Mapping the Future as an Intelligent Image

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Director of Imagery, Esri

GIS is Advancing Rapidly ……..

Making GIS easier, always available, and more social

GIS Integrates All Types of Geospatial Information

Web Maps Make This Information Accessible Widely . . .

. . . In Real Time

Remote Sensing is Core to GIS

Two Sides of the Same Coin

Remote Sensing brings value

GIS

Contextual relationships
Visual integration
Data management
Spatial Analysis

Remote Sensing

Timely, rich information
Measurements & analysis
Authoritative source

GIS brings value

- Used in nearly every industry
- Remote Sensing integrated throughout products
- GIS provides a complete solution

Increasing the value of Information

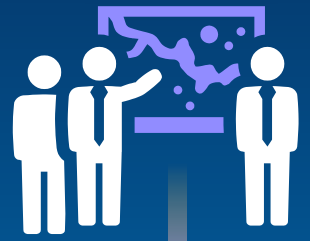
Imagery is a “Horizontal Technology”

Supports every major vertical GIS market segment

Is also a Vertical Industry in Itself

Imagery Providers

- space
- air
- ground
- web



Information from imagery is a fundamental part of many GIS Implementations

National Defense & Intel

Public Safety

State Government

Local Government

Utilities

Energy

Natural Resources

Private Enterprise

NGOs

National Sciences

I M A G E R Y

Imagery is Critical to the Decision Process

GIS Users are the Largest Collection of Professional Imagery Users in the World

Visualization

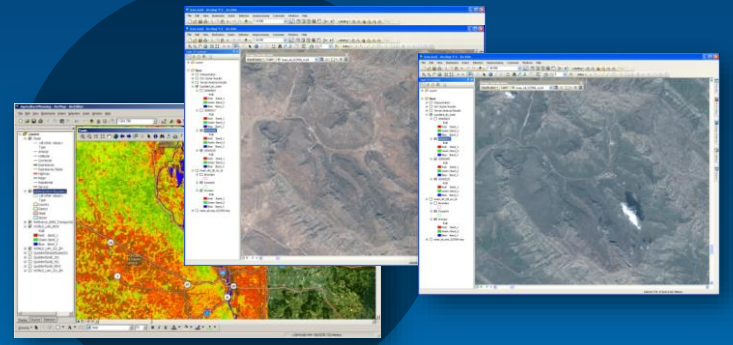
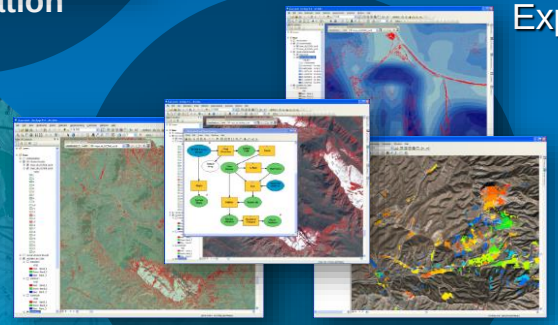
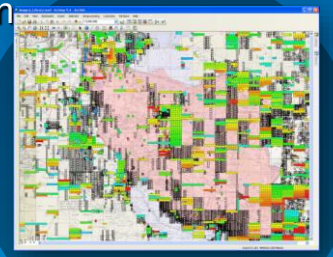


Image Exploitation



Perform Analysis



Manage Image Libraries

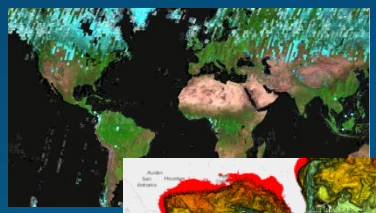
Evolving GIS Use…
…Enabling Better Decisions

Imagery

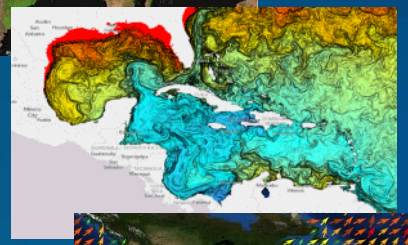
Managing, Analyzing, and Serving Intelligent Imagery

- **Scientific Formats (HDF, GRIB, NetCDF)**
- **Segmentation and Classification Tools**
- **Visualization and Analytics**

