NEARC Spring Conference 2011

Hot Trends in Mobile GIS Technology

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Agenda

- Overview of the state of mobile as it pertains to GIS
  - Devices
  - GIS Data
    - What types of data
    - How is data distributed
  - What Tools are out there
  - Smartphone devices
    - ESRI SDKs for Android, Iphone, Win Phone 7
    - Demos
  - Other devices
    - Laptops, Tablet PCs, Windows Mobile
    - Demos (Mobile Mapping Application, ArcGIS Mobile)
  - Future Considerations

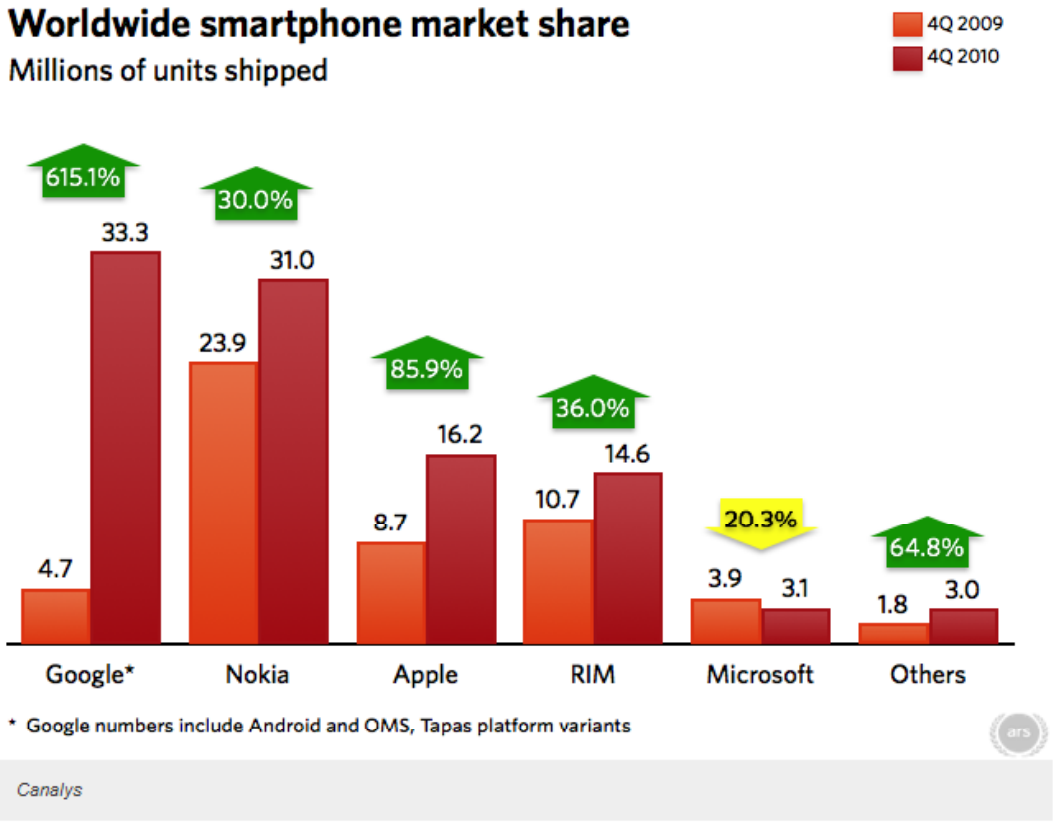
The World of GIS is Changing

- **Hardware Technologies are Greatly Expanding**
  - Lots of New devices
  - Faster Internet/Broadband
- **Providing Data to Crews… More Options than Ever**

The World of GIS is Changing

http://gigaom.com/2010/03/26/1-in-2-americans-will-have-a-smartphone-by-christmas-2011/

One in two Americans will have a smartphone by Christmas this year, Nielsen forecasts (compared to just one in 10 in the summer of 2008) Iphone, Androids, Win Phone 7, etc.



