Working with Imagery & LiDAR in ArcGIS 10.2
Today’s Agenda

• Online content
• Tools for working with imagery & LiDAR
• Data management using mosaic dataset
• Data dissemination
ArcGIS is a Complete Geospatial Platform

Integrating All Types, Sources, and Sensor Models

- Thermal
- Panchromatic
- Full Motion Video (FMV)
- LiDAR
- RADAR
- Multi-Spectral
- Satellite
- Aerial

Making Imagery Accessible

...Imagery is a Fundamental Part of the Systems
Platform Features - Imagery

- Comes with Imagery
- Provides Advanced Imagery Tools
- Manages Massive Image Collections
- Distributes Imagery Quickly
ArcGIS Comes with Imagery
ArcGIS Comes With Imagery

Expanding Content

- 100 million SqKm added
- Landscape services
- World Elevation Service – Public Beta
Global Imagery

World Imagery Basemap Coverage - Summer 2012

1 meter resolution
15 meter resolution
Global Imagery

World Imagery Basemap Coverage - Summer 2013

1 meter resolution
15 meter resolution
Marketplace – Premium Services

ArcGIS Marketplace
Powering your enterprise with geospatial apps and data

One stop shop for everything Imagery
Road Ahead for World Imagery

- Continue to Update Imagery and Fill Holes
- Add Landsat 8 data - New
- Event Driven Imagery
Ready to Use Imagery Content
Tools for Working With Imagery
Improved Sensor and Data Type Support

- SPOT6
- Pleaides
- DMCii
- Chinese HJ, ZY1 & ZY3
- BAE .sup

- Improved support for Data types
ArcGIS Provides Advanced Imagery Tools
Visualization, Processing and Analysis

• Fast
• Dynamic
• Massively Scalable

Open and Leveraged by Partners
Expanded Search Capabilities

• Search connected drives for all:
  • Raster Datasets
  • Raster Products
  • Mosaic Datasets
  • Mosaic Dataset Item
  • Raster Catalogs

• Add to Mosaic Dataset
Additional Raster Functions

- **Local function**
  - On-the-fly pixel-by-pixel analysis
  - Bitwise, Boolean, relational evaluation, cell statistics operations
  - Enable wide range of customer functions

- **MLClassify**
  - Applies Supervised Classification
  - Enables simpler classification workflows
Improved Geoprocessing Tools

• Compute Pansharpen Weights
  • Computes Optimal Gram Schmidt Pansharpen weights
  • Results in better image quality
Cache Generation Tools

- Tools to generate Cache from Mosaic Datasets
- Enables users to Cache
- Publish Cache to ArcGIS Online
Imagery Tools
Tools for Working With LiDAR
Esri Supports LiDAR Users

- Transforms LiDAR Data Into Useful Information Products
LiDAR Visualization Options

- **LAS Dataset**
  - LAS files
  - Supports version 1.0, 1.1, 1.2, 1.3

- **Mosaic Dataset**
  - LAS files
  - Terrain dataset
  - LAS dataset

- **Terrain Dataset**
  - Multipoint feature class
Spatial Indexing - New in 10.2

Folder

file1.las
file2.las

......

Add

LAS Dataset

Compute Stats

Folder

file1.las
file2.las
file1.lasx
file2.lasx
Rearrange - New in ArcGIS 10.2

- Rewrite LAS files with optimal point ordering
- Physical sort of point records
- Results in an optimized index
- Benefits data retrieval operations
- Custom GP tool will be published
- Utility for evaluating need for rearrangement will be available
Road Ahead for LiDAR

• Enhancements
  • Some custom tools will be provided out of the box
    > Ground classifier, Model key etc.
  • Potential new functionality
    > Tile, Clip, Merge
    > Break-line extraction
    > Include Z as part of point filtering
    > Assign RGB from photo
    > Fast outlier detection
Road Ahead for LiDAR

• Compression
  • Esri compressed LAS
  • Lossless
  • Transparently treated as LAS but much better for use and exploitation
  • Library for 3rd party use
LiDAR - Delivery Recommendations

• ‘Rearranged’ LAS, including “.lasx” file, provided as deliverable to client

• Yields best performance without client needing to do anything

• Does not hurt non-Esri clients
LiDAR - Usage Recommendations

• Classified LAS files organized as ‘tiles’
• 200 MB file size limit
• All participating LAS files have the same Spatial Reference (Projected CS)
• Data location (preferably on a local disk)
LiDAR - Licensing

• Standard, 3D, or Spatial Analyst License
  • Create LAS dataset
  • Modify LAS dataset schema
  • Include in Mosaic dataset
    > Publishing requires Image Server extension
  • View in 2D
  • Rasterize

• 3D Analyst License
  • Edit class codes
  • View in 3D
  • TIN based surface analysis
  • Rearrangement
3D Resource Center - Utilities

CheckLAS
LAS Model Key
LAS To LAS

Height Above Ground
Ground Classifier
LAS Dataset Tools
LiDAR Manipulations
Image Management
ArcGIS Manages Massive Image Collections

Satellite, Aerial, Scanned, Processed
Nadir, Oblique, FMV, Lidar, Radar
Pan, Multispectral, Float, Categorical

Wide Range of Sensors & Sources

Levels of Imagery
- Static Cache (Backdrop)
- Preprocessed (GIS Ready)
- Raw (Unprocessed)

Providing Accessibility to all Forms of Imagery
Improvements – Mosaic Dataset

- Number of bands
- Mosaic operator ‘Sum’
- Merge Items
  - Fewer Items – Simpler Management
- Seamline Blending
- Synchronize
Mosaic Dataset Georeferencing

Register Raster

Performs a geographic transformation to an existing raster dataset by automatically registering it to a reference image. This is similar to the Auto Register button on the Georeferencing toolbar.

In order to automatically register the image, the input raster and the reference raster must be in a relatively close geographic area. You may need to create a link file with a few links in order to get your input raster into the same map space. A link table can be created using the Georeferencing toolbar.
Demo 4

Image Management
Dissemination
Image Dissemination - Options

Integrating with & in the Cloud

- ArcGIS Server
- ArcGIS Online for Organizations
- Hybrid Approach
Support of Image Services in Web

In June Release of ArcGIS Online

• Set Rendering rules / Selection of Raster Functions
• PopUps
Demo 5

Dissemination
Summary

ArcGIS as a platform provides:

1) Quality imagery content
2) Advance tools for working with imagery & LiDAR
3) Efficient system for Image management
4) Multiple options for Image dissemination
Resources

Desktop/Online Help Imagery section at resources.arcgis.com

Imagery Blog

Imagery Resource Center
http://resources.arcgis.com/en/communities/imagery/

Upcoming Web Seminars

What’s New in ArcGIS 10.2 – Dec 05, 2013
ArcGIS Online Steps for Success – Jan 23, 2014

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Thank You