

Mobile Technology and Forestry

Finding a Tool to Meet your Business Needs

15TH ANNUAL
SUSTAINABLE FORESTRY CONFERENCE

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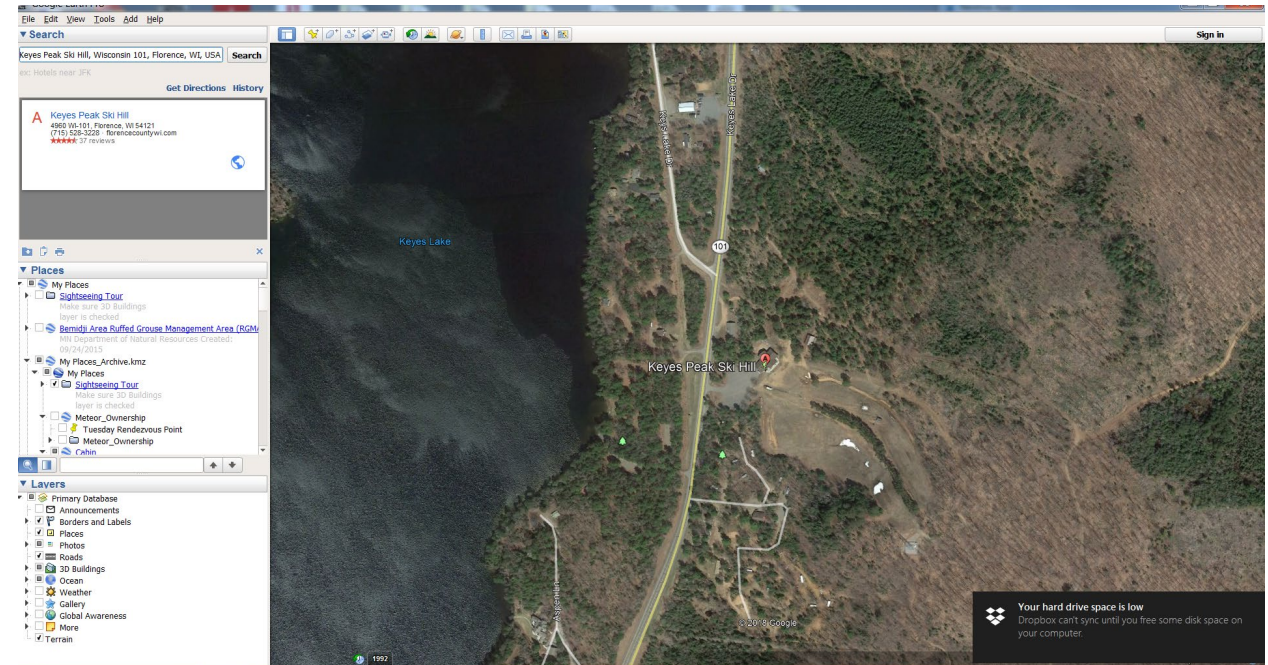
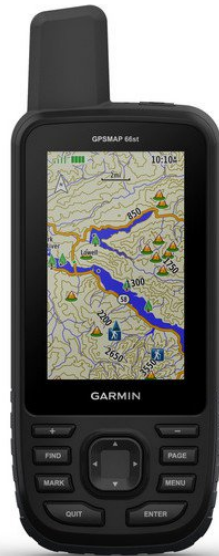
Progression of Field Computers and Technology

- Significant change in technology over the past 30 years
- From adapting available tools ...to... ruggedized field computers



What are your Business Needs?

- GIS or GPS technology integration
- What tasks will you do?



What are your Business Needs?

- GPS Accuracy

Standard Smart phone



5-6 meters with satellite triangulation

Smart phone with extensions



2-3 meter accuracy (GNSS)

Submeter GPS device



Best case, <30 cm accuracy (can connect via Bluetooth to virtually any device)

Where do you Work?