Tracked by Canalys
http://arstechnica.com/gadgets/news/2011/01/android-beats-nokia-apple-rim-in-2010-but-firm-warns-about-2011.ars

Change in Mobile Market

Due to:

- Increased product availability
- Increased application availability
- Better native features – GPS, Camera, music, email, etc.
- Declining prices for smartphone devices

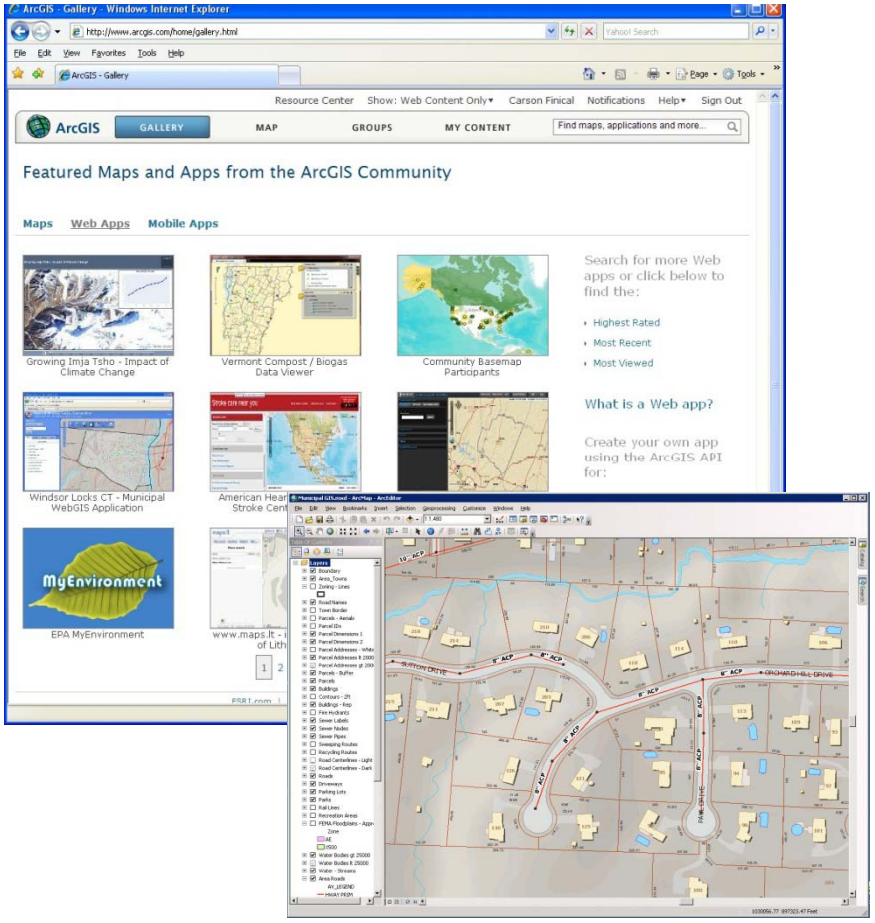
Software Innovations… Feed Data to "Any" Device

- **Software Now Feeds Data to Your Users Regardless of Hardware**
  - Esri's ArcGIS Server
  - Google Maps
  - Bing Maps