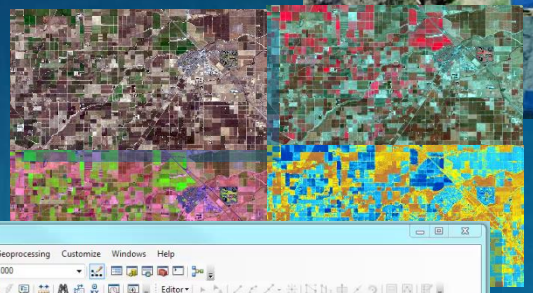
Landsat Services



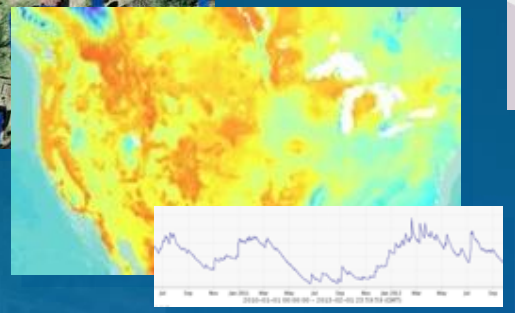
Impervious Surface

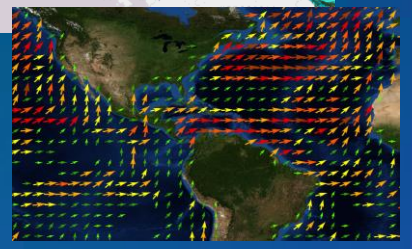


Dynamic Products



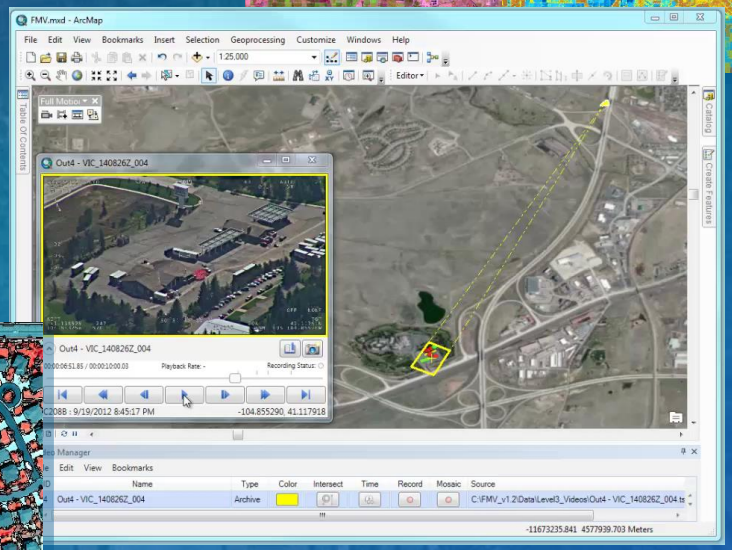
Multi-dimensional Data





Advanced Visualization

Full Motion Video



On-the-Fly Processing

Process

```
out_pb = (-42.379 + np.multiply(2.04901523, t_pb) + np.multiply(10.14333127, rh_pb)
          - np.multiply(0.22475541, rht) - np.multiply(0.00683783, tsquare)
          - np.multiply(0.05481717, rhsquare) + np.multiply(0.00122874, rhtsquare)
          + np.multiply(0.00085282, trhsquare) - np.multiply(0.00000199, ts_rhs))
```

Output

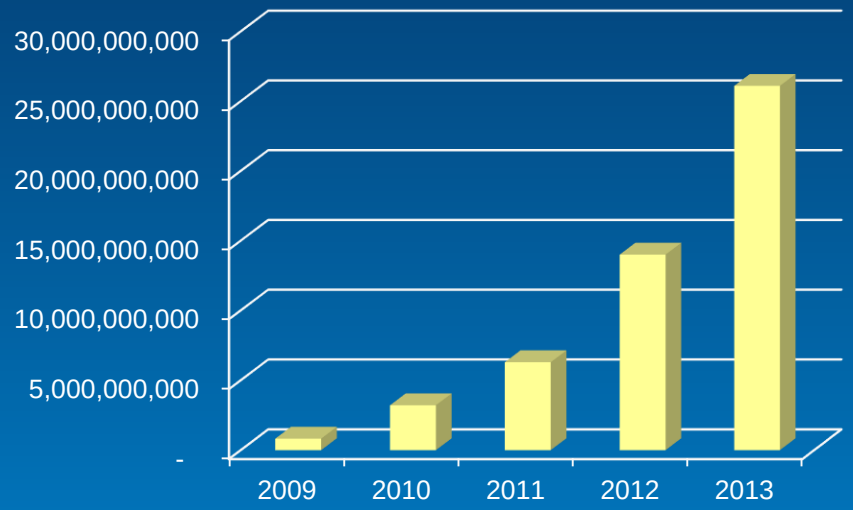
```
def bind(self, **kwargs):
    kwargs["output_rasterinfo"]["bandcount"] = 1
    kwargs["output_rasterinfo"]["pixeltype"] = "32_BIT_FLOAT"
    return kwargs
```

