GIS in the Field: A Path to Increasing Efficiency

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1. Define GIS and GPS
2. What are ArcGIS and ArcCollector?
3. I-69 Section 6 Data Collection Example
4. Standardize Typical Field Data Collection
5. Beyond These Examples
1. GIS and GPS

GIS – Geographic Information Systems
Geographic representation of data

System used to view, store, manipulate, analyze, manage, and query spatially located data.

Not Just a Map!!
1. GIS and GPS

GPS – Global Positioning System
Way to determine location in the world

System used to record and display location data.
2. ArcGIS and ArcCollector

- **What is ArcGIS?**
  - Software created by ESRI, Inc.
  - Used by the state
  - Used by some counties
  - Used by many consultants
  - Desktop version

  Works offline with locally stored information but allows access to information published on servers available through the internet.

[ESRI logo]
2. ArcGIS and ArcCollector

- What is ArcGIS?
  - Online version
    - Work through a web portal with files published online
    - Internet connection required
    - Create, use and/or share data
    - Work stored on ESRI’s server or on local ArcGIS servers
    - Requires organization login
2. ArcGIS and ArcCollector

- Organizational Accounts
  - Purchase of ArcGIS Desktop
    - Administered by Organizational Administrator
  - Purchase Online Account
2. ArcGIS and ArcCollector
2. ArcGIS and ArcCollector

- What is ArcCollector?
  - Extends ArcGIS to the field for data collection
  - Free App available for IOS®, Android®, and Windows®
  - Use ArcGIS online login to access organizations map projects
2. ArcGIS and ArcCollector
2. ArcGIS and ArcCollector

- **Advantage to ArcCollector**
  - Mobility
  - Secure
  - Real-time data storage on the cloud
  - Attach photos to points on a map
  - Seamless tie into ArcGIS

- **Disadvantage**
  - Requires advanced version of ArcGIS to manipulate collected data on the desktop, can still be viewed as read-only data with basic and standard versions
Windshield Surveys

Goals:

1. Determine type and number of buildings within/near each reasonable alternative of I-69 Section 6

2. Identify other features of interest

Unmapped waterways, wetlands, utilities, haz mat issues
3. I-69 Section 6 Data Collection

Process

1. Create data in ArcGIS Desktop

Standardization – Data was input using pre-set domains (drop-down menus).
3. I-69 Section 6 Data Collection

Process

1. Create data in ArcGIS Desktop
   1. Agricultural
   2. Commercial
   3. Industrial
   4. Public
   5. Residential
   6. Church
   7. Hospital
   8. Recreational
   9. New Construction
   10. Billboard
   11. Cemetery
   12. Hazardous Material
   13. Quarry
   14. School
   15. Utility
3. I-69 Section 6 Data Collection

Process

1. Create data in ArcGIS Desktop

Pre-populated information:

Structure type

- Commercial – Name of Business
- Hazardous Materials – Recorded hazard
3. I-69 Section 6 Data Collection
3. I-69 Section 6 Data Collection

Process

2. Identify Other Files to View in Field
   - Streams
   - Wetlands
   - Notice of Survey Mailing Areas
3. I-69 Section 6 Data Collection
3. I-69 Section 6 Data Collection

Process

3. Publish Layers to ArcGIS Online
   - Publish out of Desktop to local server
   - Add layers to ArcGIS Online via web URL to local server’s feature services

4. Download ArcCollector apps
   - Access ArcGIS Online Gallery from ArcCollector
   - Run app on-line or off-line
3. I-69 Section 6 Data Collection

Process

5. Test Run

Identify other needs:

A. Point and line files needed for utilities

B. Business Rules

1. Take pictures of commercial, industrial, recreational properties
2. No pictures of residential properties, utilities or billboards
3. I-69 Section 6 Data Collection

Process

6. Collect Data

Run app online or offline

Online = Leave on cellular data
Live updates to ArcGIS server
Don’t need to download AOI
Sucks battery life—2-3 hrs on full charge
Slows down the collection process

Offline = Turn off cellular data
Save battery life (relative term)—4-5.5 hours on full charge
Limited to pre-downloaded AOI
3. I-69 Section 6 Data Collection

Process

6. Collect Data
3. I-69 Section 6 Data Collection

Process

6. Collect Data
3. I-69 Section 6 Data Collection

Process

6. Collect Data
3. I-69 Section 6 Data Collection

Process

6. Collect Data
3. I-69 Section 6 Data Collection

Process

6. Collect Data

Additional Needs:

Visual way to indicate points have been field verified
3. I-69 Section 6 Data Collection

Process

6. Collect Data
3. I-69 Section 6 Data Collection
3. I-69 Section 6 Data Collection

Process

6. Collect Data

**Additional Needs:**

Stand alone picture point file
3. I-69 Section 6 Data Collection
4. Standardize Data Collection

Applying the same concept to everyday data collection needs

Why?:

- Standardize method, type, and storage of data collection
- Real-time server back-up
- Share data real-time
- Paperless, readable, organized notes
- Ensure collection of all relevant data
4. Standardize Other Data Collection
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4. Standardize Data Collection

Types of Environmental Data Collected

1. Wetland Sample Points – sub-meter
2. Wetland Boundaries – sub-meter
3. Photos Points – 3-5 meters
4. Stream Information – 3-5 meters
5. Environmental Project Information – 3-5 meters

Site and surrounding property description, flora and fauna in the project area, hazmat, karst, parks, schools, hospitals, unique features, site photos, etc.
4. Standardize Data Collection

Types of Environmental Data

6. Generic Data Collection File
   Environmental Point of Interest
   Environmental Line of Interest
   Environmental Polygon of Interest
5. Beyond These Examples

Other Applications

Utilities

- Pictures
- Preliminary Locations of Utilities
- Marking Approx. Locals Field Confirmed Locates

Greenfield Utility Coordinator:

“For the utility side, I can see coordinators using this application for field verification of utilities, placing pole numbers on objects, placing One Call Information on the drawing, placing attributes such as company, size of line, type of line (phone, electric, gas, etc), general notes that will be automatically added to the file. This will eliminate the possibility of losing information between the field and the office.”
5. Beyond These Examples

Other Applications

Railroads

- Pictures
- Inspection Data Collection for Crossings
- Create layer with data set for this purpose
Questions?
Contacts

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