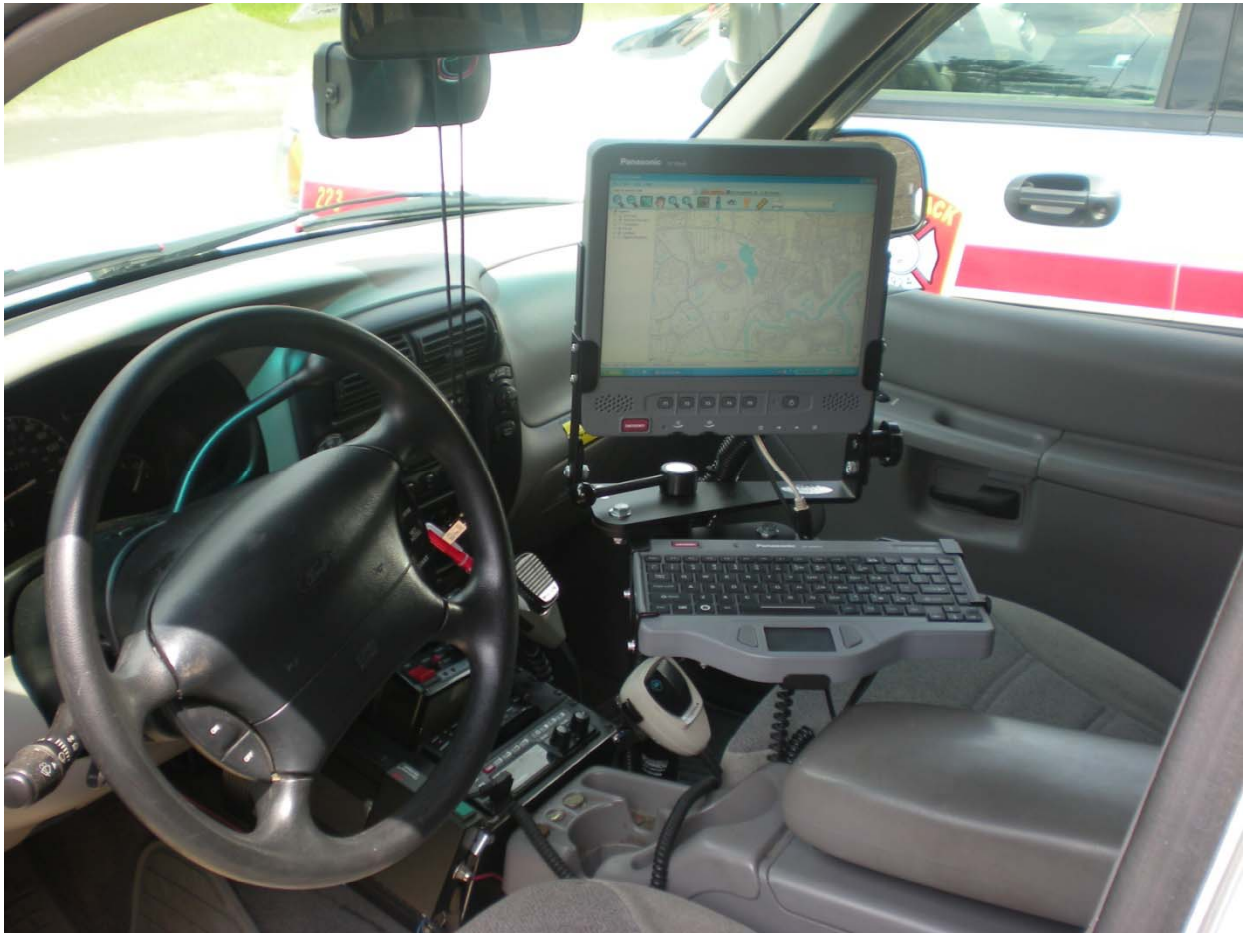
Feed…
- Web Applications
- Field Applications (Field Laptops)
- Mobile Devices (Phones)

Serve Data from Your Office or "The Cloud"

- **ArcGIS Server**
  - Serve Your Own GIS Data to Staff and the Public.
- **WFS/WMS Map Services & ArcGIS.com**
  - Load Your Data on the Internet and View on Devices
- **No Web? Local Data**



