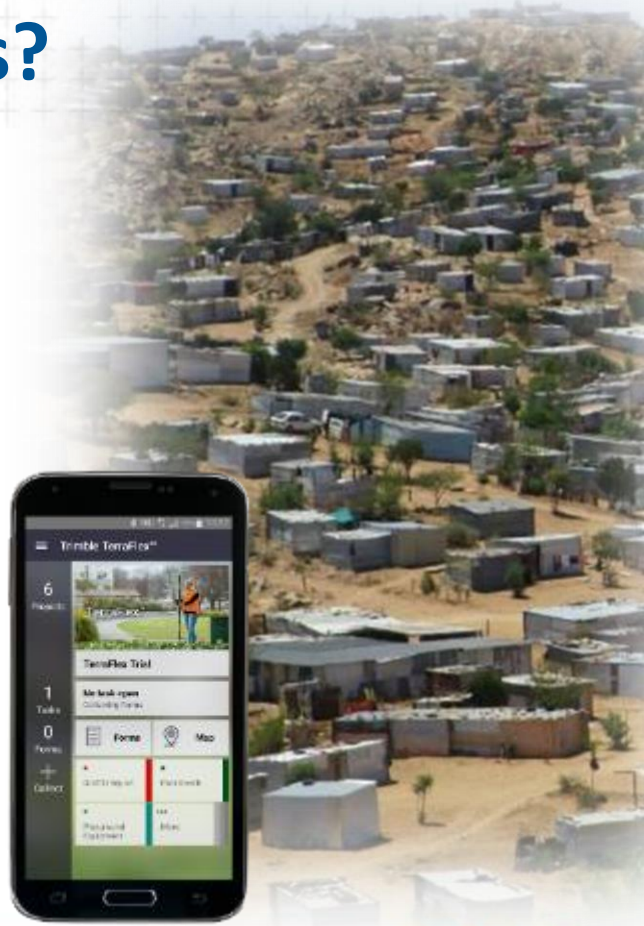
- What is “Bad Data”?
  - Data that is incorrect, misleading and inconsistent
  - Direct result of human error and outdated data collection methods
- How does Bad Data occur?
  - Poor Data Entry
  - Wrong or inaccurate data
  - Missing data
  - Inappropriate Data
  - Non-conforming data
  - Duplicate Data

Field data capture techniques

- Biggest cause of “bad data” is poor data capture techniques
- Most common method is paper based by field workers
- Challenges with these methods:
  - Subjectivity by observer (bad data)
  - Time consuming
  - Human errors (bad data)
  - Not repeatable (bad data)
  - Can become costly
  - No Spatial element
  - Low cost deployment

How can technology resolve this?

- Improved data collection
  - Knowing where what is
- Simplifying tasks
  - Requires less skilled personnel
- Enabling offsite work
  - Reducing risk
- Repeatability
  - Fixed methodology
  - Built-in checks



Hardware

Hardware

- GNSS Receivers
  - Provides high accuracy location
  - BYOD
- Data Collectors
  - Field Data Capture
  - Rugged Devices
  - GNSS Enabled
- UAV
  - Low Cost Aerial Imagery
  - Quick turn around time
  - Available on demand
- Ground Penetrating Radar
  - Locate underground services
- Mobile Scanners
  - Mobile data collection
  - Remove need for field workers

Trimble GIS Hardware

- TDC100
- TDC150 RTX
- TDC600
- Catalyst
- Geo 7X RTX
- Nomad 5 RTX
- Juno 5D
- T10

Trimble TDC150

The all new Trimble TDC150 is the next generation handheld device for GIS data collection in the field:

- Trimble Rugged Design (Mil-Spec, IP67)
- Integrated High-Accuracy GNSS
- Android OS, Wi-Fi, 4G LTE
- Google Mobile Services Certified
- App Support Including Trimble TerraFlex, Penmap and Esri Collector for ArcGIS
- 1.2 GHz Qualcomm® Processor, 16 GB Internal Storage

GNSS Receivers

- Trimble Catalyst
  - Subscription based Correction
    - Meter
    - Submeter
    - Decimeter
    - Centimeter
  - Lightweight, low cost antenna
  - Low initial capital cost
  - Use as required (on demand)
  - Monthly Licence fees
  - Software based correction on Android Devices
  - Supported by Trimble and 3rd party GPS enabled apps

