> Presented to: LAR-IAC Participants

LA County Briefing #2
Project Status Overview

January 11, 2006

VARGIS
An Infotech Enterprises Company

> Progress Meeting — *The Geospatial Experts*

Purpose of Meeting:

- Project Overview
- Current Project Status
- Schedule Compliance
- Upcoming Production Tasks
- Deliverables / Data Format

>

Project Overview

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> Project Summary — *The Geospatial Experts*

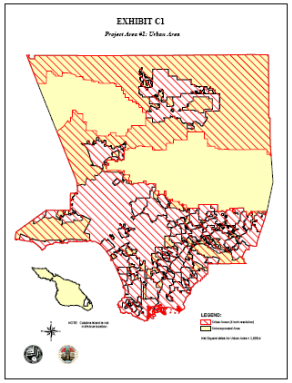
Summary of Project:

Area #1 (Urban Area)

- Project area covers approx 2,900 sq. miles
- Color & CIR Digital Aerial Imagery Acquisition
- 4” Color & CIR Digital Ortho Imagery
- LiDAR Acquisition
- Digital Terrain Model/Digital Surface Model
- 2’ Contours

> Project Summary — The Geospatial Experts

LAR-IAC Project Area #1 (Urban 4-inch Ortho)



> Project Summary — The Geospatial Experts

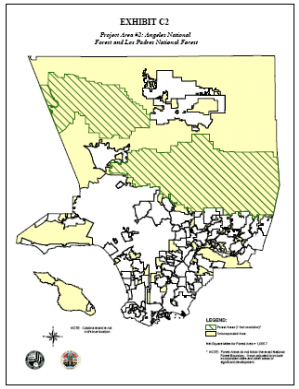
Summary of Project:

Area #2 (National Forest)

- Project area covers approx 1,050 sq. miles
- Color (& CIR) Digital Aerial Imagery Acquisition
- Color (& CIR) Digital Ortho Imagery
- Digital Terrain Model/Digital Elevation Model
- 4' Contours (5' accuracy)

> Project Summary — The Geospatial Experts

LAR-IAC Project Area #2 (Forest Areas 1-Foot)



> Project Summary — The Geospatial Experts

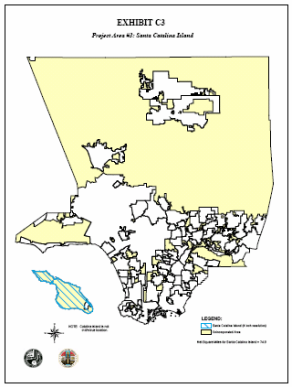
Summary of Project:

Area #3 (Catalina Island)

- Project area covers approx 75 sq. miles
- Color (& CIR) Digital Aerial Imagery Acquisition
- Color (& CIR) Digital Ortho Imagery
- LiDAR Acquisition
- Digital Terrain Model/Digital Surface Model
- 2' Contours

> Project Summary *The Geospatial Experts*

LAR-IAC Project Area #3 (Catalina Island)



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Current Project Status

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> Current Project Status *The Geospatial Experts*

Project Documentation Summary :

- Document is complete and delivered to LA County
- Provides documentation for:
  - Project Plan Overview
  - Administration and Project Pre-planning
  - Project Preparation, Coordination and Support
  - Management Plan
  - Technical Plan
  - Acceptance Criteria
  - Quality Assurance and Quality Control (QA/QC)
  - Amendments to Scope of Work

> Current Project Status *The Geospatial Experts*

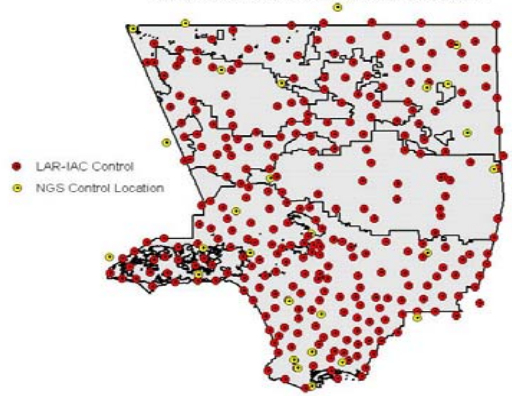
Geodetic Control

Accomplishments :