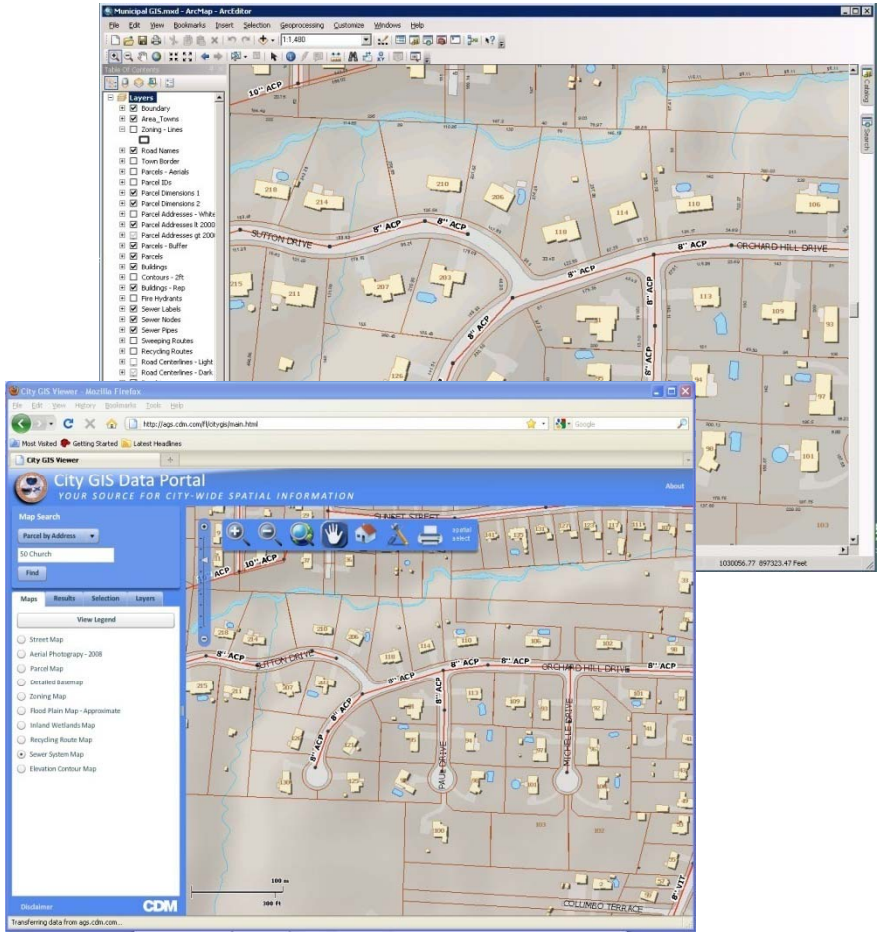
Using These Technologies Allows You to Get Data to Anyone, Anywhere, Using Any Device*



* Almost Anyone, Anywhere, and Any Device

Getting GIS Data To Your Staff … In the Office or Over the Web

- **Web – Provide User-Friendly Access to GIS Data**
- **Map Services – Feed GIS Data Over the Web to Desktop GIS**
- **Technologies - ArcGIS Server, Google, Bing**



No More Going to the GIS Guy to Get What You Need

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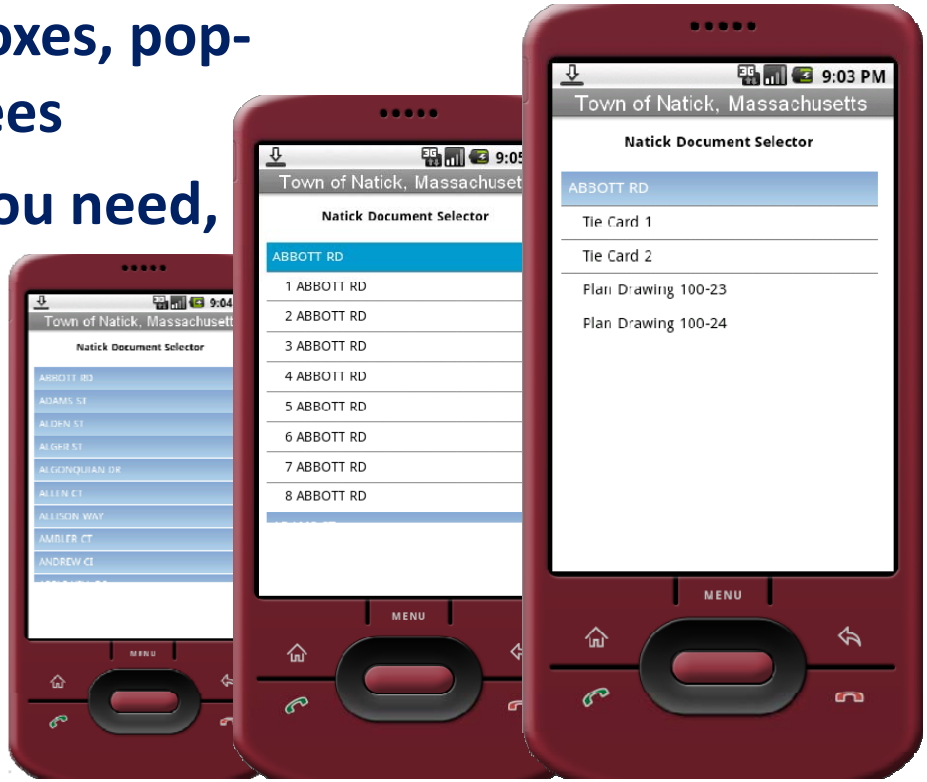
Getting GIS Data To Your Staff
… In the Field for Operations Staff