GNSS Receivers

- Trimble R1
  - Small, rugged, lightweight GNSS receiver for great mobility
  - Flexibility to choose your data collection device (BYOD - Apple, Android, Windows)
  - Bluetooth connection to Trimble handhelds or consumer-grade smart devices
  - Provides higher-accuracy location data (1 – 2m)
  - Flexible, professional data collection in more places
  - Optional ViewPoint RTX provides sub-meter accuracy via IP or satellite
  - Annual Licence Fees

Data Collectors

- Trimble TDC100:
  - Combines smartphone with and Trimble GNSS data collection technology
  - Android OS
  - Accurate GNSS receiver:
    - 1-2m Real-Time Accuracy
    - Tracks GPS, GLONASS and Beidou constellations
  - Designed for use in a variety of industries where conventional GNSS devices aren't required
  - Fully rugged (IP67 standard)
  - Carry just one device
  - Mobile Phone ready

Data Collectors

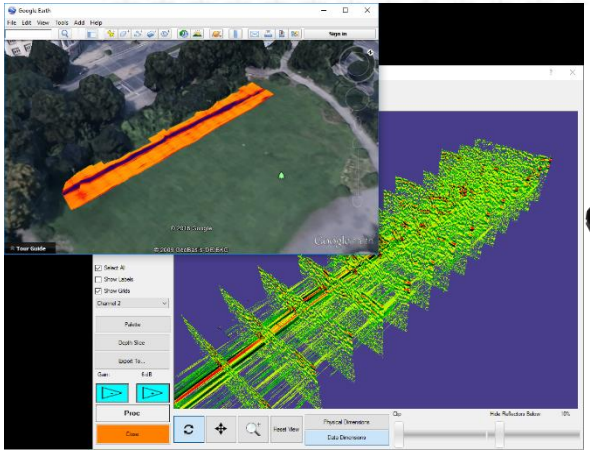
- Juno 5
  - Familiar, easy-to-use, smartphone form factor
  - Works with professional software for GIS workflows
  - Large, sunlight readable screen
  - Stay in touch with the office—integrated communications available
  - Rugged for work in all conditions (IP68)
  - Optional 1D/2D barcode scanner and enhanced GPS versions (1 – 2 m accuracy)
  - Windows Mobile based

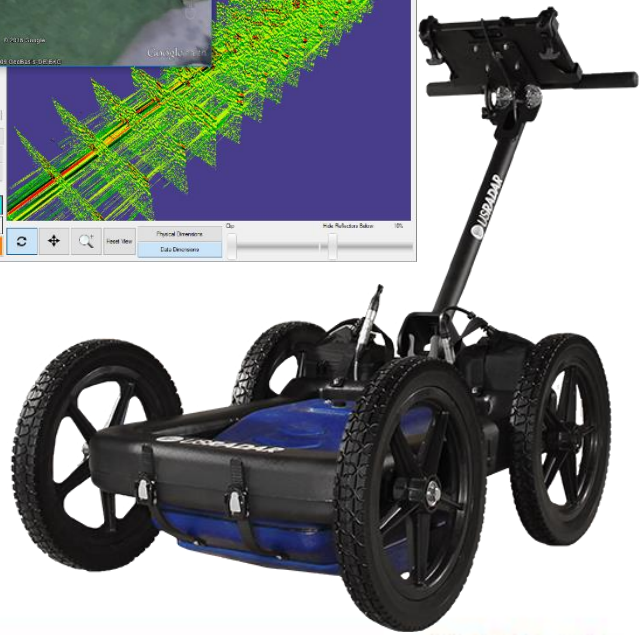
UAV

- Sensfly eBee X
  - Fixed Wing Autonomous UAV
  - Maximum Flight Time
    - 90 min
  - Nominal coverage at 120 m (400 ft):
    - 500 ha
  - Ground Sampling Distance:
    - Down to 1 cm / pixel
  - Absolute X, Y, Z accuracy (RTK/PPK activated or w/GCPs)
    - Down to 3 cm (1.2 in) / 5 cm (2 in)
  - Absolute X, Y, Z accuracy (no RTK/PPK, no GCPs)
    - 1-5 m (3-16 ft)

Ground Penetrating Radar (GPR)

- US Radar Quantum Imager GPR
  - Multi-bandwidth GPR
    - World's first triple bandwidth GPR
    - 250-, 500- and 1000 MHz antenna
    - Especially suited for clay soils, deep utilities, and fine targets that require high resolution imaging.
  - In field 3D investigation
  - GNSS Ready with mapping software





