

2010 NAIP Presentation

Post-Mortem Meeting Salt Lake City, Utah

December 8, 2010

Forrest Godby

Clay Smith, PLS, CP

Ryan Bowe

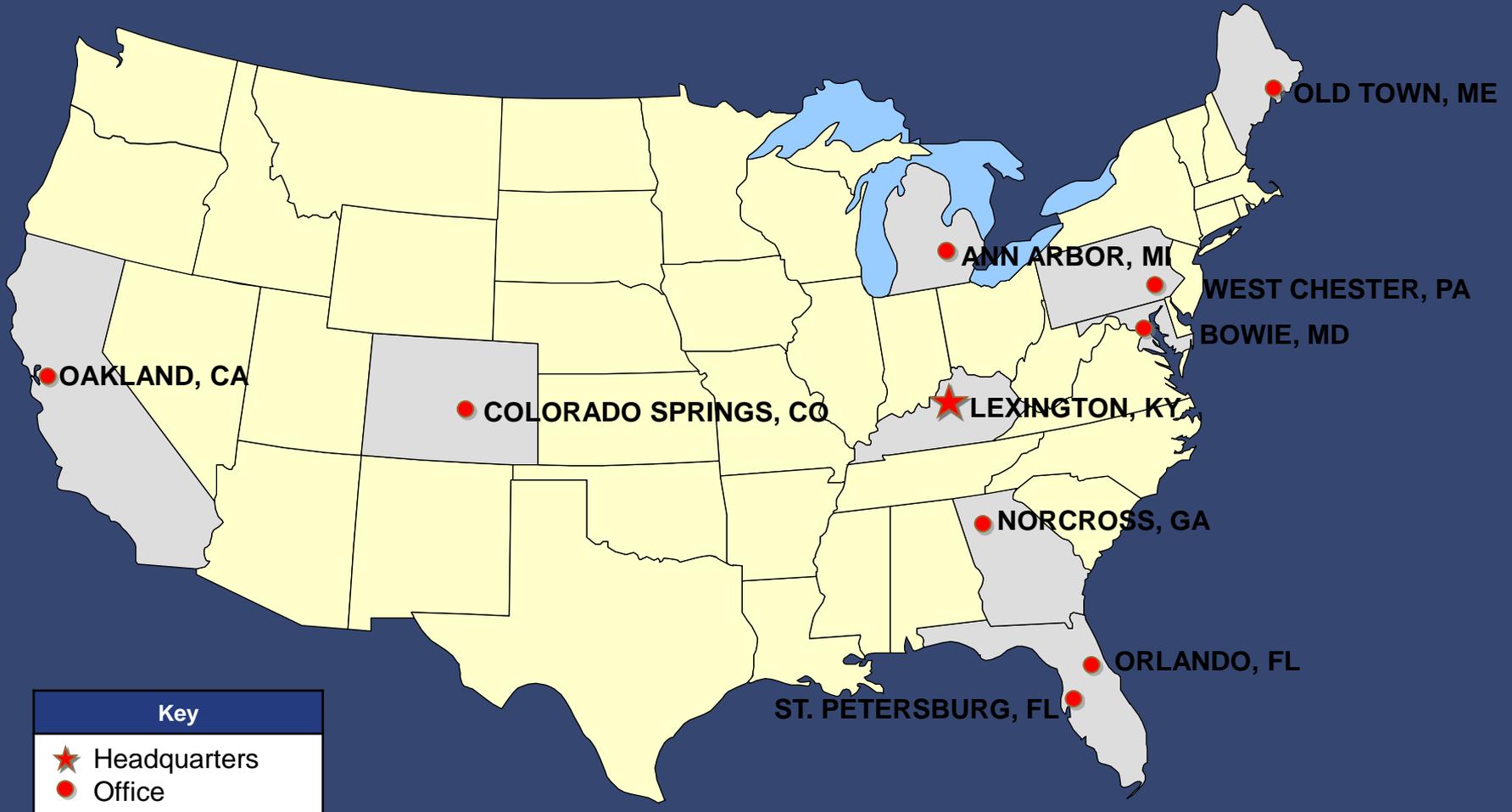
Mike Ritchie, PE, PLS, PSM, CP

Photo Science History & Background

- 1974 – Founded in Lexington, Kentucky
- Originally coal mine mapping
- 1991 – Ownership change (13 people)
- Today over 200 professionals... exclusively Geospatial
- Full-service Surveying, Mapping, Remote Sensing, and GIS capabilities
- Corporate Headquarters:
 - Lexington, Kentucky



Photo Science Office Locations



Major Federal Clients

- USDA Farm Service Agency
 - NAIP
 - NRCS
- USDA Forest Service Agency
- USGS
- NGA
- NOAA
 - Shoreline
 - Coastal Services
- USACE
- DHS – FEMA