- Full GIS Functionality in the Field
- Over Web or Replicated
- Integrated Data (CCTV, GIS, etc.)
- Tons of uses
  - Data Access in the Field
  - Asset Inventory
  - Data Collection & GPS
  - Emergency Response

How Will Data Be Used?

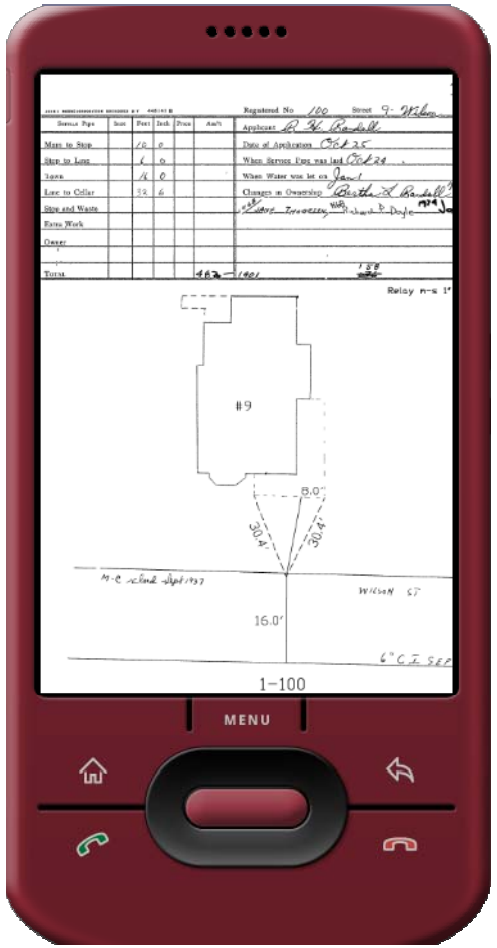
- Tools are simplified
- Processes are streamlined
- No more complex dialog boxes, pop-ups, messages, decision trees
- The tools are doing what you need, when you need it.



How Will Data Be Used?

We're able to do this because:

- **More sophisticated hardware, services, and development APIs**
  - **Each will cut time for development**
- **Allowing for more attention to User Interface and User Experience**