Segmentation

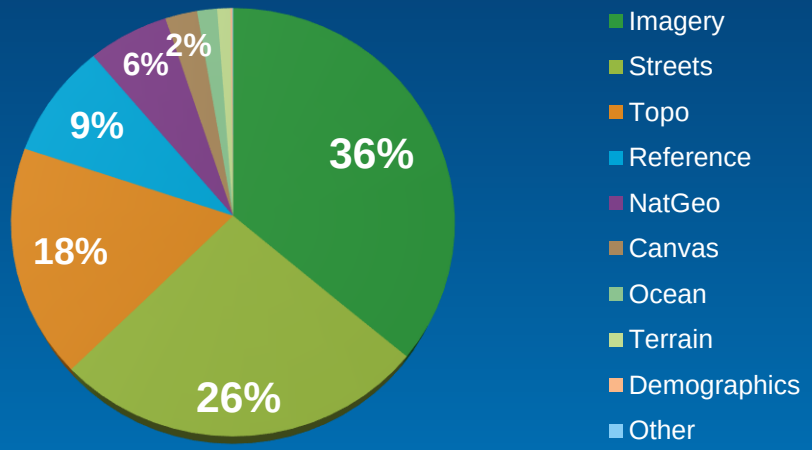
Supporting Single Scenes . . .
. . . and Massive Collections

ArcGIS Online Basemap Usage Stats

Requests by Year (2009-2013)



Usage by Map Type (Nov 2013)



Top 3 Map Types represent over 80% of Total Requests

GIS Apps

Included as Part of
Online, Server, and Desktop

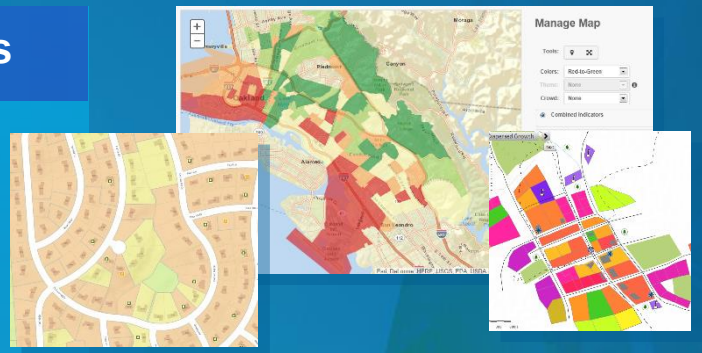
ArcGIS

Solution Templates

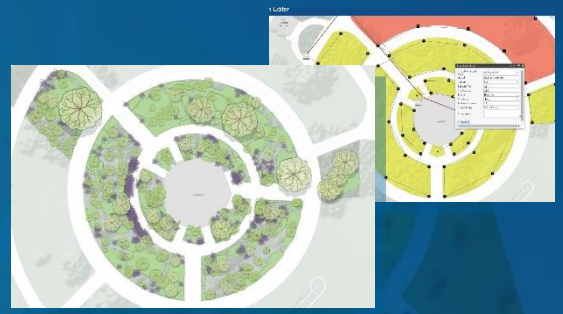
Platform Configurations for Organizations

Ready-to-Use Apps and Maps

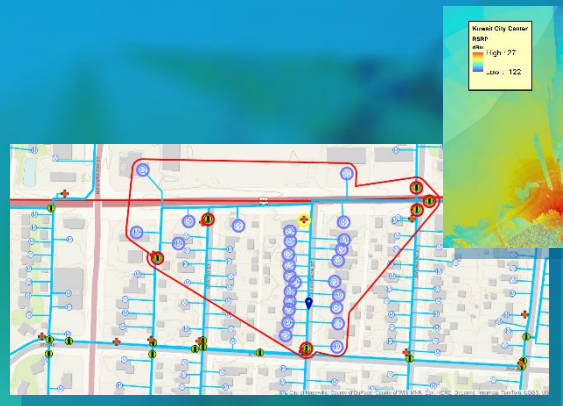
- Easily Configured
- Fully Supported
- Open Source
- Free