- Cellular signal?
- Internal GPS? Is that good enough?

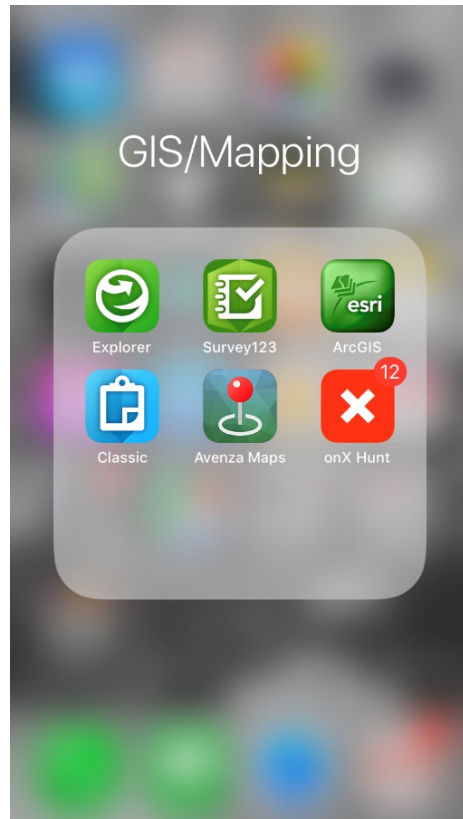
Plan for connectivity issues and match system to your work environment



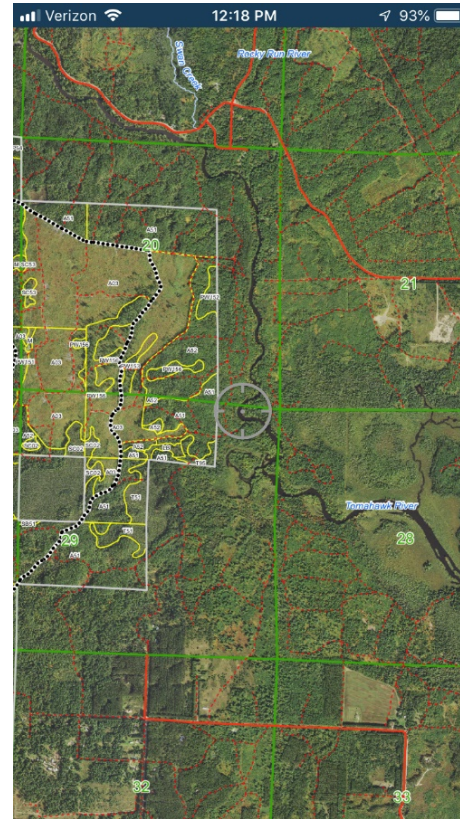
Where do you Work?