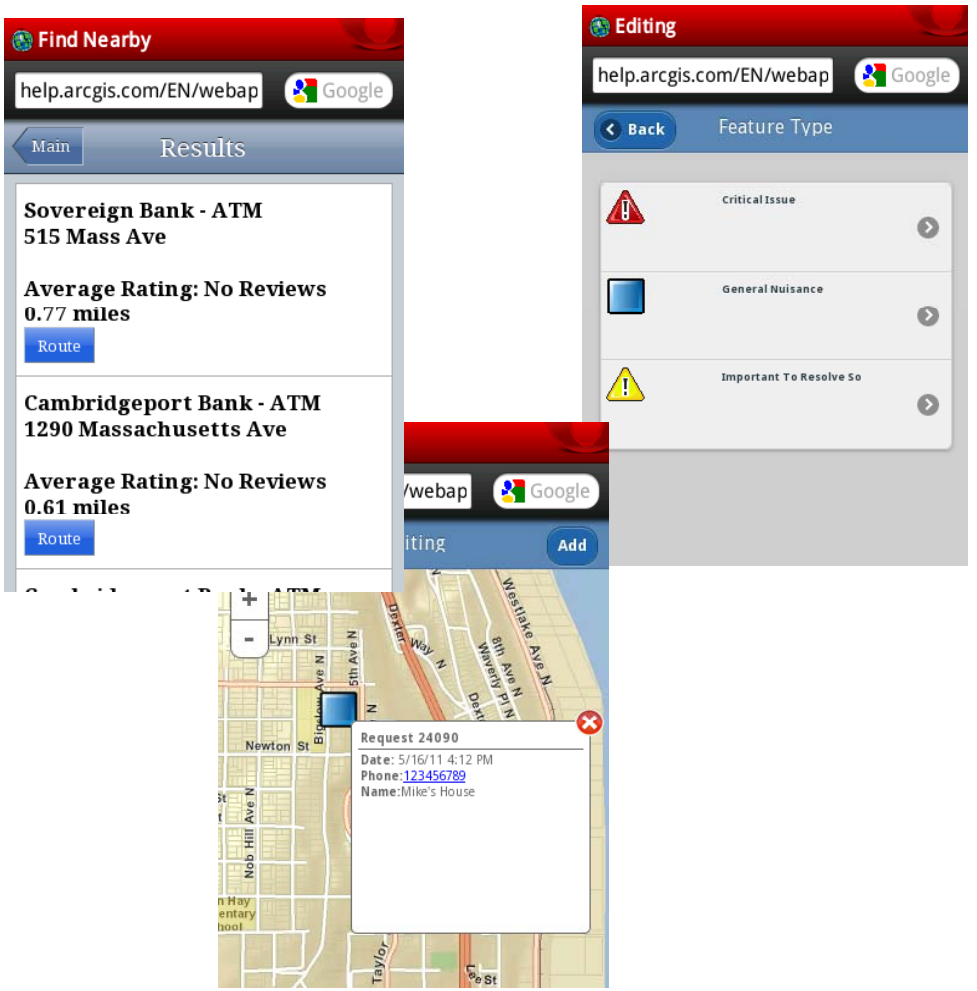


Getting GIS Data To Your Staff … via Mobile Devices

- Push GIS Data to Popular Devices Over the Web
  - iPhone and iPad
  - Android Devices
- Growing GIS Functionality
- Gaining in Popularity
- A Hot Trend… and Actually Usable

GIS On A Smartphone

- GIS can be deployed on a wide variety of smartphones at one time using the web
- Who says you have to the specific SDK to view data on your Android, IPhone, Windows Phone 7 Device?
- Leverage ESRI's JavaScript API (Dojo mobile, JQuery Mobile)



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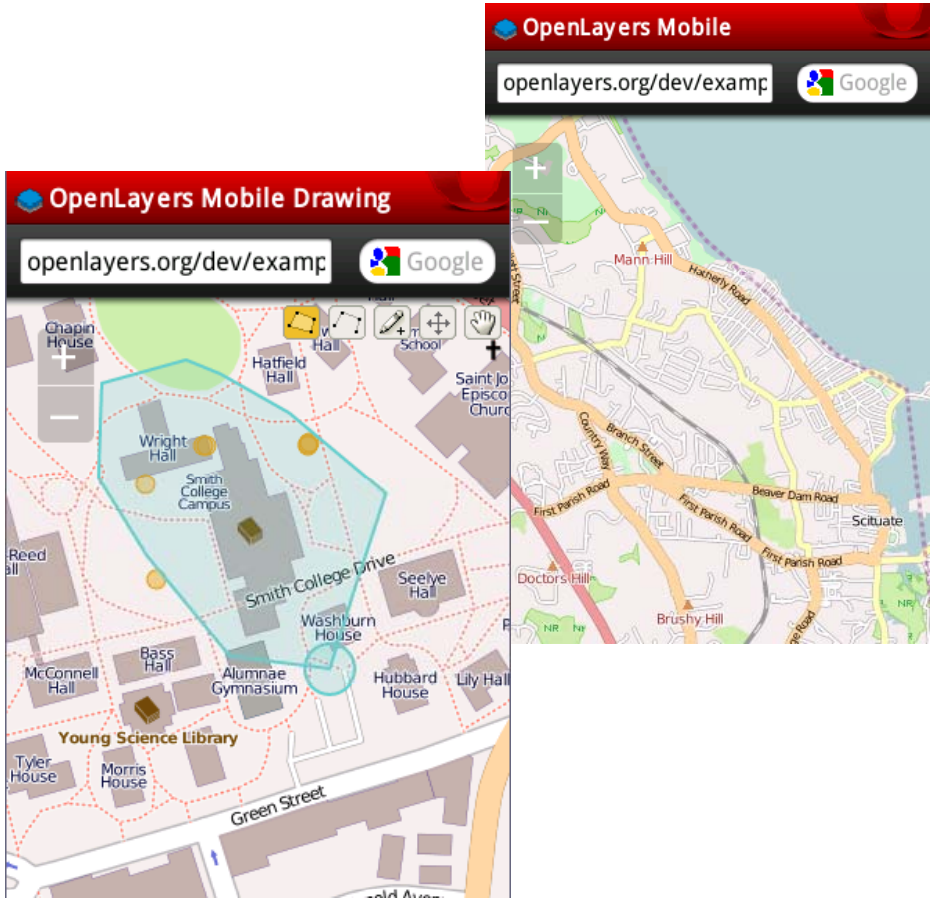
GIS On A Smartphone

