MOBILE DATA COLLECTION: A PRIMER

GENE STROMAN, PUBLIC LIFE INTERN
SF PLANNING DEPARTMENT, SPRING 2015
1. Project Overview
2. PLS Workflow Comparison
3. Project Setup
4. Demo
TIMELINE

1. FOCP GRANT Application: August 2014
2. FOCP Grant Awarded: December 2014
3. Internship Began: January 2015
4. iPads Delivered: April 2015
TEAM

- Robin Abad
- Teresa Ojeda
- Mike Webster
- Mike Wynne
- Brian Quinn
PUBLIC LIFE STUDIES
ACTIVITY MAPPING

- Captures the location, demographics, posture, and activities of the users in given public space

- Ex: BART Plazas, Parklets, Annie Street Plaza

- Involves a full team of data collectors

- Many shifts per day

- Often several people collecting at the same time

- Potentially a large number of points in a small area

- Time and date are determining factors of activity levels
COMMON USES:
• Track Infrastructure Conditions
• Carry out Damage Reports
• File Service Requests
• Map Places of Historical Interest
• Record Violations
• Manage Land Use / Property Maps

OUR USE:
• Activity Mapping
TYPICAL WORKFLOW

1. Create intake matrix / hardcopy forms
2. Print & assemble materials
3. Distribute Materials
4. Observe / collect public life data
5. Enter totals into google form
6. Transcribe rows into excel
7. Data cleanup
8. Create geodatabase
9. Transcribe data points into ArcMap
10. Join tables to shapefile
11. Merge all data
12. Scan all hard copies
13. Run geospatial data analysis on points in ArcMap
14. Run numeric data analysis on tables in excel
15. Production on maps, charts, tables in Adobe Suite
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15. Production on maps, charts, tables in Adobe Suite
1. Create geodatabase
2. Create data collection map
3. Upload Resources and set properties
4. Observe / collect public life data
5. Upload data points
6. Access data points on computer
7. Run geospatial data analysis on points in ArcMap
8. Run numeric data analysis on tables in excel
9. Production on maps, charts, tables in Adobe Suite
IN SUM ...

✓ Fewer steps
✓ Cuts out the most time-consuming steps

MORE TIME FOR THE FUN STUFF:

✓ Qualitative analysis in Excel
✓ Spatial analysis in ArcMap
✓ Production on maps, charts, tables in Adobe Suite
MDC PROS & CONS

**PROS**
- No more clipboard!
- Online / Offline
- Seamless data processing
- Efficiency

**CONS**
- Cost of tablet & MyFi
- In-field risk
03 PROJECT SETUP
01 GEODATABASE SETUP

STEP 1
In ArcCatalog, create a new Geodatabase to house all of the data you will be collecting in-field. It is important that all files created from this point on live in this Geodatabase, as the edited properties of this geodatabase will affect all associated files.

STEP 2
Open up the Properties dialog box for the newly created geodatabase. Within the “Domains” tab, setup values for each of the data categories you are looking to observe in-field. All text-based field types will have “Coded Values” domain types. Assign a list of coded values for each of the domains. These are the options a data collector will be able to select from on a drop-down list. Assign unique codes for each option, as well as a Description (this is the way the text will appear to the data collector).

STEP 3
Create new Feature Classes (Points) for each of the data point classifications you are looking to collect. In the properties box for each of these Feature Classes, create new fields and assign corresponding domains (the set of drop-down options you intend the data collector to see underneath each of the fields).
02 MAP SERVICE SETUP

STEP 1
Two different map services must be set up in ArcMap. For each service, bring in the relevant layers using the “add data” tool;
Service 1 is made up of the feature classes setup in geodatabase setup. These are the data points that a user will be collecting in-field.
Service 2 is made up of a series of shapefiles that will serve as a basemap, helping to contextualize a user’s surroundings.

STEP 2
Once you have set up both services in two separate .mxd documents, publish the service to a server via ArcMap.

STEP 3
After both services have been hosted on a server, set service properties and combine services into an ArcGIS Online Map document.

Either
(1) ArcGIS Online or
(2) SF Multitenant Server
03 BACKEND SETUP

1. Enterprise geodatabase hosted at SF Multitenant Server

2. Assemble services into ArcGIS Online Map

3. Download map to device

4. All data collected online is sent back to Enterprise Geodatabase
MOBILE DEVICE SETUP

**ONLINE**

**PROS**
- Automatic syncing
- Unlimited zooming
- More accurate geolocation
- Automated editor tracking

**CONS**
- Requires live cellular data or Wi-Fi connection

**OFFLINE**

**PROS**
- Collect data without internet connection

**CONS**
- Manual sync with internet connection
- Limited to Esri map templates
- Unreliable
- Manual editor tracking
04 DEMO
DATA COLLECTION

[Esri Collector Demo]
05 POST-COLLECTION WORKFLOW

1. Collected points are transmitted to ArcGIS Online
2. Manually download data from ArcGIS Online as a shapefile to computer
3. Republish map service

AGOL

SDE

1. Collected points are transmitted to Enterprise Geodatabase
2. Access data by connecting to Enterprise Geodatabase on personal computer

ArcGIS Online Server

SF Multitenant Server
CONCLUSION

LESSONS LEARNED:

• BETA Testing
• Photos as Attachments
• Offline Collection
• Public Life
CONCLUSION

FURTHER RESEARCH:
• Offline Functionality
• Related Tables
CONCLUSION

POTENTIAL APPLICATIONS:
• Activity Mapping Plazas
• Urban Forest Inventory
• Living Alley Existing Conditions
• IIN Business Surveys
• Façade & Sidewalk Existing Conditions
THANKS!

✓ QUESTIONS?
✓ COMMENTS?
✓ APPLICATIONS?