

the Energy to Lead

Smart Phone Applications for Damage Prevention and Integrity Management

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Presentation Overview

- > Intelligent Utility System Program
- > Damage Prevention Applications
- > Other Damage Prevention Technologies

Intelligent Utility System Program

- > Reduce the cost of compliance
 - Hardware and software
 - Data management labor

- > Decrease operational risk
 - Increased data quality
 - Enhanced awareness

- > Facilitate the transition to data driven decision making

IUS – Current Project Objective

- > Create an architecture that provides . . .
 - Low cost data collection devices
 - Simple software
 - Access to up-to-date engineering information
 - Real-time data submittal from the field
 - Minimal back-office processing
 - Single repository for asset, engineering, operational and integrity data

Tools

- Smart phones and tablet devices
- Cloud computing
- GIS



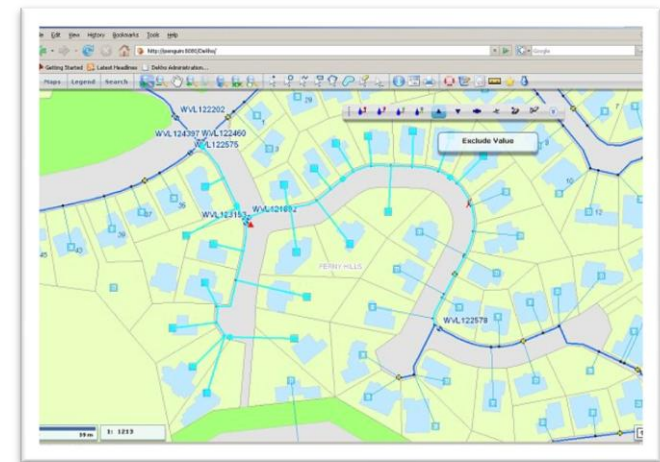
Data Collectors

- > Consumer grade smart phones and tablets
 - iPad and iPhone
 - Android devices
 - Windows
- > Cost = \$400 - \$800
- > Feature rich, easy to use
- > Plethora of developers and supporting services
- > Durability? But easy to replace!
- > Evaluating accessories to support field use



GIS

- > Allows direct access to GIS for field viewing
- > Allows direct GIS feature updates
- > Attaching field data to GIS features facilitates future analysis and trending
- > Using Esri ArcServer (compatible with Smallworld)



Software Application

- > 3-GIS Network Express
- > Smart phone/tablet version of mobile data collection software

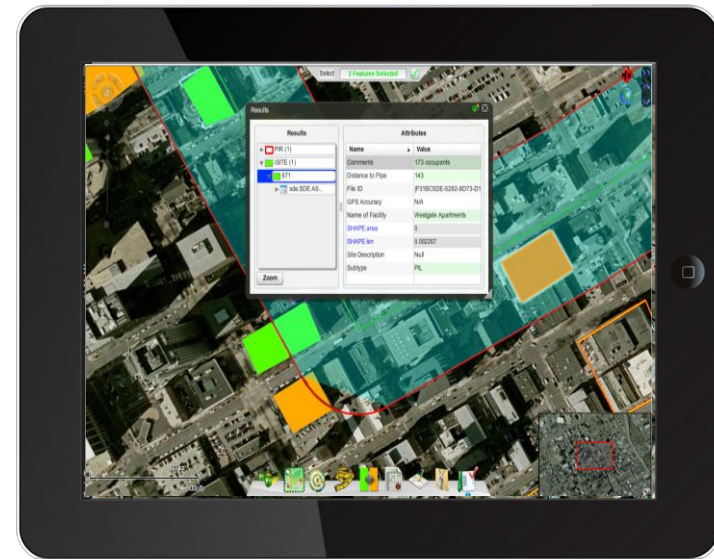


Status

- > Software architecture developed
- > Operator specific applications being built
- > Pilot and implementation projects on-going

Current Applications

- > CP readings
- > Exposed Pipe Surveys
- > Marker ball installations (RFID tags)
- > HCA field data capture
- > One-call tickets (electronic whitelining)
- > Excavation encroachment monitoring
- > New service installations