- Going Open Source? Can use OpenLayers!!!
- Still can hit ArcGIS Server Web Services (if published as WMS,WFS)



GIS On A Smartphone

- **IPhone SDK**
- **Windows Phone 7 SDK**
- **Android SDK (coming out of BETA very shortly)**

Use these if you need access to the native hardware or native applications (Camera, accelerometer, GPS (in some cases), storage (in some cases)

GIS on Your iPhone, iPad, or Android

IPhone Movie

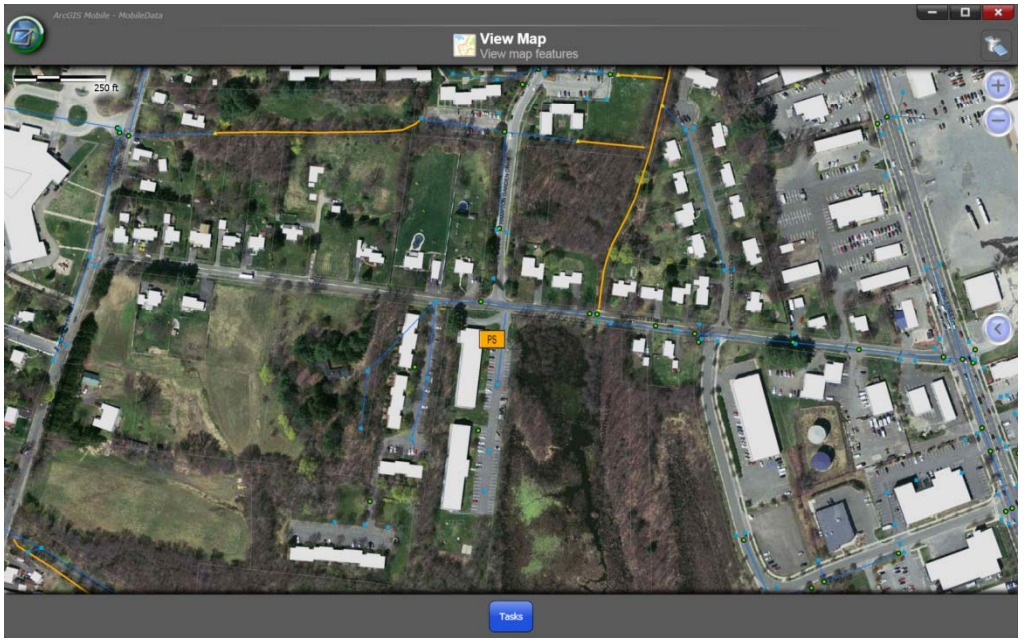
Other devices

- Viewing GIS on other devices (the phone doesn't fit every use case):
- Windows Mobile (CE)
- Laptops
- Tablet PCs