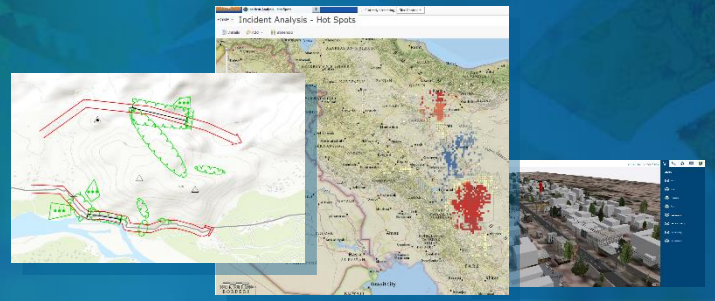
Local and State Government



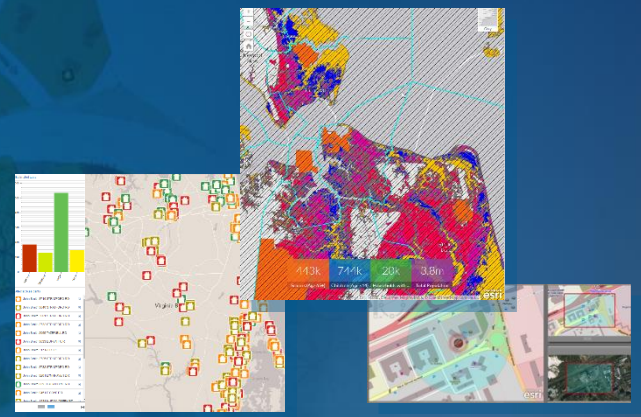
Parks and Gardens



Utilities and Telco



Military and Security



Public Safety and Emergency Management

. . . Improving Productivity and Leveraging Best Practices

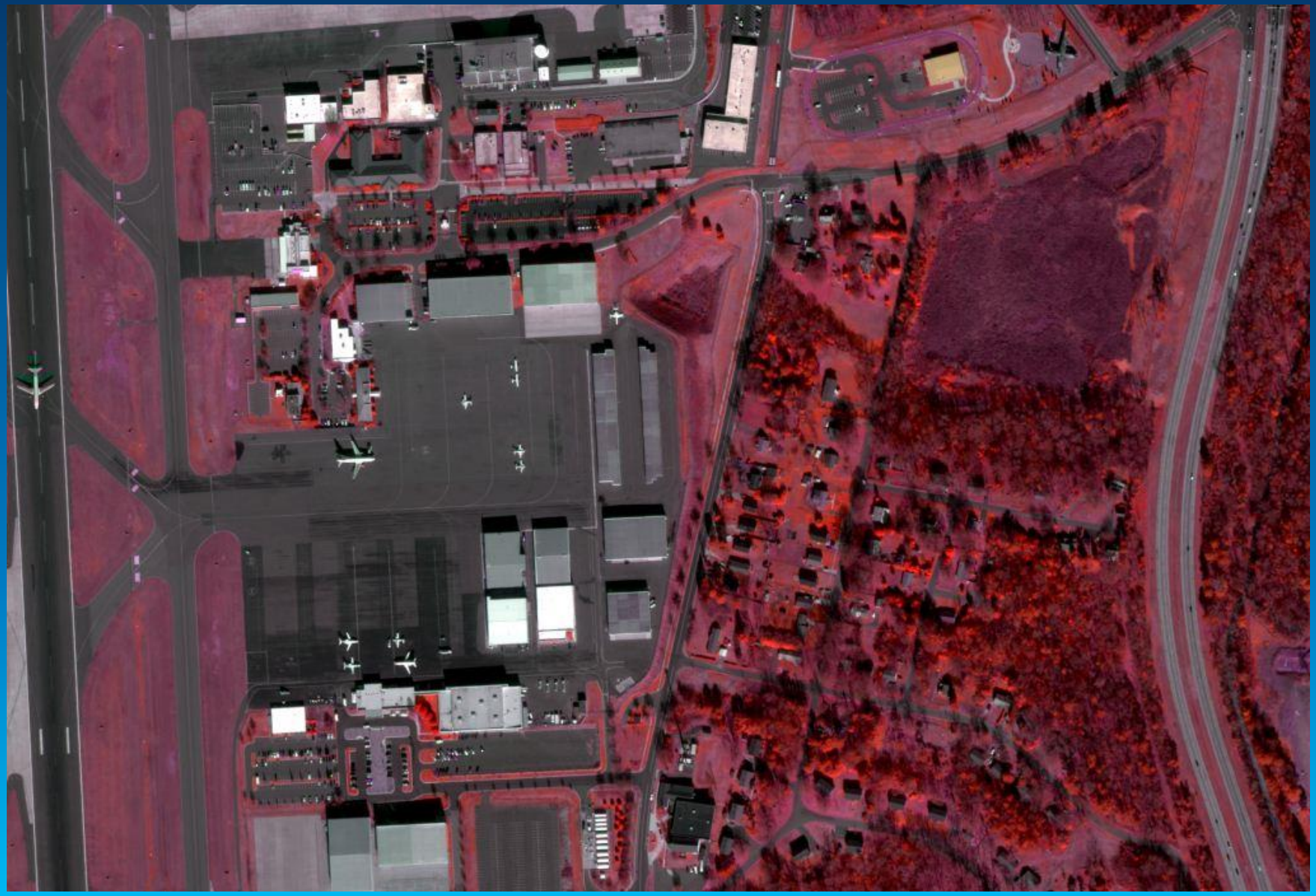
WorldView2 Premium Image Services for classification