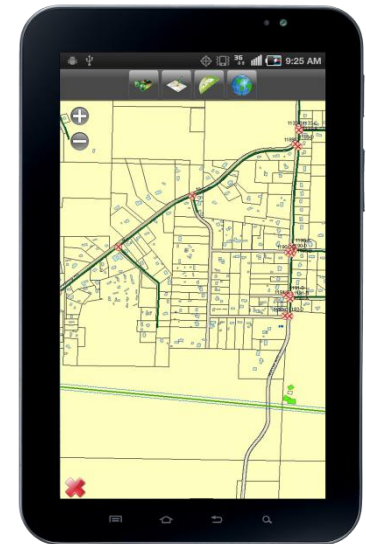
Barcode Scanning

- > Integrate barcode scanning for capturing new installation information
- > Pole mounted system with high accuracy GPS, tablet computer, new installation data collection software, and barcode scanner



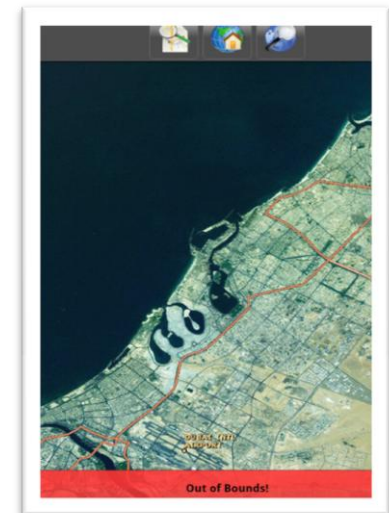
Marker Ball Applications

- > Marker balls are a great tool to support utility re-locating
- > Must record their location during installation
- > Information should be available immediately
- > Is consumer grade GPS sufficient?
- > Testing with Atmos
- > DOT Workshop in Virginia



Excavation Encroachment Monitoring

- > Cab-mounted monitoring system
- > Data from design files or GPS-enabled locators
- > Mobile viewing tool for site monitoring
 - Warns of excavation activity outside of a valid one-call ticket
 - Warns of excavation activity encroaching underground utilities
- > Demonstration in Virginia in 2011
- > Technology refinement, pilot project in New York



Electronic Whitelining

- > Application to allow excavators to enter one-call tickets from smart phones and tablets (Apple and Android)
- > Next generation Phase 1 technology
- > GPS or touch screen to create polygon
- > Ability to add pictures
- > Cloud computing for real-time validation

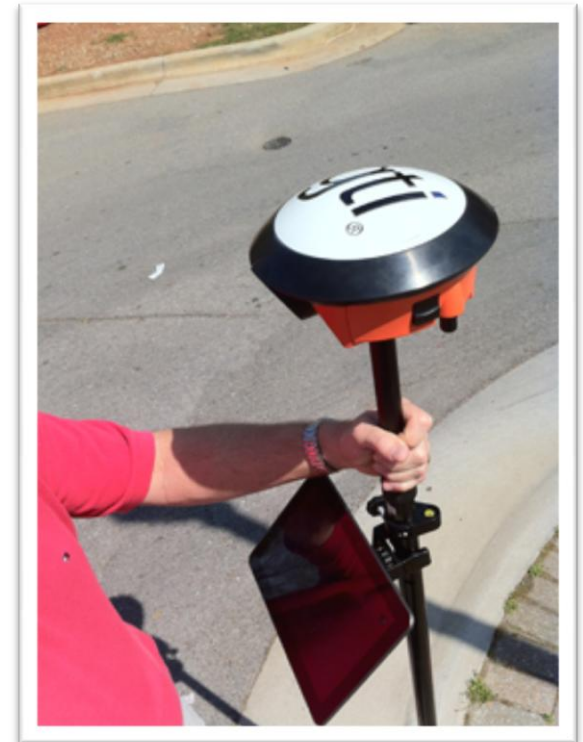


Electronic Whitelining

- > Integration with VUPS software
 - Testing this week
- > Implementation in Virginia in May/June 2012
- > Funding from Williams

High Accuracy GPS

- > GTI partnering with NavCom to provide real time, decimeter quality GPS
 - Ability to integrate with smart phones and tablet devices
 - Proprietary software to limit multi-path in urban canyons
 - No need for post processing



GPS Workflow

> Existing



> New



Results

- > Demonstration of high accuracy GPS for marker ball installations with Atmos

RFID Markers Highway Relocation Verot School Road, Lafayette LA



Improving Map Accuracy

> New Installations

- High accuracy, reliable maps
- Re-locatable



> GIS Conflation

- Improving existing map accuracy using GPS data collected through routine operations



Other Damage Prevention Technologies

- > Crossbore Best Practices
 - Preventing and detecting
 - Training and outreach

- > Acoustic Plastic Pipe Locator
 - Commercialization with Sensit

- > 3M's Locatable Warning Tape
 - Need a technique for trenchless installations

Thank you!
