Collector for ArcGIS: Working with High Accuracy Data

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Agenda

• Introduction
• Getting started
• Collector setup for high accuracy data collection
• Field data collection process
• Tools and resources
• Q&A
Field GIS

Taking GIS Beyond the Office

• Planning and Managing Work
• Viewing Maps
• Collecting New Data
• Inspecting Existing Data
• Working as a team

Connecting the Field with the Enterprise
Collector for ArcGIS

- Web Maps
- Work Offline
- High Accuracy GPS
Collector for ArcGIS: How is it being used?

- Collect and Maintain Data
- Capture Observations
- Perform Rapid Assessments
Collector for ArcGIS | Asset Inventory

- Improve accuracy and currency of data
- Modernize field workflows

Sign Inventory

UAV Ground Control

Hydrant Collections
Collector for ArcGIS | Le-Ax Water District

Travis Anderson
Civil Engineer
Collector for ArcGIS | Control Points Use Cases (Drones)

Drones

Soccer cones

Collector + RTK/RTX

Control Points
Getting Started

Considerations for high accuracy data collection
Data Collection Considerations

- Project accuracy requirements
- Supported receivers
- Correction services
- Desired basemap for collection
- Datum transformations
Collector for ArcGIS | Lots of Receivers

Trimble
Spectra Precision
Bad Elf
EOS Positioning Systems
GENEQ inc.
Septentrio
JUNIPER systems
GARMIN
Dual
Leica Geosystems
- when it has to be right
Collector | Using Real-time Differential Corrections

- Improve accuracy from receiver
- Requires a subscription and connection*
- Optionally use 3\textsuperscript{rd} party app to configure
- Need to understand your map’s projection and apply a location profile accordingly
Datum Transformations
Minimize when possible to maintain accuracy

DT1 – Defined in location profile
DT2 – Determined by basemap
DT3 – Determined by storage coordinate system

Geographic Transformation Table
Collector Setup

New High Accuracy Capabilities
Demo
Collector | Location Provider

- Located in App Settings
- Support for
  - Integrated receivers
  - Bluetooth receivers
  - Serial receivers on Windows
- Connect to named receiver
- Specify antenna height

iOS White Listed Providers:
- Trimble R1/R2
- Eos Positioning
- Geneq iSxBlue
- CHC
- Bad-Elf
- Aman NMEA-BT Adapter
- Dual GPS
- Garmin GLO
Collector | Location Profile

- Define the transformation used from receiver to map
  - Integrated location sensor or external GNSS receiver

**Input:** Coordinate System used by GNSS receiver correction service
  - Always GCS (example: NAD_1983_2011)

**Output:** Coordinate System used by Web Map’s BaseMap
  - GCS or PCS

**Method:** Datum transformation selection
  - Choices by map extent
  - Custom and grid-based transformations not supported

**Name:** Provide a memorable name for the profile
Collector | Location Accuracy

- User-defined accuracy value
  - Match project accuracy requirements
- Specify in imperial or metric units
  - Based on measurement units
Field Data Collection
New High Accuracy Capabilities and Use Cases
Demo Recap

- **GPS badge**
  - Useful for troubleshooting

- **Basemap overzoom**
  - Zoom in beyond minimum scale range (resampled)

- **GPS Metadata fields**
  - Auto-populate accuracy information to point features
  - Based on well-known fields added to your Feature Layer (points only)
Tools and Resources
Demo
Tools and Resources

- New hosted feature layer option for collecting high accuracy metadata
- ArcGIS Solution Deployment Tool in ArcGIS Pro Deployment Tool
- Scripts available to help automate attribute creation and popup configuration
  - Record metadata fields

New Hosted Feature Layer

Create a new, empty feature layer. A feature layer lets you:

Select the layers to include. Click a layer name to edit it.

- Sewer Manhole
- Manhole Inspection

- Capture GPS receiver information
Collector | ProjectZ Geoprocessing Tool

- Z-value capture workaround
  - Altitude Stored as an attribute value
  - Capture height above the ellipsoid (HAE)
  - Subtracts antenna height
  - Converted into orthometric height if needed

*Note:* Editing Z-enabled geometry is not yet supported
Collectors | Additional Use of ProjectZ Tool

- Capture Drone ground control points (GCP)
  - Using Ground Control feature template
  - Convert into orthometric heights
  - Import GCP

New Hosted Feature Layer

<table>
<thead>
<tr>
<th>What do you want to do?</th>
<th>Select a feature layer template</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show All</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>Ground Control</td>
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<tr>
<td>Electric Utilities</td>
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<tr>
<td>Environment</td>
<td></td>
</tr>
<tr>
<td>Gas Utilities</td>
<td></td>
</tr>
</tbody>
</table>
Other Resources

Technical workshops
- Coordinate Systems and Projections: An Introduction
- Coordinate Systems and Datum Transformation in ArcGIS: An Introduction

Other resources
What is New
What is new in Collector - June 2017

- GPS Averaging
  - Some industry best practice, like USFS
  - Standard deviation metadata field
- Collector utilities scripts updated
Collector What’s Coming

Q3 2017
- Trimble Catalyst (Android)
- 95% confidence interval

2018
- Z value support
Take Away

• Access accurate location reliably
  - In field: GNSS badge
  - In office: GNSS metadata

• Data Collection Consideration
  - Receiver + Correction service choice
  - Datum transformation

• Use Case
  - Hydrant collection
  - Ground Control Point for Drone
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