Finding the right mapping option



Avenza
Maps



Mapping Options

Systems and Customization

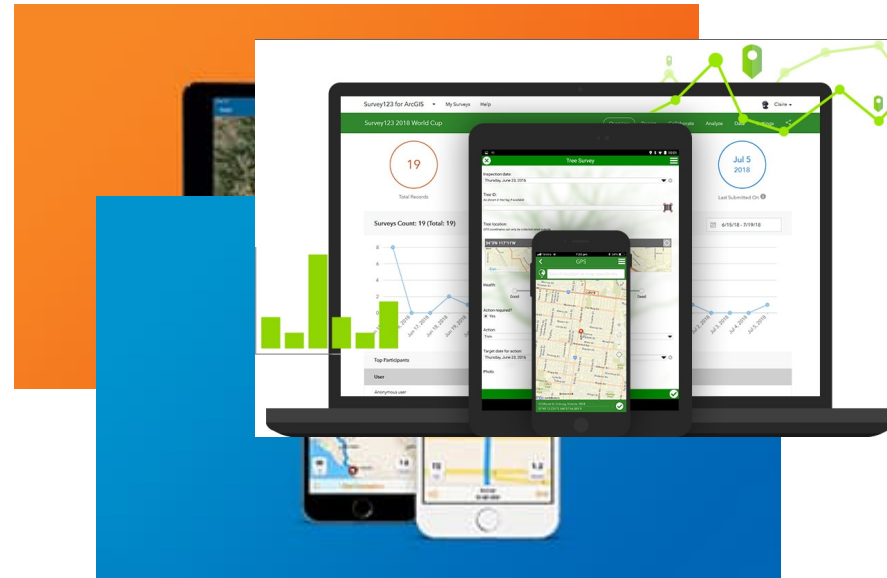
Trimble

Terrain Navigator Pro

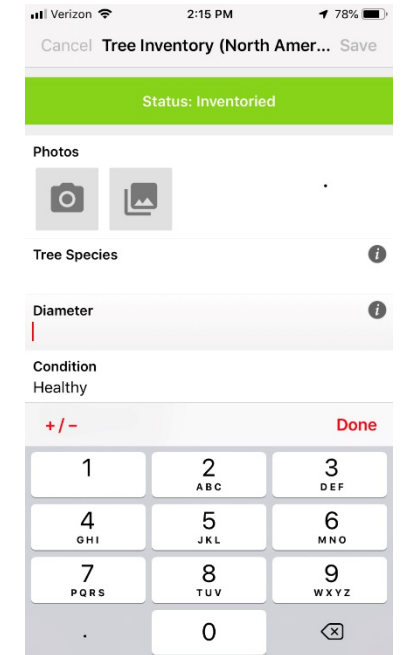


ArcGIS App Suite

Collector, Navigator, Survey123



Fulcrum



Mapping Options

Everyday GIS

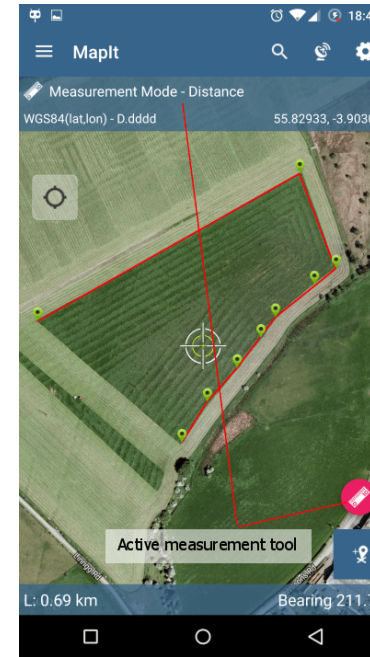
Avenza



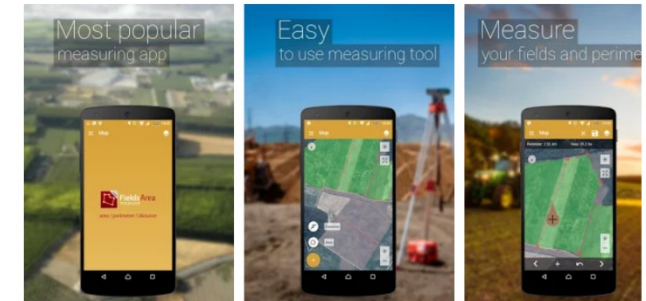
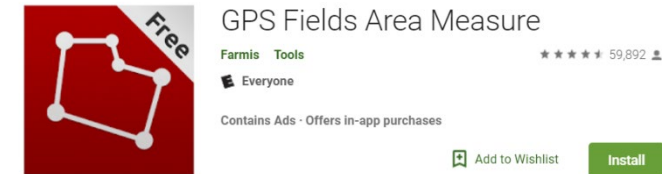
GIS Kit and GIS PRO



MapIt GIS



GPS Fields Area Measure



Be flexible

- Building a flexible system
 - Hardware/software combinations
- Adapting



What about Timber Inventory?