DigitalGlobe premium services support on the fly processing and analysis

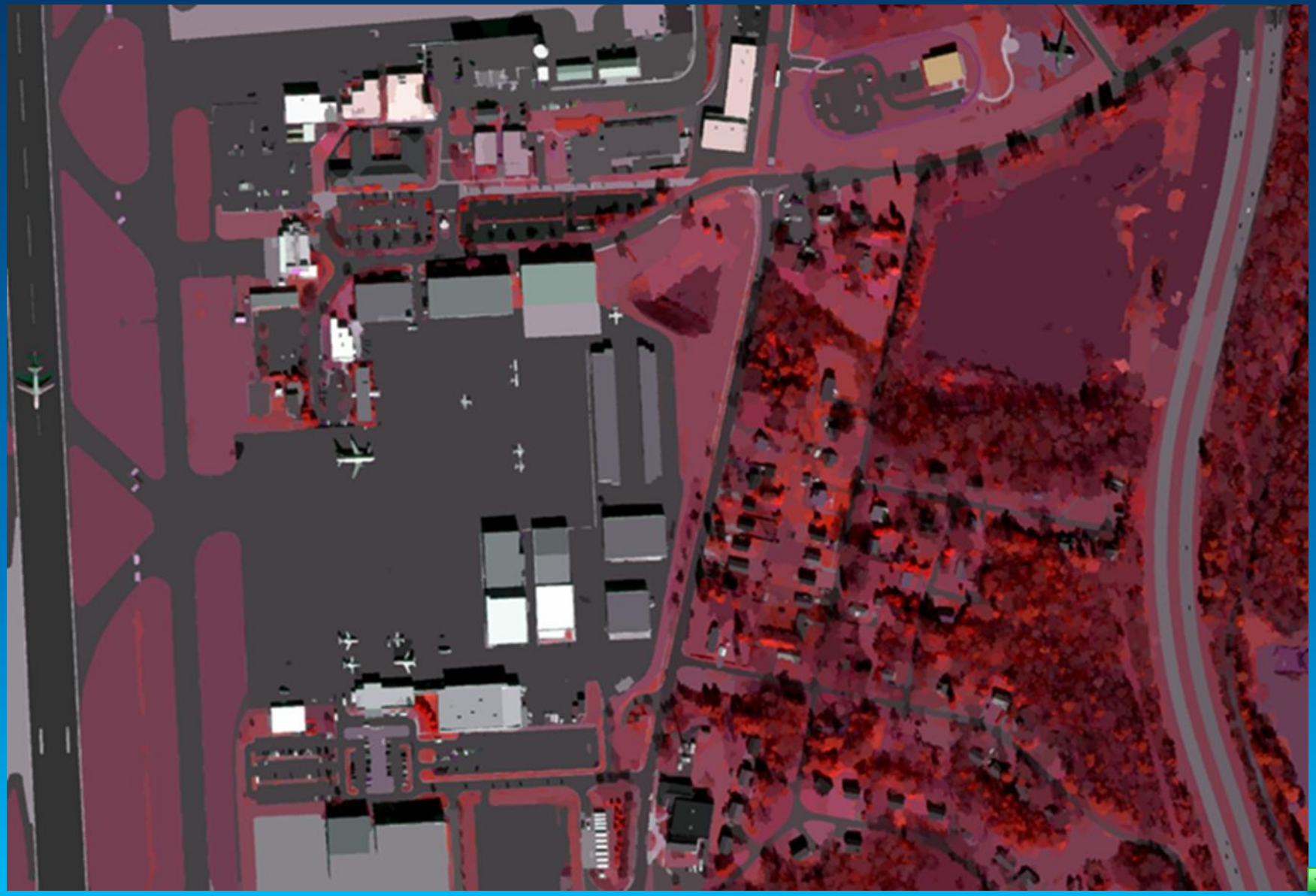
Find Address

