

PHOTOS, LOGS, REMOTE SENSING, ELEVATION MODELS, CONTOURS, INTRARED, DATA CONVERSION, ANALYSIS, DIGITAL MAPPING, 3D MODELS, GROUND CONTROL, LASER MAPPING, TERRESTRIAL

SANBORN Total Geographic Solutions

Presentation to LAR-IAC for Sanborn Certified Pictometry Ortho Imagery

Date: January 17th, 2008
Location: LA County

Presented by: Jason Caldwell, Director of Strategic Accounts

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SANBORN

Agenda

- Sanborn Overview
- Sanborn Certified Products
- Pilot Project Review
- Sanborn Production Methodology
- Product Comparisons
- Pilot QA/QC Issues and Acceptance Criteria Review
- Questions

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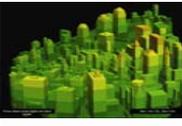
SANBORN

The Sanborn Map Company

Since 1866

Office Locations	Acquisition Resources	Services
Ann Arbor, Michigan Charlotte, North Carolina Colorado Springs, Colorado Fort Worth, Texas Greensborough, North Carolina Pelham, New York Portland, Oregon St. Louis, Missouri	Fixed wing aircraft (8) UltraCam Digital (2) Z/I DMC (4) Leica Analogue RC30/20 (2) Optech LiDAR-50 Hz (1) Leica LiDAR ALS 50 II (2)	Photogrammetric Mapping Remote sensing and analysis GIS software development Decision support tools Data analysis





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Sanborn Certified™ Products

PICTOMETRY®

- Sanborn uses Pictometry imagery to produce accurate Orthos for Pictometry customers
- 4-inch (1"=100' ASPRS Class I, NMAS, NSSDA)
- 6-inch (1"=100' ASPRS Class I, NMAS, NSSDA)
- 1-foot (1"=200' ASPRS Class I, NMAS, NSSDA)
- DTM/DEM provided by customer
- Spatial accuracy dependent upon quality of DTM/DEM and Exterior Orientation provided by Pictometry



Sample 1" Sanborn Certified™ Imagery



Sample 1" Sanborn Certified™ Imagery

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Pilot Project Area Review

- Project Area (shown in black)
 - 10.5 square miles
 - 42 Tiles
- Sanborn Completed two pilots
 - 11 MP Camera System
 - 16 MP Camera System
- Data Sources
 - 4" RGB Pictometry acquired imagery
 - Exterior Orientation (Provided by Pictometry)
 - Existing DTM and control (Provided by County)

LA-1402
PILOT Project

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Aerial Triangulation Review

- Ground Control Survey

LA109	6420656.7895	1815293.3150	11.2433
LA110	6490179.1383	1728993.2778	20.6476
LA111	6500964.5792	1758893.2498	67.8855
LA112	6502026.5461	1779378.9142	61.3049
LA113	6509985.2922	1802397.2650	104.4997
LA114	6504695.1370	1819484.1968	152.0813
LA115	6523956.0955	1842906.3558	43.8276
LA116	6527762.0733	1731210.4027	15.0636
LA117	6539890.0536	1755842.1176	27.6112
LA118	6547448.5474	1770276.1413	54.9909
LA119	6549859.6834	1780237.0043	107.7715
LA120	6548022.0558	1800468.1745	320.4205
LA121	6402177.6284	1802163.2299	525.3376
LA122	6420393.8265	1728094.3838	201.3745
LA123	6435447.0261	1737489.6870	233.9290
LA124	6445012.8528	1757824.8057	96.4721
LA125	6434524.8263	1782491.7176	122.8058
LA126	6464717.9797	1778968.4568	42.9581
LA127	6542117.0825	1818509.1046	175.7727
LA128	6536017.8534	1791341.5236	104.0481
LA130	6491082.0870	1825513.3062	206.4652
LA131	6421671.2247	1798196.0263	1028.4693
LA132	6403999.4956	1829495.7331	755.1376
LA133	6100559.2788	2125801.6061	3641.3907
LA134	6154125.5331	2110133.8808	3050.6575
LA135	6400483.8716	2112020.4488	2782.3248
LA136	6458453.0769	2120765.5338	2532.3215
LA137	6490335.1015	2122400.7856	2381.9453
LA138	6514629.7926	2121097.9684	2309.4685