- Internal vs. External uses
- May need customization, be ready for added costs



TALLTIMBER 3.5
www.ttimmer.com

TCRUISE

SILVIATERRA



- Tree volumetrics can differ greatly, make sure you understand how timber volume is estimated

Choosing a Mobile System

- **Old perspective** – driven by hardware
- **New perspective** – software options have improved
 - May want to consider software/applications first
- **Operating Systems**
 - iOS – Apple
 - Android
 - Windows Mobile
 - Old Windows CE
 - Windows desktop



Choosing a Mobile System

Considerations:

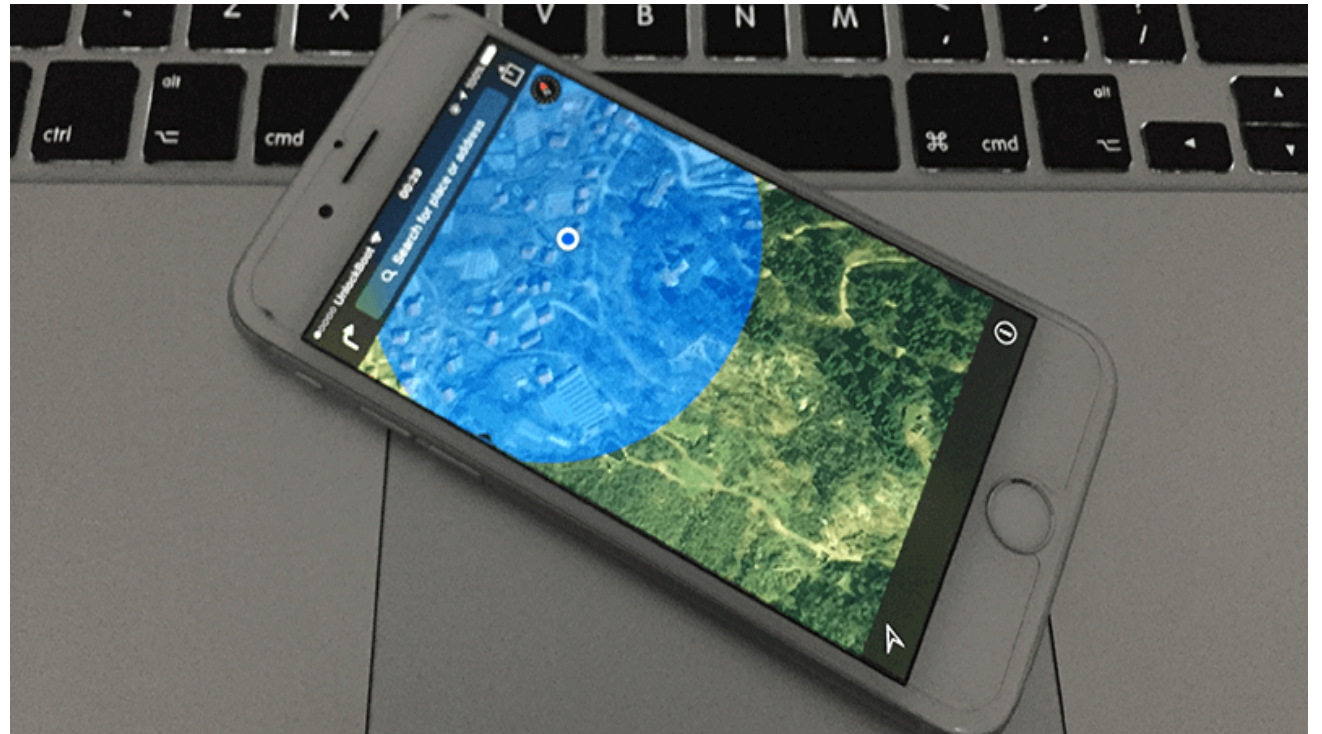
- Operational Period - Battery Life
- Operation Temperature - Extremes
- Memory/Storage
- Operating System - associated applications
- Ruggedized - shock proof, water resistant