- 335 Total Ground Control Points (GCPs) in project area
- Dual Frequency GPS Receivers Used
- All GCPs are paneled or painted to be visible in aerial photography
- All paneling was completed by Dec. 5th, 2005
- All new GCPs have been surveyed and tied to existing NGS Control.
- Final adjusted coordinates for each GCP have been established to meet Second Order Class 1 Horizontal (0.2' accuracy), 3rd Order Vertical Accuracy (0.3' accuracy)
- Epoch of 2004 has been used
- Final QA of data is in progress, and expected to be competed by 1/13/06.
- Final Delivery of geodetic control reports and digital data expected to be delivered by 1/20/06

> Current Project Status *The Geospatial Experts*

LAR-IAC Ground Control Point Locations



> Current Project Status *The Geospatial Experts*

Geodetic Control Challenges and Solutions :

Issue:

- Challenging terrain and accessibility in National Forest Areas.

Solution:

- VARGIS will add LiDAR cross-flights across areas to strengthen AT and Contour accuracies.

Issue:

- Unreliable accuracies and descriptions for existing control within project areas.

Solution:

- VARGIS set and surveyed additional new point locations to ensure the strength and accuracy of the control network.

> Current Project Status *The Geospatial Experts*

Geodetic Control Challenges and Solutions :

Issue:

- Corrupt data received for 7 GCPs.

Solution:

- Surveyor returned to these points, and re-observed all to meet required accuracies

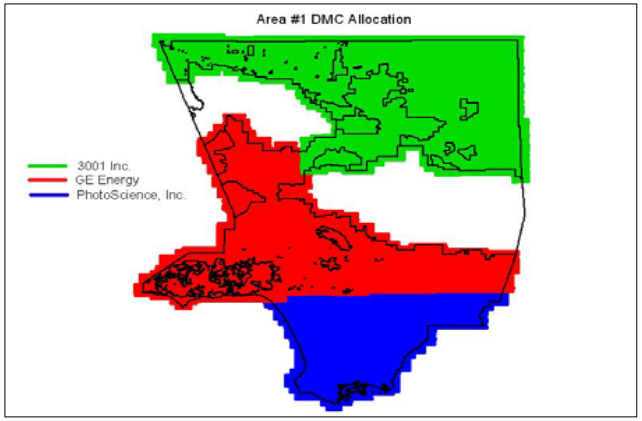
> Current Project Status *The Geospatial Experts*

Digital Aerial Image Acquisition Overview:

- Three (3) state-of-the-art digital sensors (DMC)
- Color and CIR Digital Aerial Imagery Acquisition
- 3,000' above mean terrain for Urban Area, Catalina Island
- 9,000' above mean terrain for National Forest
- 3 distinct regions, allocated to individual team members

> Current Project Status

The Geospatial Experts



> Current Project Status

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Digital Aerial Image Acquisition (Urban Area)

Accomplishments

- 12 of 31 days available in December for flights
- Approx 65% of total Area #1 photos have been acquired as of **1/8/06**.
- 22440 of 32106 (70%) in northern area complete, 9530 of 14832 (64%) in central area complete, 3355 of 7790 (43%) in the southern area complete as of **1/8/06**.
- Promising weather for week of 1/9/06.
- Slightly ahead of schedule for late-January / early-February completion of aerial imagery, weather permitting.

> Current Project Status

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Digital Aerial Image Acquisition (Urban Area)

Challenges:

- LAX – flight restrictions at 3000' altitude
- Air Quality (Haze or smog)

Solutions:

- Increased flying height to 5000' over restricted areas
- No impact on orthoimagery accuracy or delivery specifications (nominal 6" capture, 4" final orthos)
- Review onboard imagery during acquisition for quality

> Current Project Status

The Geospatial Experts

Digital Aerial Image Acquisition Accomplishments (Forest Areas):

- 100% of total photos have been acquired
- Finished head of schedule (est. late January completion)
- Area was completed on 1/05/06

> Current Project Status *The Geospatial Experts*

Digital Aerial Image Acquisition (Forest Areas)