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Stereo Compilation for Updates and New Features

- AT Solution Allows for:
 - Updates to Elevation Modeling
 - Building outline development
 - All accuracies consistent with:
 - 1"=100' for 0.33-foot AOI
 - 1"=200' for 1.0-foot AOI

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Orthophoto Imagery Production

Aerial Imagery
Nadir Image Chips Provided by Pictometry

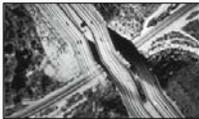
TIN / DEM
DTM Provided by LA County

Photogrammetric Data
Camera Calibration Data and Exterior orientation Provided by Pictometry

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Digital Orthoimagery Issues

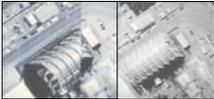
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Sanborn Corrects Common Inherent Orthophoto Problems Including:

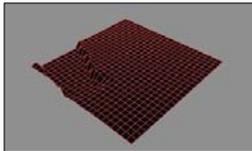
- Bridge Distortion
- Edge Displacement
- Building Ghosting
- Image Smearing
- Radiometric Correction



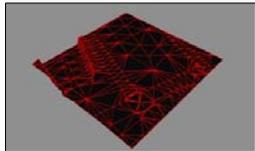

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Rectification

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GRID



TIN



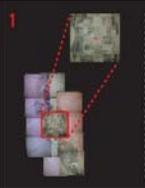
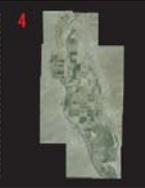
Sanborn uses terrain as a TIN, rather than a regular grid DEM/DTM when producing Orthophotos.



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SPICE Color Balancing Sample

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Target thumbnail zone selected	"Local" thumbnail color-balance	Global high-resolution color-balance	Final balanced scanned ortho-image
 <p>1</p>	 <p>2</p>	 <p>3</p>	 <p>4</p>
<p>Thumbnail are grouped into geographic/ terrain-specific areas for local color-balancing. Target tone is selected.</p>	<p>Thumbnail are color-balanced against local targets. Target parameters are then prepared for global color-balancing.</p>	<p>Local and global color-balancing weights are applied to high-resolution ortho-imagery.</p>	<p>Color-balanced and scanned final ortho-imagery is available for client.</p>
 <p>1</p>	 <p>2</p>	 <p>3</p>	 <p>4</p>

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Bridge Correction

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Radial Displacement

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- Pictometry narrow view angle reduces building lean

"sweet spot"

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Radial Displacement

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Large Format Camera

Medium Format Camera

Ground surface

Map surface

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Smart Seaming

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Typical Seaming Problem

Intelligent Seaming Process

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Seamline Comparison

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- Pictometry Medium Format
- Large Format Digital (DMC or UltraCam)

~70 Images

18 Images

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Pictometry Imagery vs. Existing DMC SANBORN

2007 Pictometry 4" Ortho Tile // 2006 DMC 4" Ortho Tile

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Pictometry Imagery vs. Existing DMC SANBORN

2007 Pictometry 4" Ortho // 2006 DMC 4" Ortho

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Pictometry Imagery vs. Existing DMC SANBORN

2007 Pictometry 4" Ortho // 2006 DMC 4" Ortho

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Pilot Project – Summary of issues SANBORN

- Building distortion caused by DTM

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Pilot Project – Summary of issues

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- Above ground features and seamlines



Building Lean (Collision)



Building Lean (Obscured Transportation)

Questions?

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