Choosing a Mobile System

Considerations:

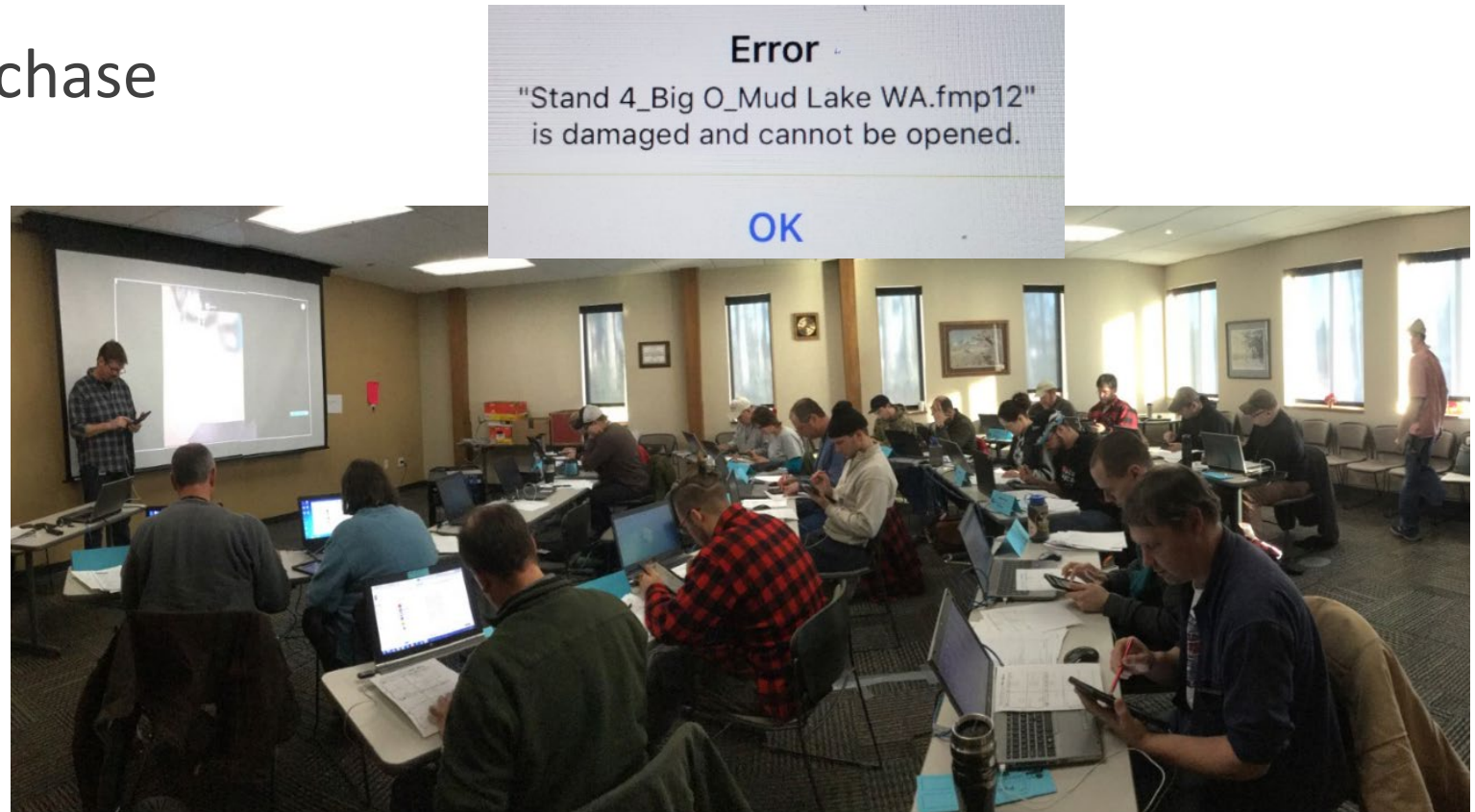
- Display size / resolution
 - full daylight use
- Keyboard?
- Communication ports
- GPS options
 - Integrated
 - Blue Tooth
 - Cellular triangulation