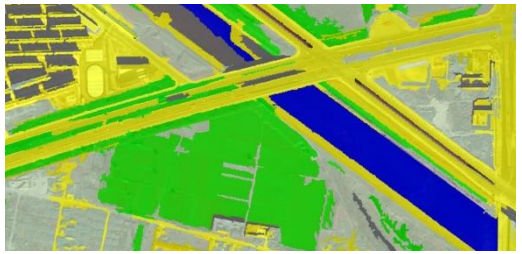
Mobile Mapping

- MX7
  - Rapid 360-degree geo-referenced image documentation
  - Precision positioning using GNSS and inertial referencing system
  - Deploys on all sizes of on and off-road vehicles
  - Rugged, reliable and lightweight design with low power consumption
  - Use with Trimble Mobile Imaging Capture software and Trimble Trident office software for data capture, extraction and analysis

Software

Software

- Field Data Capture software
  - Cloud/Office Based
  - Capture location, attributes, photos, measurements
  - BYOD
- Remote Sensing Software
  - Advanced object recognition
  - Automatic data extraction from imagery (i.e. informal settlements)
- Crowd Sourcing
  - Online platform for public to report issues or submit data

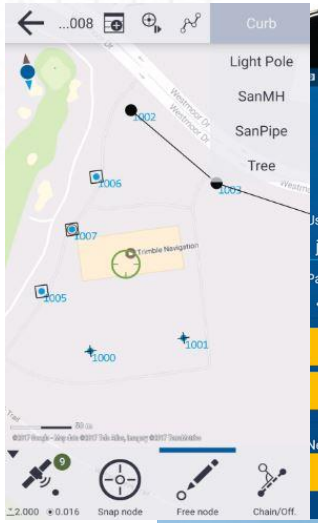


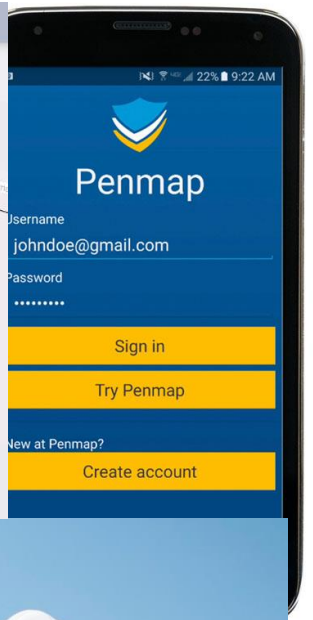
Field Data Capture

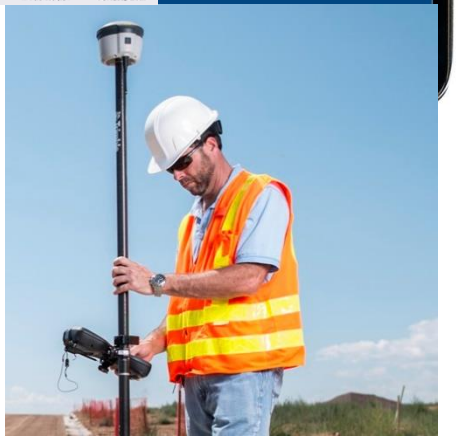
- TerraFlex
  - Fast, efficient, geospatial data collection across a fleet of mixed devices
  - Import and update existing data for up-to-the-minute information
  - Streamlined data management to keep your data organized
  - Direct integration with your Esri environment
  - Cloud based; no need for centralised databases
  - Annual licence fees
  - Work Offline
  - High Accuracy Positioning
    - Compatible with Trimble Catalyst, R1 and R2 receivers

Field Data Capture

- PenMap
  - Trimble® Penmap® for Android™ is a powerful, yet incredibly straightforward cloud-connected
  - It's designed to do all the basics well, and provide an intuitive and effective interface for entering and managing features and attributes.
  - Penmap makes basic cadastral, topo, and other field data collection tasks easy
  - Monthly Licence fees
  - Key Features:
    - Core survey functionality and high accuracy GIS data collection
    - Powerful but straightforward operations
    - Intuitive interface using your own Android device
    - Supports Trimble Catalyst software-based GNSS receiver for on-demand precise positioning
    - Compatible with existing Trimble GNSS R-Series receivers







Avoid The Mess

Leon Reynders

Thank-you