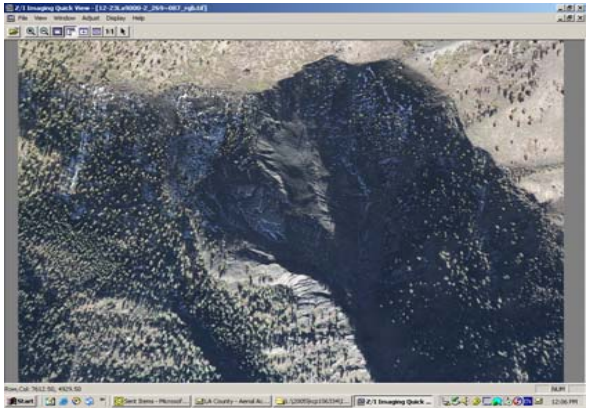
Challenges:

- Isolated snow visible on mountain tops

Solution:

- Provide samples for review and acceptance to the LAR-IAC.

> Current Project Status *The Geospatial Experts*



> Current Project Status *The Geospatial Experts*

Digital Aerial Image Acquisition (Catalina Island)

Accomplishments:

- Flights Pending

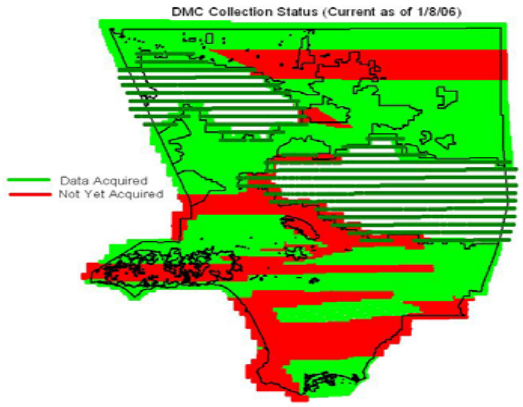
Challenges:

- Elevation Differences
- Availability of suitable landing strip

Solution:

- Design frequent line breaks
- Base station location

> Current Project Status *The Geospatial Experts*



> Current Project Status *The Geospatial Experts*

Imagery Acquisition Challenges and Solutions :

Issue:

- Long stretch of poor weather conditions from Dec 15th through January 5th.

Solution:

- Teams were mobilized early in the December, and was able to take advantage of favorable weather conditions in the first 2 weeks.
- With 3 cameras in the project area, the Team was able to maximize imagery acquisition when weather was favorable in a small area of the county.

Issue:

- GE Energy airplane was disabled for 1 week, due to incident at airport.

Solution:

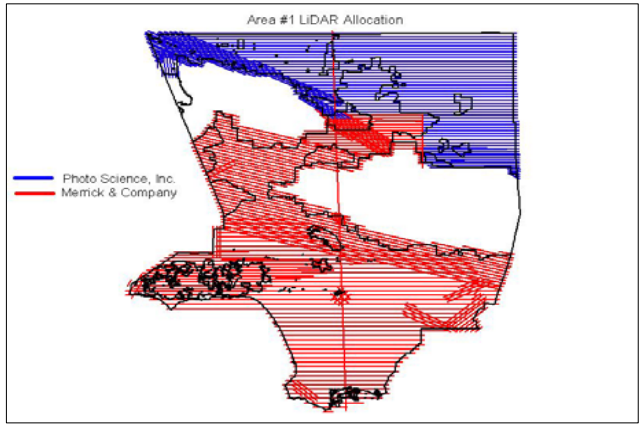
- With multiple cameras in the project area, imagery acquisition was able to continue in other areas of the county on schedule.

> Current Project Status *The Geospatial Experts*

LiDAR Acquisition Review:

- Two (2) state-of-the-art sensor ALS50
- 9,500' above mean terrain
- LiDAR will be acquired for Urban Area and Catalina Island

> Current Project Status *The Geospatial Experts*



> Current Project Status *The Geospatial Experts*

LiDAR Acquisition Status Summary (Area #1):

- 100% of Urban Area (Area #1) has been acquired
- Acquisition started in the week of December 1st
- Last Urban Area acquisition completed on 1/9/05
- Initial post-processing of data is ongoing – no issues with data or collection have been noted.
- Acquisition was completed ahead of schedule by 2-3 weeks.
- Catalina Island expected to be completed within next 5 days.