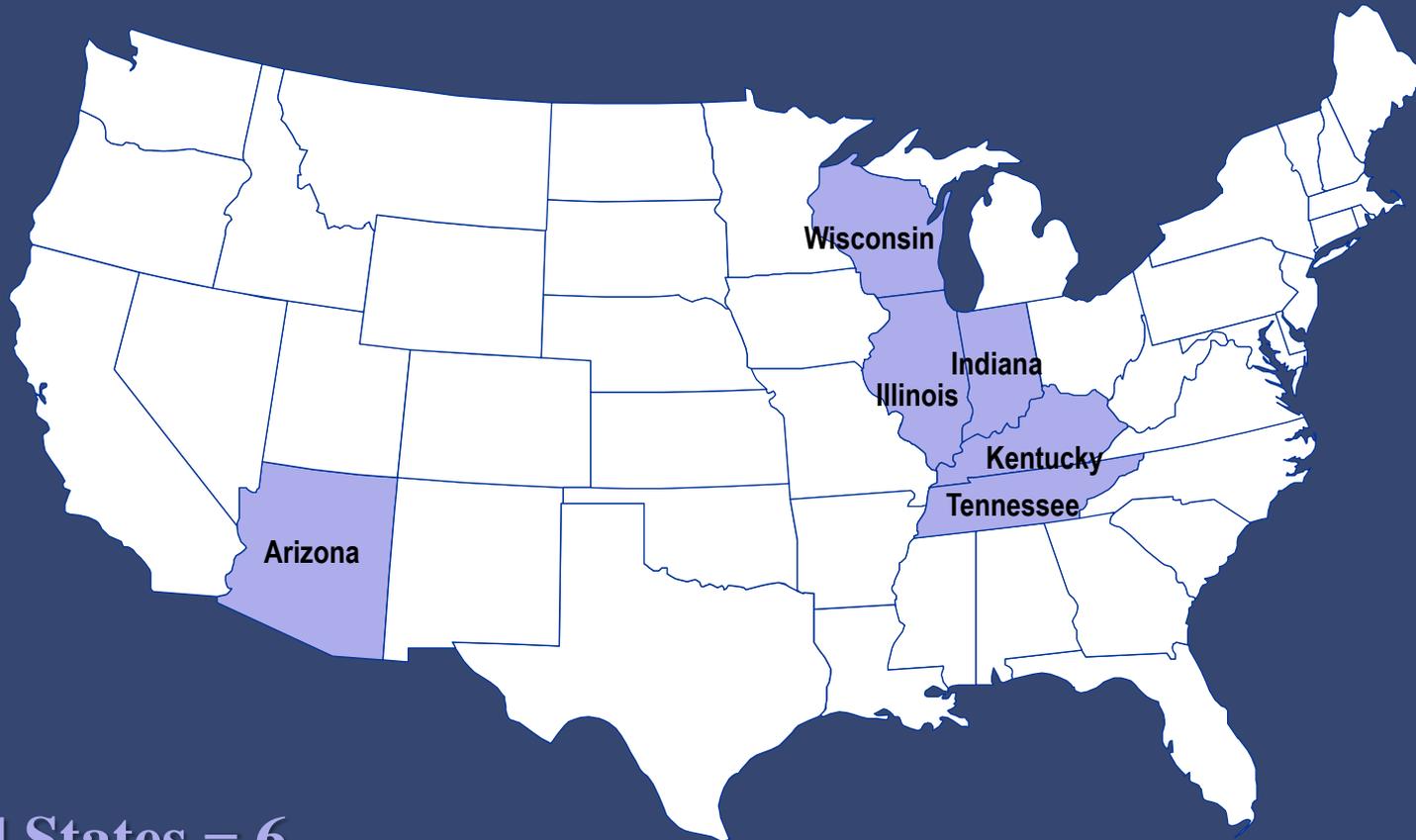
2010 NAIP States

2010	Counties	Square Miles	DOQQs	Exposures	Acquisition
Arizona (1-meter)	15	117,442	7,629	25,935	1 Jun - 31 Aug
Illinois (1-meter)	102	59,028	4,131	8,348	1 Jun - 31 Jul (2)
Indiana (1-meter)	92	38,478	2,689	5,436	15 Jun - 15 Aug
Kentucky (1-meter)	120	43,364	2,930	5,987	15 Jun - 15 Aug
Tennessee (1-meter)	95	45,364	3,000	8,332	1 Apr - 15 Sep (2)
Wisconsin (1-meter)	72	59,640	4,484	14,960	20 Jun - 31 Aug
TOTALS	496	363,316	24,863	68,998	

Photo Science NAIP History

- 2010: Arizona, Illinois, Indiana, Kentucky, Tennessee, Wisconsin
- 2009: Alabama, Colorado, Mississippi , North Carolina
- 2008: Indiana, Kentucky, North Carolina
- 2007: Maryland, Mississippi, Nebraska, West Virginia
- 2006: Indiana, Kentucky , Ohio
- 2005: Indiana
- 2004: Mississippi, New York, South Carolina, Tennessee, Virginia
