



HEXAGON

**Remote Sensing
Hexagon Technology Update**

**Pacific GIS & Remote Sensing Conference
– Nov 2023**

Angela Manchester

Angela.manchester@hexagon.com

Introduction

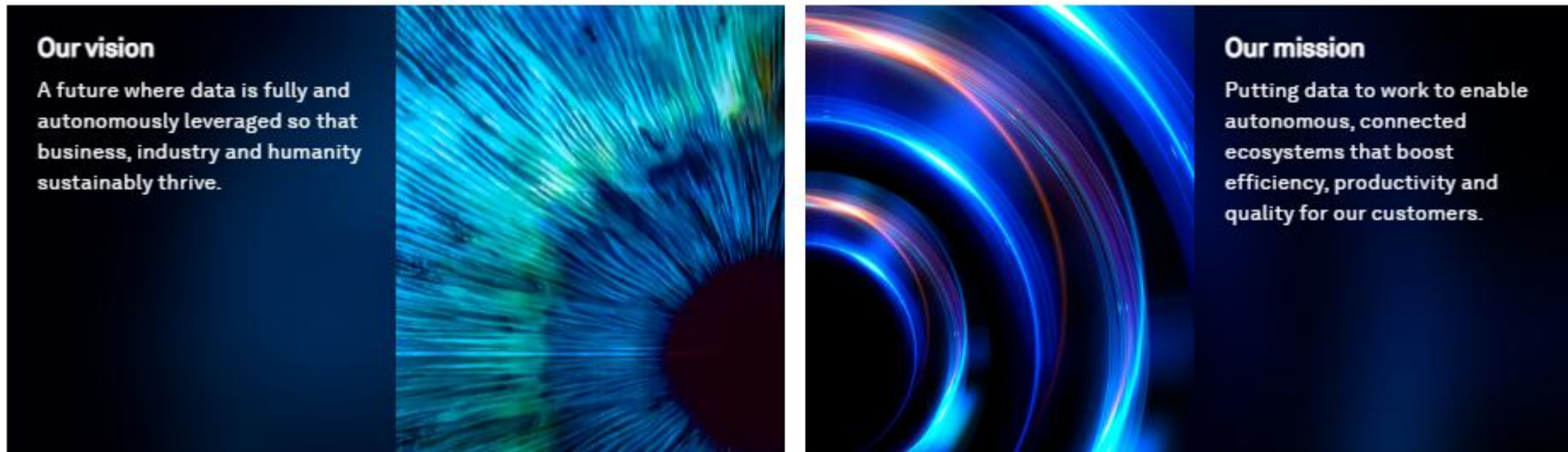
Who is Hexagon?

www.hexagon.com

Technology Company who believes digital enablement and data driven solutions can save the world. We live to improve efficiency, reduce waste, automate outcomes.

GIS, Remote Sensing and Photogrammetry and so much more.

Angela Manchester – Customer Experience Manager
~13 Years Remote Sensing and GIS with Hexagon



Our vision
A future where data is fully and autonomously leveraged so that business, industry and humanity sustainably thrive.

Our mission
Putting data to work to enable autonomous, connected ecosystems that boost efficiency, productivity and quality for our customers.

Resiliency in the South Pacific

- How can this be improved on with GIS and Remote Sensing?
- Improve mobility, redundancy and efficiency

