Mobile Technology and GIS
Large Scale field data collection
Overview

• History of Mobile Data Collection
• Types of Mobile Technology
• GIS issues in Mobile Application usage and development
• Custom applications using GIS
• A current project for ADA Compliance using GIS technology
Mobile Technologies I have developed on...

- Early Mobile Device predated the Internet
- Serial or USB interface to copy data
- ActiveSync technologies
- Ruggedized Tablet PC’s
Mobile Apps for Field data collection

• Many definitions of mobile data collection
  • Web application running on a tablet/smartphone
  • Access database on a Microsoft surface tablet
  • Hybrid application running on phonegap on Android or iOS
  • Native apps developed in Android or IOS
Buy vs. Build

- Usually budget drives this choice
- Where is data stored, do you have solid backup and security?
- Many commercial apps are buggy
- Lack flexibility
Mobile GIS Technology

- Lot of choices, but
- All have significant gotcha’s
- All require some kind of access to centralized server or data copying
GIS considerations for mobile

• Most mobile apps are not map centric
• Screen real estate is limited on mobile
• Built in GPS is often not accurate enough for placing feature
• How do you design the app so that you can seamlessly access the map?
Integrated GIS workflows on mobile

• GIS on mobile needs to be simple
• Use simple points wherever possible
• Drawing features is fine
• Editing features is usually difficult for crews
Developing Mobile Apps

• Building Mobile Apps is still harder than it should be
• Automating GIS is funky on mobile
• Need to learn Java or C to be serious with it
• Development tools are still difficult to use
• Xamarin and Phonegap
Mobile Data collection App Architecture

- No single architecture for all projects
- My preference is to only use mapservers for basemap
- Store GIS data in local database as GML or GeoJSON
- Sync back to server via sync services
- Simple and lightweight
Getting your data saved

- Most times, you can’t rely on connection to the database
- Some mechanism to sync data back to a central database is necessary
- Syncing mechanisms need to deal with photos, data, GIS data, and
Planning the field effort with GIS

GIS is extremely useful for planning large-scale field work with large numbers of surveyors and crews.
Web Map integration

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GIS driven statistics

- Track progress of survey
- Monitor Crew performance
- Monitor Bus Route completion
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Android App

Bus stop ADA compliance Survey
Handling Spatial Relationships without GIS

- Built custom facility modeler within app
- Drag/interactive interface
Wrap Up

• GIS on mobile needs to be simple, but the overall solution can benefit from it
• The GIS should be transparent to the user experience
• People expect the “Google Maps” type usability and experience
• Custom Application have value for large scale field work

QUESTIONS??
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