- 2003: Arizona, New York, Pennsylvania, South Carolina

2010 NAIP States



Total States = 6

Total DOQQs = 24,863

Featured Subcontractors

- Richard Crouse & Associates, Inc.
- Aerial Surveys International, LLC
Small Business Enterprise
- The Atlantic Group, LLC
Small Business Enterprise

Richard Crouse & Associates, Inc.

Fredrick, MD
Spartanburg, NC



- Specializing in Aerial Photographic Services
- Established 1990

- Eight Aircraft:
 - Four Piper Navajo PA 31-325s
 - Piper Aztec PA 23-250 Turbo F
 - Piper Aztec PA 23-250 F
 - Piper Aztec PA 23-250B
 - Bell JetRanger Helicopter 206B
- Two Z/I Imaging DMCs (with IMU)
- Six Leica RC-30s Film Cameras
- One Leica DSW700 Scanner

Richard Crouse & Associates, Inc.

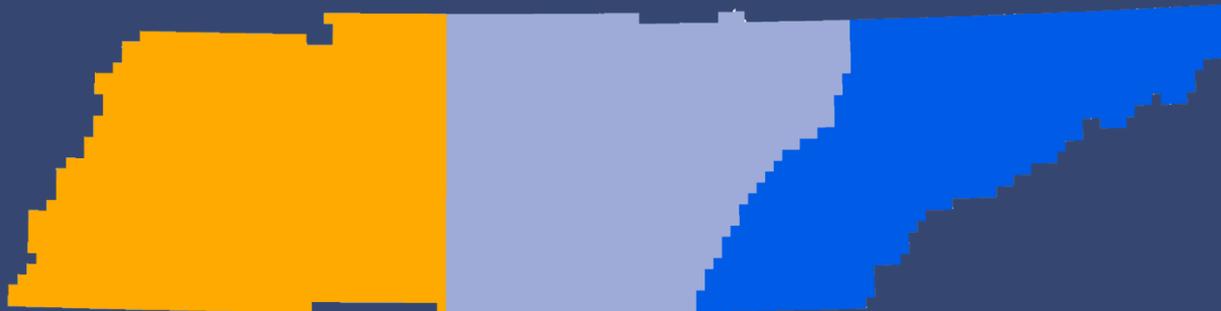
Fredrick, MD
Spartanburg, NC

- Role in 2010 NAIP:



20,000 ft ASL
1.95 ft pixel

Tennessee



-  Richard Crouse & Associates, Inc.
-  The Atlantic Group, LLC
-  Photo Science

Aerial Surveys International, LLC

Watkins, CO



- Specializing in Aerial Photography Services
- Established 1998
- Small Business Enterprise

- Three Aircraft:
 - Piper Cheyenne Turbine
 - Cessna 401 Twin
 - Cessna 402 Twin
- Two Z/I Imaging Digital Mapping Cameras
- Two Zeiss LMK 2015 Film Cameras
- Two IMU Z Applanix POS–510 Sensors

Aerial Surveys International, LLC

Watkins, CO

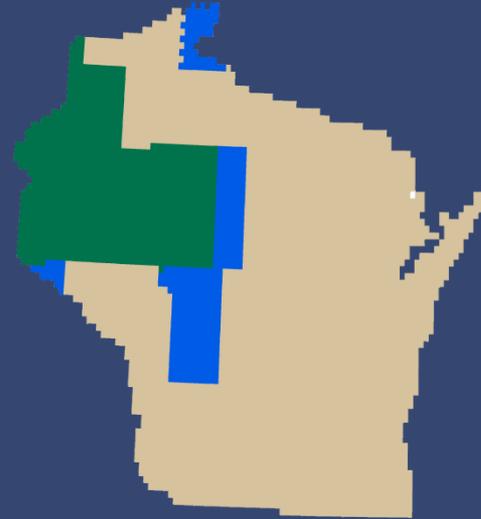


Arizona



-  Aerial Surveys International, LLC
-  Main Aerial Surveys

Wisconsin



-  Aerial Surveys International, LLC
-  Photo Science

The Atlantic Group, LLC

Huntsville, AL

THE ATLANTIC GROUP, LLC
Remote Sensing and Land Information Solutions

- Specializing in Aerial Data Acquisition and Land Information Solutions
- Established 2005
- Certified Photogrammetrists and Professional Surveyors & Mappers
- Small Business Enterprise

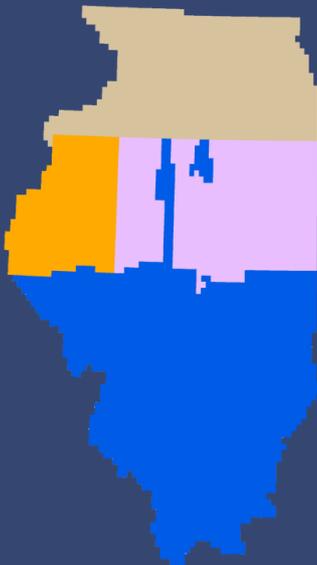
- Four Aircraft:
 - Commander 690B – Partenavia P-68
 - Piper Navajo PA31 – Cessna 210
- One Z/I Imaging Digital Mapping Camera
- One Optech 3100 LiDAR Sensor

The Atlantic Group, LLC

Huntsville, AL

THE ATLANTIC GROUP, LLC
Remote Sensing and Land Information Solutions

Illinois



-  **The Atlantic Group, LLC**
-  Aero-Metric, Inc.
-  MJ Harden Associates, Inc.
-  Photo Science

Tennessee



-  **The Atlantic Group, LLC**
-  Richard Crouse & Associates, Inc.
-  Photo Science

Issues Encountered

Issues

Resolutions

Acquisition:

- Weather – rainy season in Arizona, Illinois, and Indiana
- Restricted areas in Arizona

- Wait it out - extensions
- Keep talking nice – wait it out – bust it!