Bookmarks

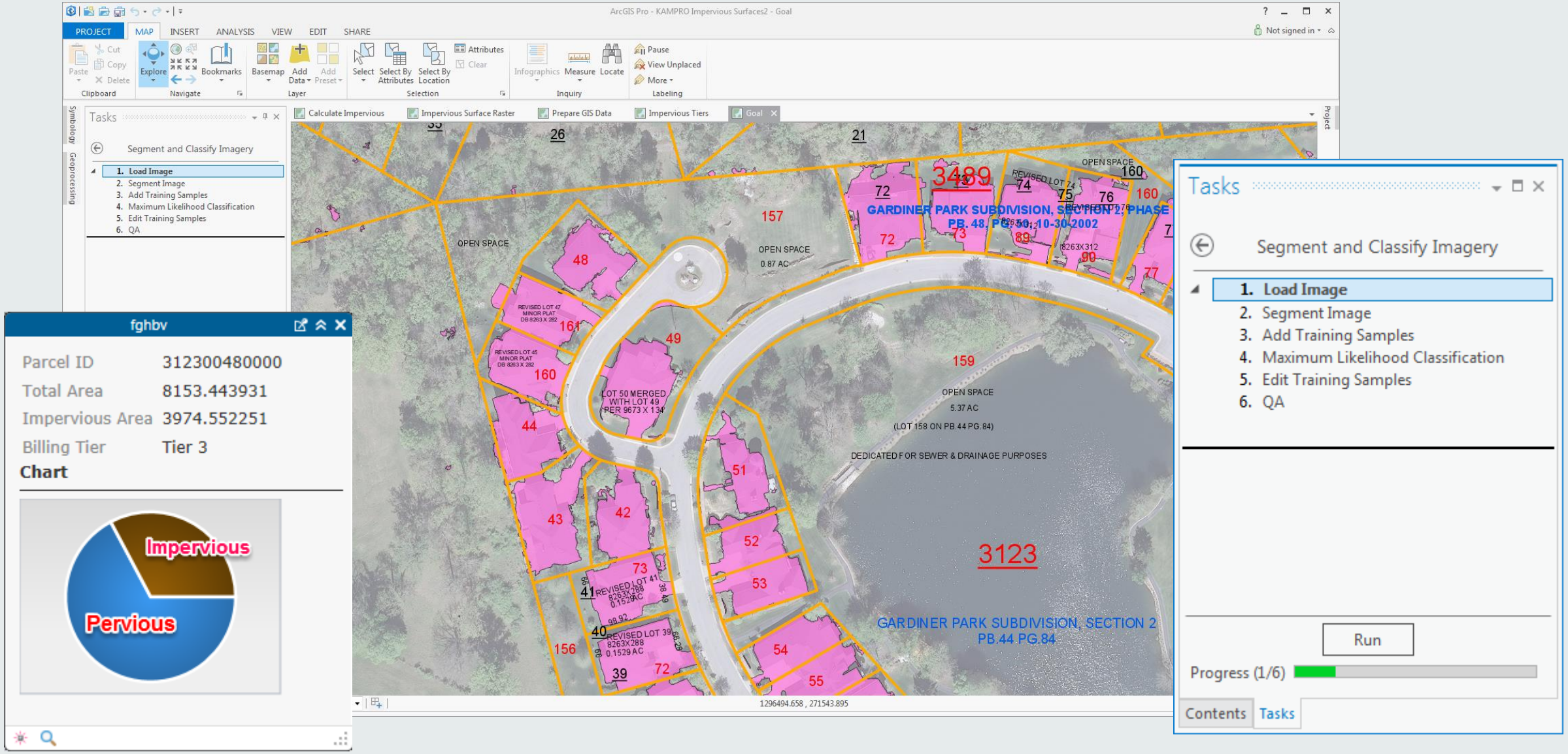
Color Infrared Image



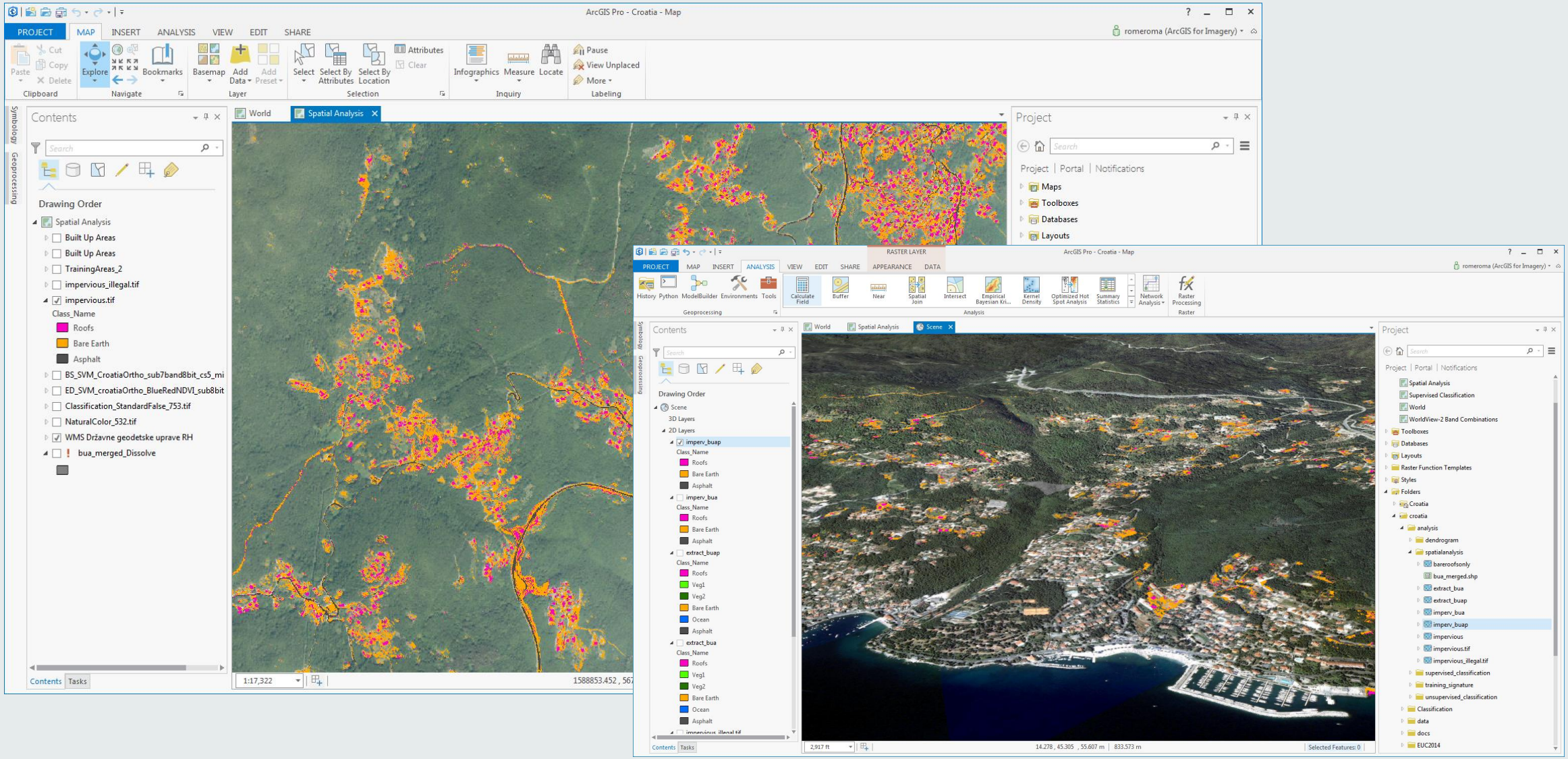
Color Infrared Segmented Image



Impervious Surface Jefferson County, KY



Croatia Illegal Construction Detection



Understanding our world.