Choosing a Mobile System

Considerations:

- Support after purchase
- Training



WDNR Division of Forestry - Example

Apple iPad mini 4

- iOS operating system
- Screen size – 8” diagonal
- Front and rear facing cameras
- 128 Gigabyte memory
- Bluetooth and Wi-Fi connectivity
- Data enabled
- AirDrop – Short range Wi-Fi
- GPS integrated (AGPS / GLONASS)



WDNR Division of Forestry - Example

Apple iPad mini 4 - continued

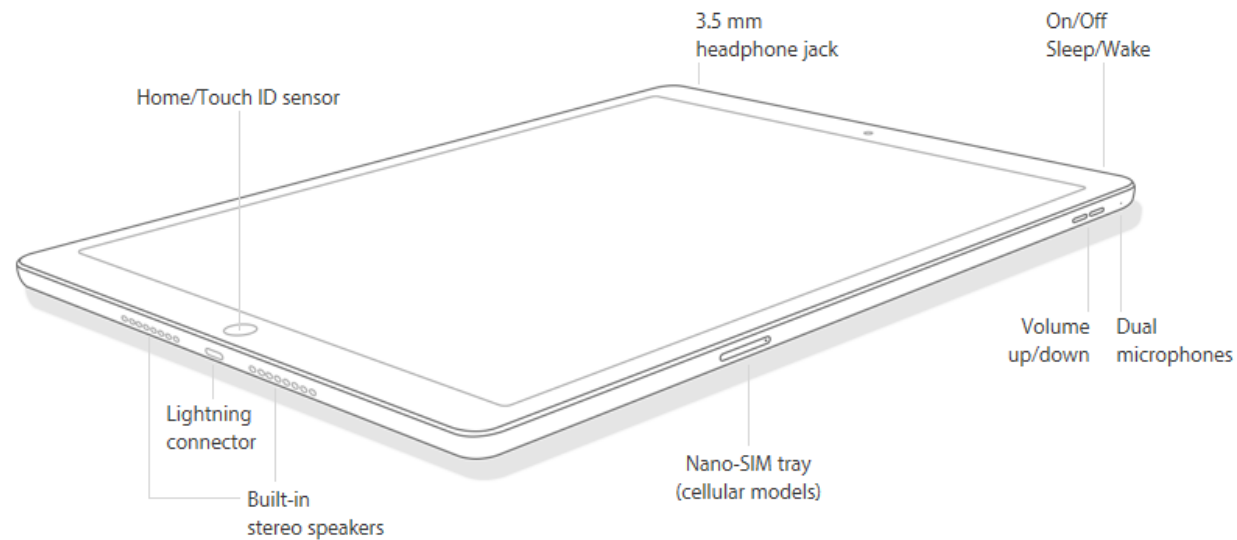
- Apple lightning cable with AC adapter
- Life Proof Ruggedized case
- Stylus
- Extra battery recharger
- Car Charger cable
- Carrying Case