> Current Project Status

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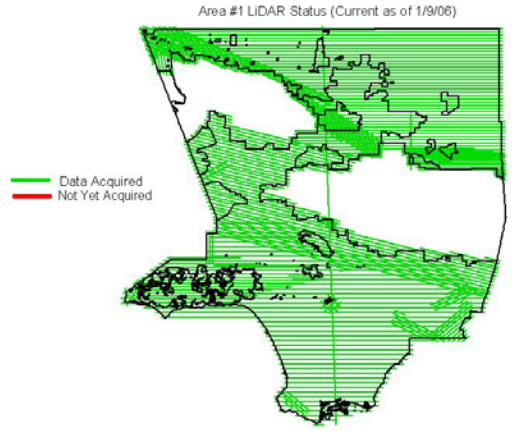

> Current Project Status

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LiDAR Acquisition Challenges and Solutions :

Challenges:

- Merrick experienced technical issues with their aircraft engine, and was grounded for approx 14 days.

Solution:

- Early mobilization, aggressive flight scheduling, and 2 LiDAR systems on site have allowed us to remain ahead of schedule with LiDAR acquisition.

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Task Preparation

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> Task Preparation

The Geospatial Experts

Aerotriangulation Preparation:

- Evaluate AT sub-blocks based on imagery acquisition status
- Evaluation Ground Control Point locations to determine block boundaries
- Awaiting processed imagery

Task Preparation

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Imagery Processing Preparation:

- Malibu and Pasadena pilot areas partially acquired within past 3 days. Sample images for all 3 pilot areas will be available within 6 days.
- Sample image from GE flight has been sent for LAR-IAC review.

Deliverables / Data Format

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Delivery and Data Format

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Delivery Schedule:

Overview:

Month of Completion	Tasks	Units Complete	Deliverable
November 2005	Project Initiation	All	1
December 2005	Geodetic Services	All	2
January 2006	LiDAR Acquistion Imagery Acquisition	All 1.a,1.b,1.c,,2,3	8 3
February 2006	LiDAR Processing Imagery Acquisition	1.a, 1.b, 1.c 1.d,1.e	9 3
March 2006	Aero Triangulation Lidar Processing	1.a,1.b,2.a, 3 1.d, 1.e	4 9
April 2006	Aero Triangulation Breakline Compilation	1.c, 1.d, 1.e, 2.b 1.a,1.b, 2.a	4 10
May 2006	Breakline Compilation Ortho Processing	1.c, 1.d, 1.e, 2.b 1.a, 1.b, 2.a	10 5
June 2006	Ortho Processing Contours	1.c, 1.d, 1.e, 2.b 1.a-e	5 11
July 2006	Ortho Processing DTM Contours	3 3	5 11
August 2006	Near IR Ortho Processing Contours	All Area 1 2a, 2b	6 11
September 30, 2006	Rework (if Necessary)		

Delivery and Data Format

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Proposed Documentation For Invoicing Approval

- Geodetic Control
  - Hardcopy and digital report
- Orthoimagery Acquisition
  - Coordinate listing of acquired image photocenters
- LiDAR Acquisition
  - GeoReferenced screenshots of raw imagery capture

> Current Project Status

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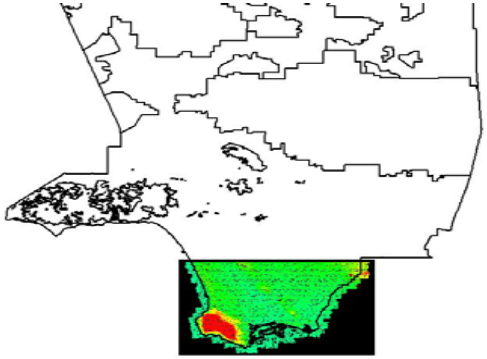
LiDAR Screenshot Example



> Delivery and Data Format

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Data Deliverables and Format

Delivery Product	Format 1	Format 2	Format 3
Orthophoto	GeoTIFF	Jpeg 2000	
Digital Surface Model *	ASCII - points	ArcGIS shapefile -points	Microstation (dgn) - points , lines
Digital Terrain Model **	ArcGIS shapefile - points, 3D lines	AutoCAD (dwg) – points , lines	Microstation (dgn) – points , lines
Digital Elevation Model ***	ArcGIS raster	AutoCAD (dwg)	
Contours	ArcGIS shapefile	AutoCAD (dwg)	