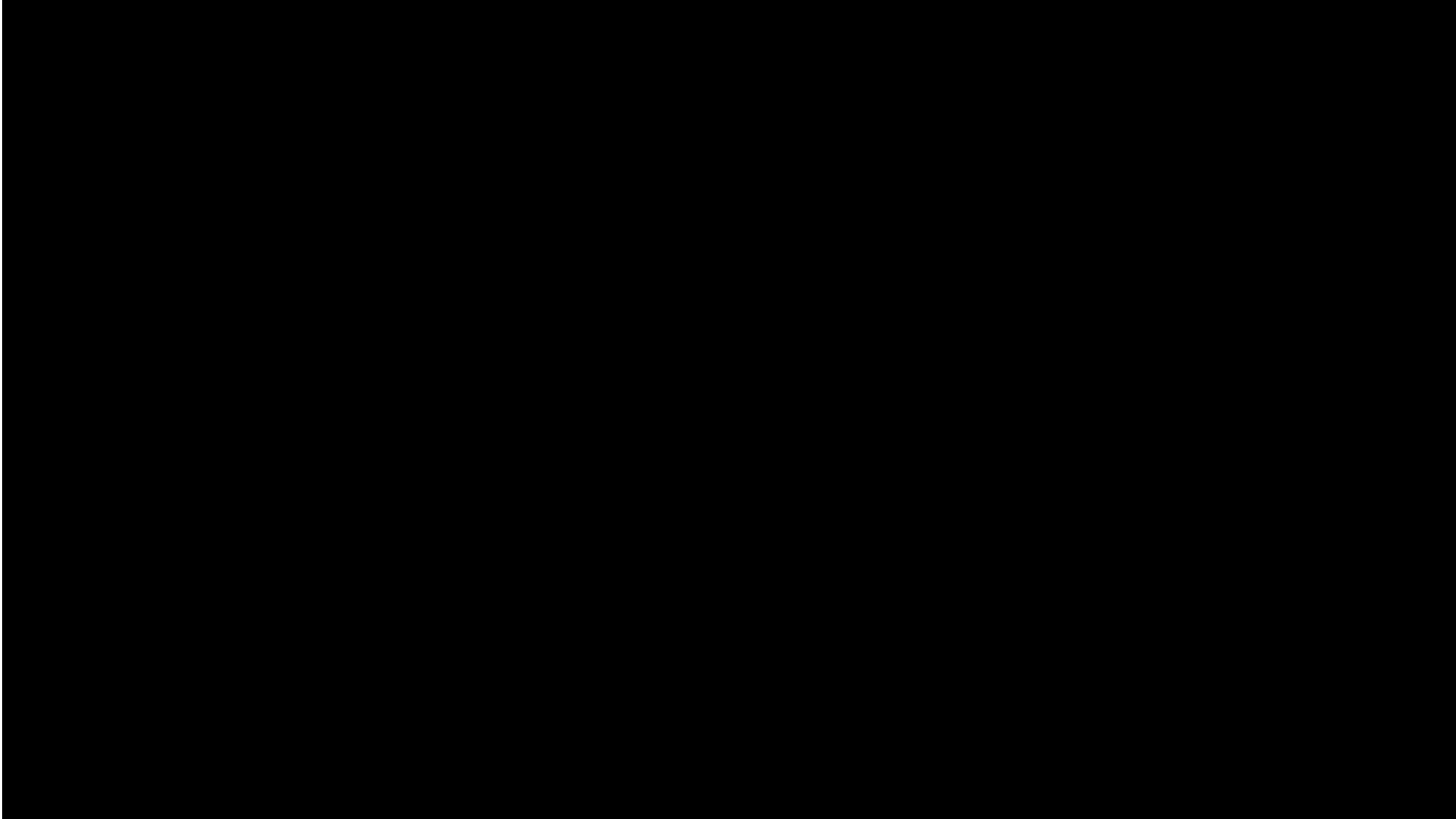
Quick Technology Update:

Data Capture: LEICA Cameras and Sensors ie BLK Handheld Sensor

Data Preparation: ERDAS IMAGINE

Data Delivery: ERDAS APOLLO

LEICA part of Hexagon – Remote Sensing Data Capture





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ERDAS IMAGINE

Technical Update

Remote Sensing Essentials – Educational Grant

- Grant *free* ERDAS IMAGINE Essentials level licenses to all Universities. This includes licenses for use on campus and also for students own computers
- This is to empower education and improve resilience
- Adapt learnings with flexible Delivery Methods
- No longer students tied down to University Computers.
- Self-License on students machines > remove any need for Network to Campus for licensing
- Questions: angela.manchester@hexagon.com