WDNR Division of Forestry - Example

iPad mini 4 - The Basics

- Website: <http://www.apple.com/ipad-mini-4/>



WDNR Division of Forestry - Applications

- Forest Metrix

Website: <http://forestmetrix.com/wp2>

- Lizardtech GeoViewer

Website: <https://www.lizardtech.com/geoviewer-pro/overview>

- Avenza PDF Maps

Website: <http://www.avenza.com/avenza-maps>

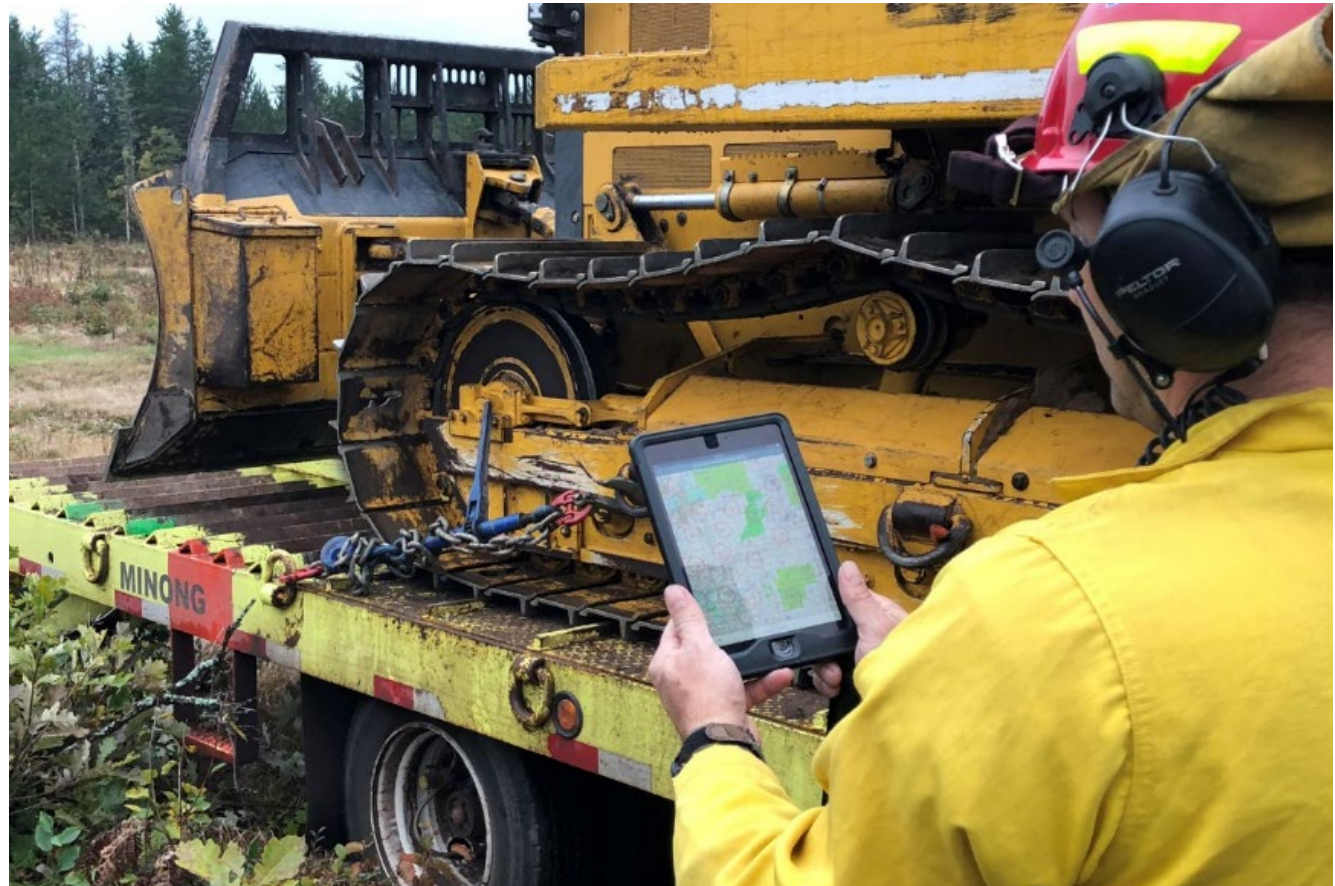
- Garafa GIS Pro

Website: <http://garafa.com/wordpress/all-apps/gis-pro>

Avenza Maps

View your GPS position on georeferenced PDFs

- Created in a desktop GIS (ArcGIS or QGIS)
- Available on-line through Avenza Map Store



