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
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 smartphones 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

Collect Data in the Field → Bring Hardware Back to the Office → Download Data → Post Process Data → Integrate Data into GIS

> New

Collect Data in the Field → Integrate Data into GIS
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!