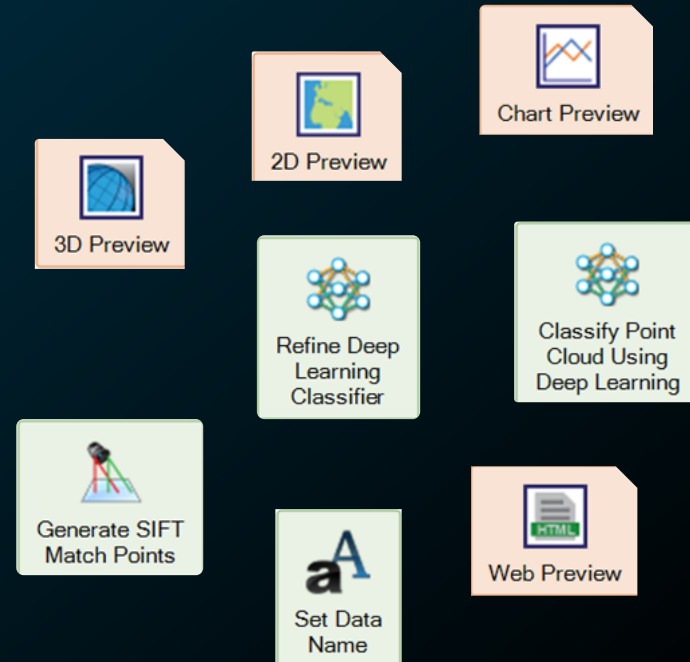


Spatial Modeler

New and updated operators

New operators

- Replace String **Idea**
- Set Data Name (useful for Preview, Geopackage export, etc) **Idea**
- Import Deep Learning Models (must be TensorFlow 2 models) **Idea**
- Refine Deep Learning Machine Intellects **Idea**
- Compute Interior Orientation for Frame Camera
- Compute Georeferencing using Edge Matching
- Generate SIFT Match Points **Idea**
- Preview replaced by 2D Preview, 3D Preview, Chart Preview, Web Preview
- Classify Point Cloud Using Deep Learning



Updated / improved operators

- Dictionary Input supports HFA files (e.g. Signature files) **Idea**
- Raster Match works correctly for multi-band u16 imagery
- 2D Preview now accepts List of IMAGINE.Raster, List of IMAGINE.Feature and List of IMAGINE.PointCloud
- Compute Transform supports Camera, DLT and Projective Transform models
- Generate Deep Learning Training Chips operator supports chips generation for Semantic Segmentation
- Extract DSM gives much sharper results

Scale Independent Feature Transform (SIFT)

- Automatically identify common points (scale and orientation invariant features) that occur in both an input image (which is usually unreferenced) and a reference image
- Results are sufficient for the input image to then be used in photogrammetry operators such as Generate Control Points Based on Reference

