What's New with Imagery in ArcGIS

Mike Muller and Vinay Viswambharan
ArcGIS is a Complete Geospatial Platform

Imagery is an Integral Component

Provides Advanced Imagery Tools

Manages Massive Image Collections

Comes with Imagery

Easy, Open and Cloud Enabled
ArcGIS is an System for…

Imagery Managers
- Manage
- Disseminate

Imagery Users
- Content
- Visualization
- Analysis

What's New with Imagery in ArcGIS
What’s New with...

- Ready to Use Imagery Content
- Managing Massive Collections of Imagery
- Image Processing & Visualization
Ready to Use Imagery Content
ArcGIS Content Portfolio

Imagery Content is an Important Piece

- Imagery
- Basemaps
- Geocoding
- Network Analysis
- Landscape Analysis
- Location Analysis

Esri Community Map Data
Global Imagery
World Imagery Basemap

- high-performance visualization
- recent updates
  - United States (DG 0.3m)
- in progress updates
  - Western Europe (DG 0.6m)
  - Other (DG 1m)
- Select Community Provided Imagery
  - Switzerland, Liechtenstein, Cities in USA and Canada
  - more coming (e.g. Denmark)
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
Global Imagery
Landsat Global Land Survey (GLS)

- dynamic services appropriate for analysis
Partner Imagery
Subscription Based

• Bing Maps (requires “your” Bing key)

• Premium Services through Esri Marketplace for ArcGIS Organizational Account Subscribers
  - Digital Globe
    - Global Basemap ("best off – most current")
    - Multispectral (8-band 50cm)
    - FirstLook (before/after event imagery)
  - RapidEye
    - Multispectral (5m)
  - More Coming…
Ready to Use Imagery Content

Vinay
Managing Massive Collections of Imagery
New Sensors
ArcGIS Supports a Wide Range of Sensors

• Sensors
  - SPOT 6
  - Pleiades
  - DMCii
  - ZY-3, ZY-1 02C, HJ 1A/1B (China, CRESDA, SASMAC)
  - Landsat 8

• Better Partner Integration
  - BAE (Socet GXP) .sup files
Enterprise Image Search
Easier to Find Imagery

- Desktop and Server Indexing of Image Metadata
- Improved User Interface in Desktop
- Fast Results!

![Image Search Interface](image_search_interface.png)
Geoprocessing Tools
Easier to Build and Manage Mosaic Datasets

• New Tools
  - Merge Mosaic Dataset Items
  - Split Mosaic Dataset Items
  - Compute Pansharpen Weights

• Improved Tools
  - Manage Tile Cache (mxd support)
  - Synchronize (multiple options)
  - Set Mosaic Dataset Properties (multiple additions)
  - Build Seamlines (added blend unit)
  - Clip (maintain clip extent without resampling)
  - Register (register MS to Pan)
  - Build Overviews (Gaussian Blur resampling)
New Geoprocessing Tools
Merge/Split Mosaic Dataset Items

- Used when images...
  - are identical in nature
  - have no metadata or identical metadata
  - are scenes split for distribution

- Helps eliminate tonal balancing issues

- Some cases it reduces the need to generate seamlines
New Geoprocessing Tools
Compute Pansharpen Weights

• Computes optimal Gram-Schmidt Pansharpening weights using representative MS/Pan image

• Used when…
  - developing a custom Raster Type for ArcGIS
  - refining existing weights as new imagery becomes available
Improved Geoprocessing Tools

Build Overviews

• Gaussian blur resampling

10.1 (before)

10.2 (after)
Managing Massive Collections of Imagery

Vinay
Image Processing and Visualization
New Image Processing
Raster Functions

- New Functions
  - Local Function
  - ML Classify (Maximum Likelihood)

- Improved Functions
  - Extract Bands (configure missing band behavior)
New Image Processing

Local Function

• per pixel operations
  - bitwise
  - stats
  - conditional
  - logical
  - math/trig

• “on-the-fly raster calculator”

• advanced calculations

Example: on-the-fly Avalanche Risk Assessment
New Image Processing
ML Classify Function

• maximum likelihood
• signatures…
  - can be configured using a file created in desktop
  - can be passed by-value to services which publish the function
Image Processing and Visualization

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What’s New with…

Image Services

Web Mapping Using Image Services
Image Services
Image Service
Enhancements for Developers

• New REST APIs
  - getSamples
    - sample pixel values using a geometry and parameters
    - profiles and more…
  - computeTiePoints
    - generate matching tie points to a reference image
  - computeClassStatistics
    - generate statistics needed as input to ML Classify
  - legend
    - request legend information (labels, graphics, etc…)
Image Service
Enhancements for Developers

• Improvements
  - exportImage
    - support for TIFF compression (none, JPEG, LZ77)
    - support for png32
  - mosaicRule new operation MT_SUM
    - advanced workflows for summarizing overlapping imagery
Image Service
Enhancements for Developers

- SOE development officially supported
  - SDK help and sample

```csharp
using ESRI.ArcGIS.Server;

namespace SimpleSOE
{
  [AutomationProxy(true),
   ClassInterface(ClassInterfaceType.None),
   GuidAttribute(“a9ed9e17-d2b2-461c-9da3-2915af9a3f00”)]
  public class MySOE : ServicedComponent, IServerObjectExtension
  {
      private IServerObjectHelper m_SOH;

      public IGeometry ReturnCircle(ref IPoint inpoint, ref double radius)
      {
          ESRI.ArcGIS.Geometry.IGeometry circle = topop.Buffer(radius);
          ....
```
Web Mapping Using Image Services
Image Services in Web Maps
Enhancements for Web Map Authors

• Configurable
  - Image Rendering
  - Image Display Order
  - Image Quality (compression)
  - Pop-ups! (metadata and pixel values)

• Catalog Table
  - Viewing
  - Filtering
Web Mapping Using Image Services

Vinay
Thank you...

Please fill out the session evaluation

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Paper – pick up and put in drop box