GeoViewer

View MrSid aerial photos

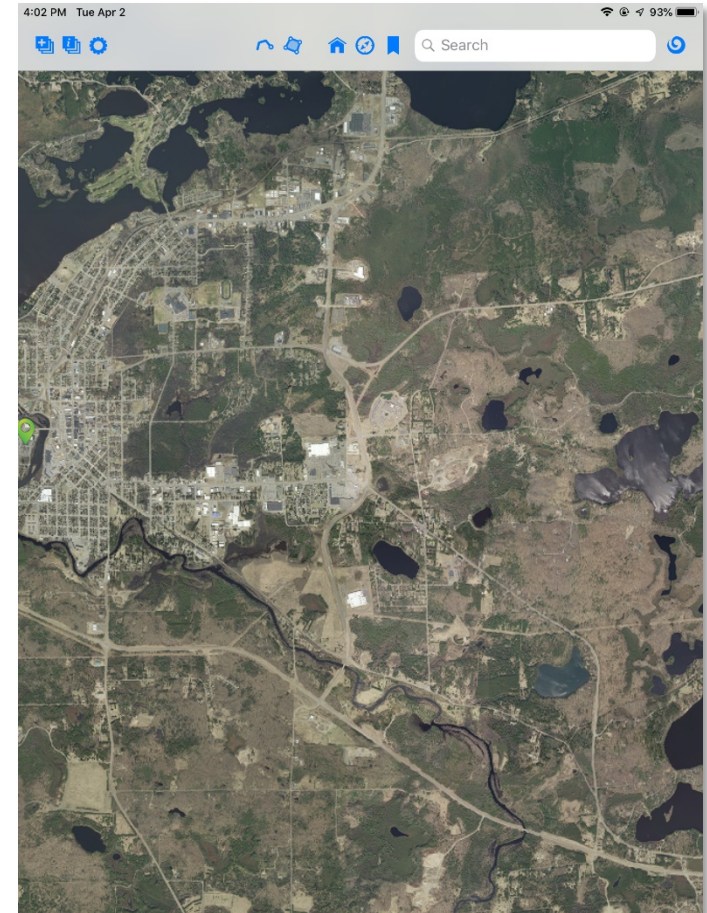
- At photo resolution – no conversion necessary

View ESRI shape files

- Without attributes
- Polygons display as lines

Pro Version

- Measure area
- GPS tracks



GIS Pro

ESRI Shape files

- View and edit topology
- View and edit attributes

Limited projections

- State aerial photos can't be used (see GeoViewer)
- Shape files projected to Lat./Long.

Cached background maps

- Data plan or Wi-Fi



Forest Metrix

Runs through Apple's File Maker Go (iOS only - free app)

- Plot level data capture
- Stand/Tract level summaries
- Simple analysis in the field
- On board reporting - PDFs

Desktop report engine

- Further analysis in the office
- Macro enabled excel spread sheet



WDNR Division of Forestry – Lessons Learned

165 devices – Field Deployed 2 ½ Years

3 units warranted

- 1 – malfunctioning Bluetooth antenna
- 1 – User left rugged case port open in heavy rain
- 1 – User fell with unit and scratched screen




WDNR Division of Forestry – Lessons Learned

iPad charging

- Not all chargers are created equal
 - 110AC wall plug that comes with the iPad - full 2.1 A
 - 110AC wall plug that comes with an iPhone – 1.1 A – charge iPad ½ as fast

USB PC/Laptop charging

- Not all USB ports are created equal
 - USB 2.0 or 3.0 charging port  supports up to 1.5 A, will charge when laptop is off

Integrated GPS vs Cellular Triangulation

WDNR Division of Forestry – Lessons Learned

Battery mitigation

- Location data services
- Airplane Mode
- Display
 - On/off
 - Brightness

External battery and lightning cable

All data transferred using iTunes

- Except photos on Windows PC

Plan field work disconnected

Bring compass, paper and pencil !

Questions?

