An Affordable Process for Creating High Accuracy Orthomosaics

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Esri Imaging and Mapping Forum

Agenda

- Problem Statement
- Process
- Results and Analysis
- Customer Example

Problem Statement

• How can one create high quality orthomosaics using prosumer products?

Assumptions

- Low cost
- Off-the-shelf hardware
- Esri's tools
- Autonomous or PPK
- Goals
 - High accuracy
 - High GSD
 - Easy & repeatable



Field Process

Preparation

- Ground Control Point (GCP) plan
- Feature layer for Collector
- Site Prep and Collection
 - Startup, movement, recording



Field Process – Movement and Placement



Horizontal Orientation & maximum sky visibility critical

Target placement & Recording



Establishing GCP



Option 1

- GCP directly from Collector

Option 2

- Post Process raw data
- Project as necessary
- Join Collector data & PPK data
- Establish corrected GCP



Results and Analysis

Post Processed vs. Autonomous

Orthomosaic Result – With Ground Control



GCP Accuracy – PPK vs. Autonomous



Resultant alignment with Esri Basemap

Orthomosaic Result – No Ground Control



GCP Inaccuracy



Resultant alignment with Esri Basemap

Results & Lessons Learned

- Autonomous GPS
 - Sub-meter result
- PPK
 - Generally <= 10cm (RTK verified)</pre>
- Lessons Learned
 - Planning
 - Use one projection for everything
 - Know your post-processing tool
 - GCP placement is critical



Use Case for Aerial and Topo Data Captured from a Drone

Lightning 6.2.0.2 Copyright © 2017 BSD Technology LLC					
Alignment & Template					
Sheets	Seed C:\GIS\Index\ArcSEED.		mdb	Open	
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Pipeline Alignment Sheets for Design and As-Built Projects





















Pipeline Design & As-Built Sheets

- Unprecedented Accuracy & Detail
- Unprecedented Cost to Acquire
- Unprecedented Production Ease





















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