> Delivery and Data Format

The Geospatial Experts

Data Volume:

VARGIS LLC
LA County Team
Estimated File Size/Volume Table

Products	Sq. Miles	File size / Sq. Mile	Total File Size
Product #1 - Geodetic Control and Pre-marking	3,954	N/A	0.5 GB
Product #2 - Aerial Triangulation	3,954	N/A	0.3 GB
Product #3 - Digital Terrain Datasets (DSM, DTM and DEM)	2,898	50	144 GB
Product #4 - Contours with 2 Foot Interval	2,898	10 MB	29 GB
Product #5 - Ortho Imagery with Four Inch Pixel Resolution	2,898	735 MB	2080 GB
Product #6 - Ortho Imagery with One Foot Pixel Resolution	1,056	81.75 MB	85 GB
Product #7 (Optional) - Near Infrared Imagery with Four Inch Pixel Resolution	2,898	735 MB	2080 GB
Product #8 (Optional) - Ortho Imagery with Four Inch Pixel Resolution	75	735 MB	54 GB
Product #9 (Optional) - Digital Terrain Datasets (DSM, DTM and DEM)	1,056	30 MB	32 GB
Product #10 (Optional) - Contours with 5 Foot Interval	1,056	5 MB	5 GB

Estimated Total Volume of Data: **4.5 TB**

> Delivery and Data Format

The Geospatial Experts

County Buffers (Deliverable Extents):

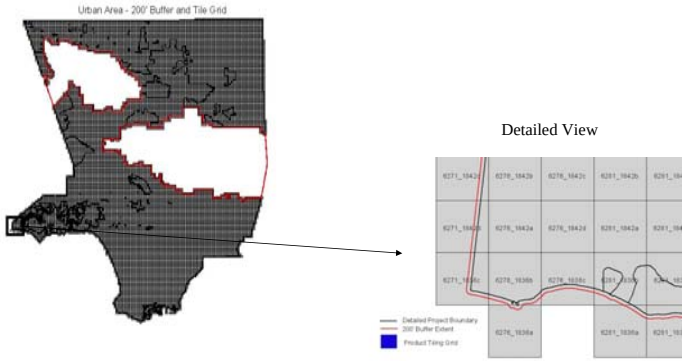
- A buffer polygon of 200' from the detailed project area boundary has been created and delivered to LA County
- Separate buffers have been created for Urban Areas and Forest Areas
- Orthoimagery will be produced to fully cover the 200' buffer for each area
- Contour coverage will extend to the same buffer extent (orthoimagery and contours will cover the same area)

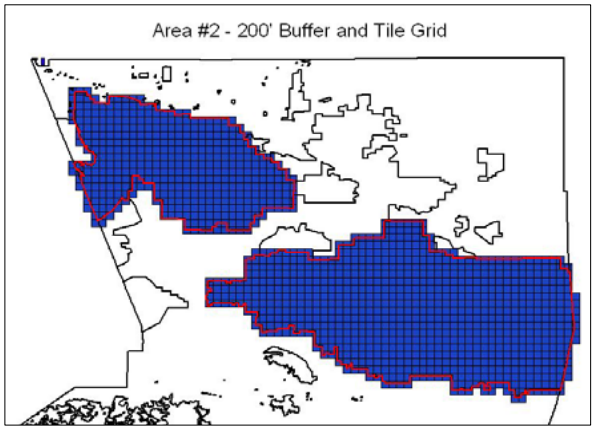
Tiling of Orthoimagery, DTM, Contours

- Tiling grids have been created by VARGIS and delivered to LA County
- National Forest area tile grids are based on 1 sq. mi. coverage (5280'x5280')
- Urban Area and Catalina tile grids are quartered from the Area #2 grid (2640'x2640')
- Where orthoimagery does not fill a complete tile, a fill value of 255 pixel value (white) will be used.

Tile Grid Naming Conventions:

- Tile names for Forest Areas grids are derived from lower-left corner State Plane coordinates, concatenated to 4 digits:
  - YYYY_XXXX
- Tile names for Forest Areas and Catalina Island are a sub-set of the Area 2 grid:
  - YYYY_XXXXa
  - YYYY_XXXXb
  - YYYY_XXXXc
  - YYYY_XXXXd






Questions and Answers
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