Mechanical:

- EO accuracies
- Image misregistration (pan sharpening)

- Replace IMU (expensive)
- New calibrations (Z shift)¹
- Software enhancement short-term and camera re-build in Germany

Management:

- Delivery late – one state

- Tried new process without notice - failure

Other Team Member Support

Aero-Metric, Inc.

Sheboygan, WI

- Acquisition support in Illinois and Wisconsin
- Final products for Wisconsin

Wilson & Company

Salina, KS

- Field control in Arizona
- Acquisition support in Indiana

MJ Harden Associates, Inc.

Mission, KS

- Acquisition support in Illinois (20,000 ft)

Main Aerial Photography Surveys, Inc.

Phoenix, AZ

- Acquisition support in Arizona

Arizona Sample Set-Up

Blocks configured around:

- Restricted areas:
 - Military
 - Commercial flyway
 - Terrain
- Upgrades:
 - Lower altitude for Cochise County
 - Potential balance among subcontractors
 - Exposure counts for tiles



Aerial Sensors-DMC: All Digital

Photo Science	3
Aero-Metric, Inc.	2
The Atlantic Group, LLC	1
Aerial Surveys International, LLC	2
Richard Crouse & Associates, Inc.	2
Wilson & Company	1
MJ Harden Associates, Inc.	1
Main Aerial Photography Surveys, Inc.	1
TOTAL	13

Field Control

- Arizona – Wilson & Company
- Illinois – Photo Science
- Indiana – Photo Science (existing)
- Kentucky – Photo Science (existing)
- Tennessee – Photo Science
- Wisconsin – Aero-Metric, Inc.

DMC Image Processing

- All DMC post processing was done in Lexington, except for Wisconsin.
 - Control over colors and tones, and ensured adherence to “best practice” guidelines.
 - Photo Science maintains a complete set of backup imagery in Lexington.

ABGPS/IMU and A/T

- ABGPS/IMU was processed by subcontractors, the results provided to us for QC.
- Any required A/T was performed in Lexington, except for Wisconsin.
- Allowed Photo Science to identify and resolve issues quicker.

Ortho Production

- Photo Science performed all rectification, mosaicing, and tone matching in Lexington for all states except Wisconsin.
- Aero-Metric performed all rectification, mosaicing, and tone matching for Wisconsin.