Other Devices - Options

ArcGIS Mobile

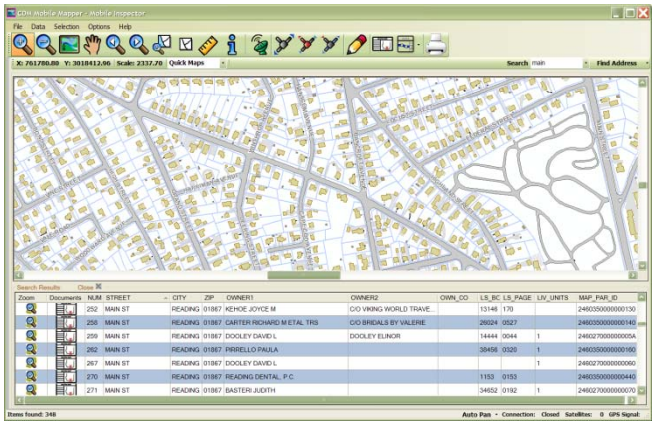
- Easy to use out of the box solution
- Map Viewing
- GPS
- Query Data
- Field Collaboration w/ Tracking
- Data Synchronization
- Customizable (not to the extent you can customize with ArcEngine)



Other Devices - Options

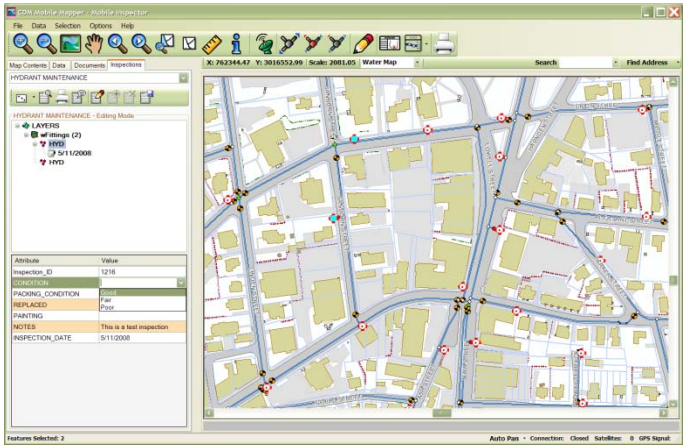
ArcEngine

- ArcObjects SDK



- Anything you can do with ArcGIS Desktop, you can recreate using ArcEngine

- Provides the ability to fully customize the ArcGIS Desktop experience



A Few Comments and Opinions

- This is Not Rocket Science
- These Technologies Feed Asset Management Programs
- Base GIS Software Has These Capabilities
- Look to Leverage Your Software to Provide Data to Staff At All Levels

Future Considerations

- ArcGIS Runtime soon to be released….
  - Not quite as powerful as ArcEngine
  - More powerful than ArcPad/ArcMobile

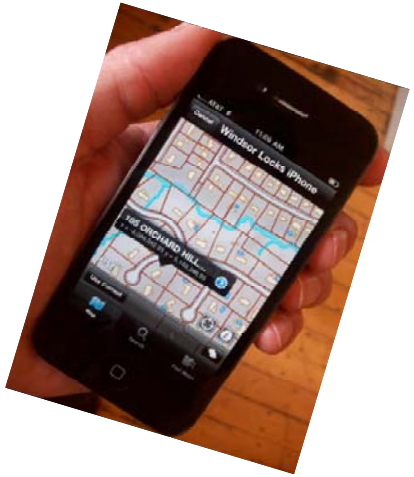
- Technology is improving. We will see:
  - Faster broadband speeds
  - Improved broadband quality
  - Better devices
    - More storage capacity
    - Better processors
  - Even better applications

Overview

- Leveraging the internet is the most effective way to get data to the mass of devices (i.e. phones … and most everything else)
  - Serve your own data through ArcGIS.com or ArcGIS Server
  - Steal others data through ArcGIS.com, or the large variety of free map servers out there (MassGIS)

- Getting data on a local device
  - ArcGIS Mobile
  - ArcEngine
  - Caching?

Have Questions?



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