Final Deliverables

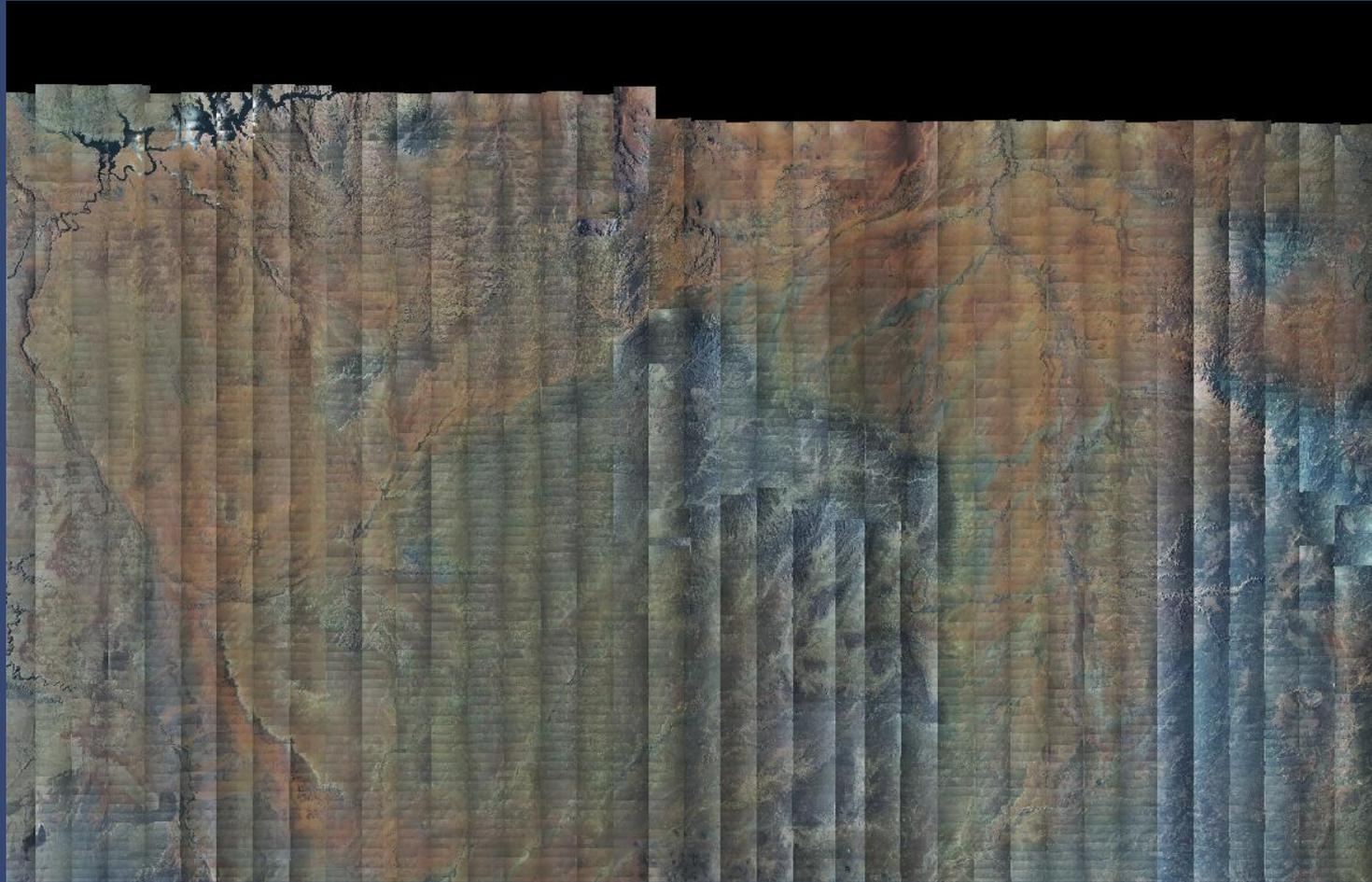
- All final CCMs were produced by Photo Science in Lexington,
- All final DOQQs were produced by Photo Science in Lexington, except for Wisconsin.
- Final deliverables were shipped by Photo Science from Lexington.

Ortho Issues – Kentucky

- Smears Caused by DEMs



Wide Range of Tones – Arizona



Shadows – Arizona



Schedule-Flying

	Published	Actual
Arizona	1 Jun – 31 Aug	3 Jun – 10 Sep (E)
Illinois	1 Jun - 31 Jul (2)	16 Jun – 25 Aug (E)
Indiana	15 Jun - 15 Aug	7 Jun – 28 Aug (E)
Kentucky	15 Jun - 15 Aug	7 Jun – 28 Aug (E)
Tennessee	1 Apr - 15 Sep (2)	10 Apr – 18 Apr 7 Jun – 23 Aug
Wisconsin	20 Jun - 31 Aug	20 Jun – 28 Aug

Schedule – Digital Orthos

	Flight Actual	Completion
Arizona	10 Sep	14 Oct
Illinois	25 Aug	8 Oct
Indiana	28 Aug	1 Oct
Kentucky	28 Aug	28 Sep
Tennessee	23 Aug	27 Sep
Wisconsin	28 Aug	29 Nov

Added Capacity for 2010 NAIP

- 3-DMCs
- 100TB Storage

- Wilson & Company - 1,411 exposures
- MJ Harden Associates - 2,808 exposures
- Main Aerial Photography - 7,235 exposures



Photo Science Pixel Farm
745 Terrabytes - Active

Thank you for the
opportunity to brief you today.

Questions?