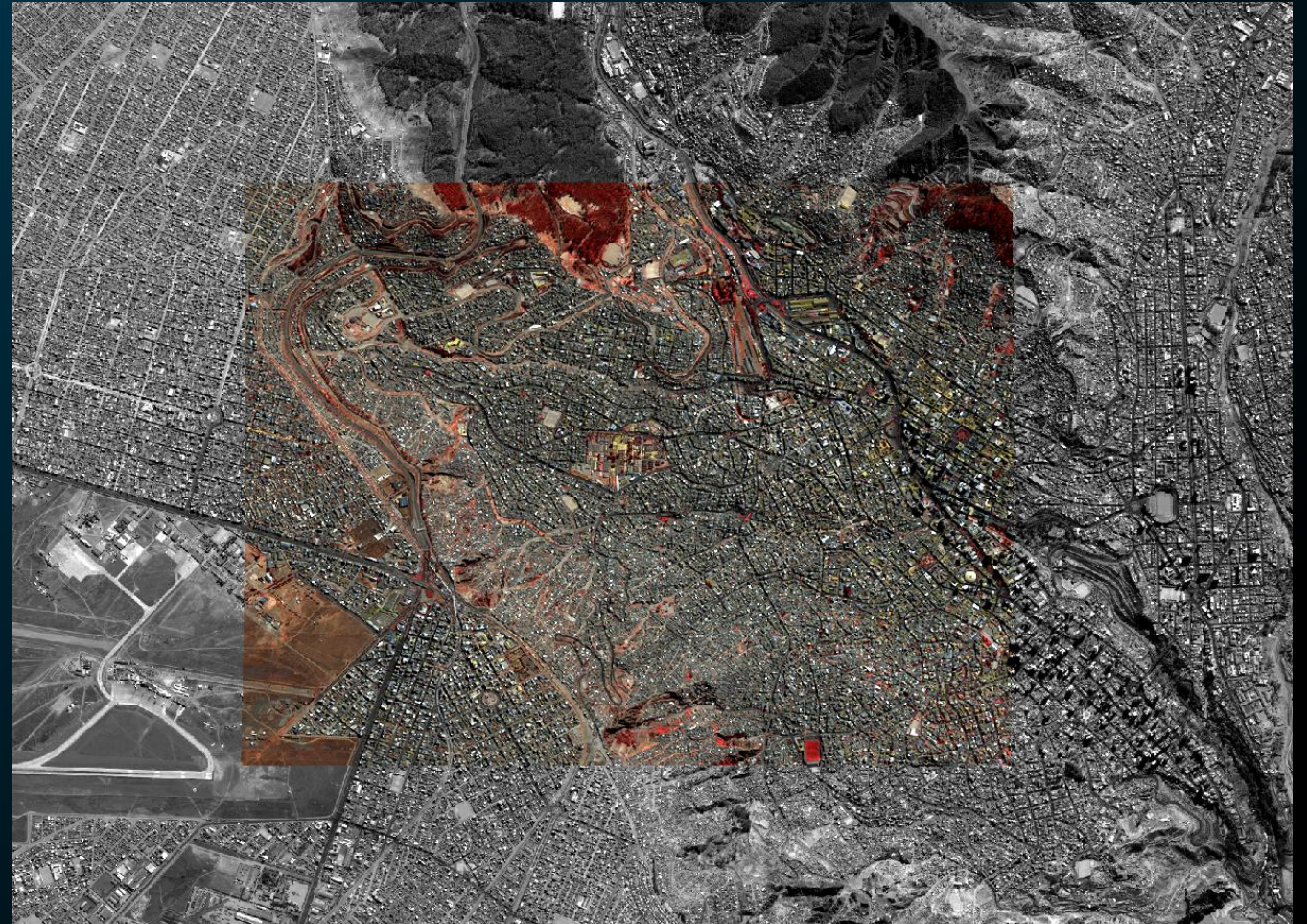
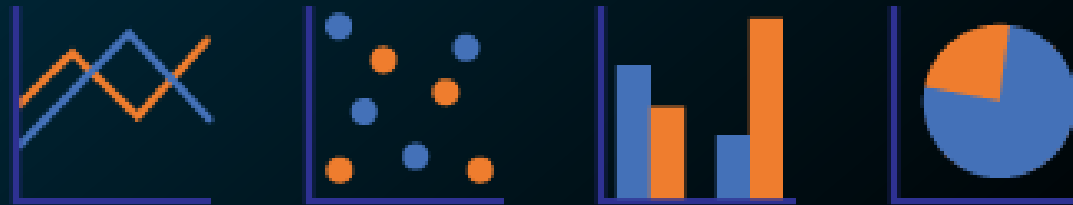
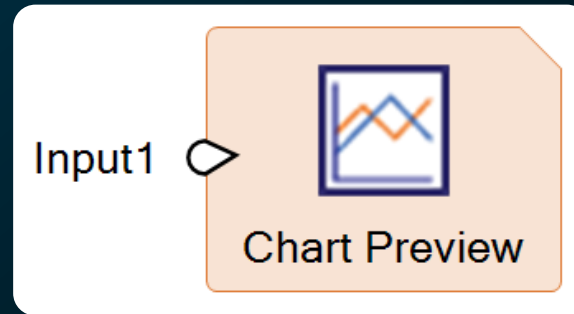


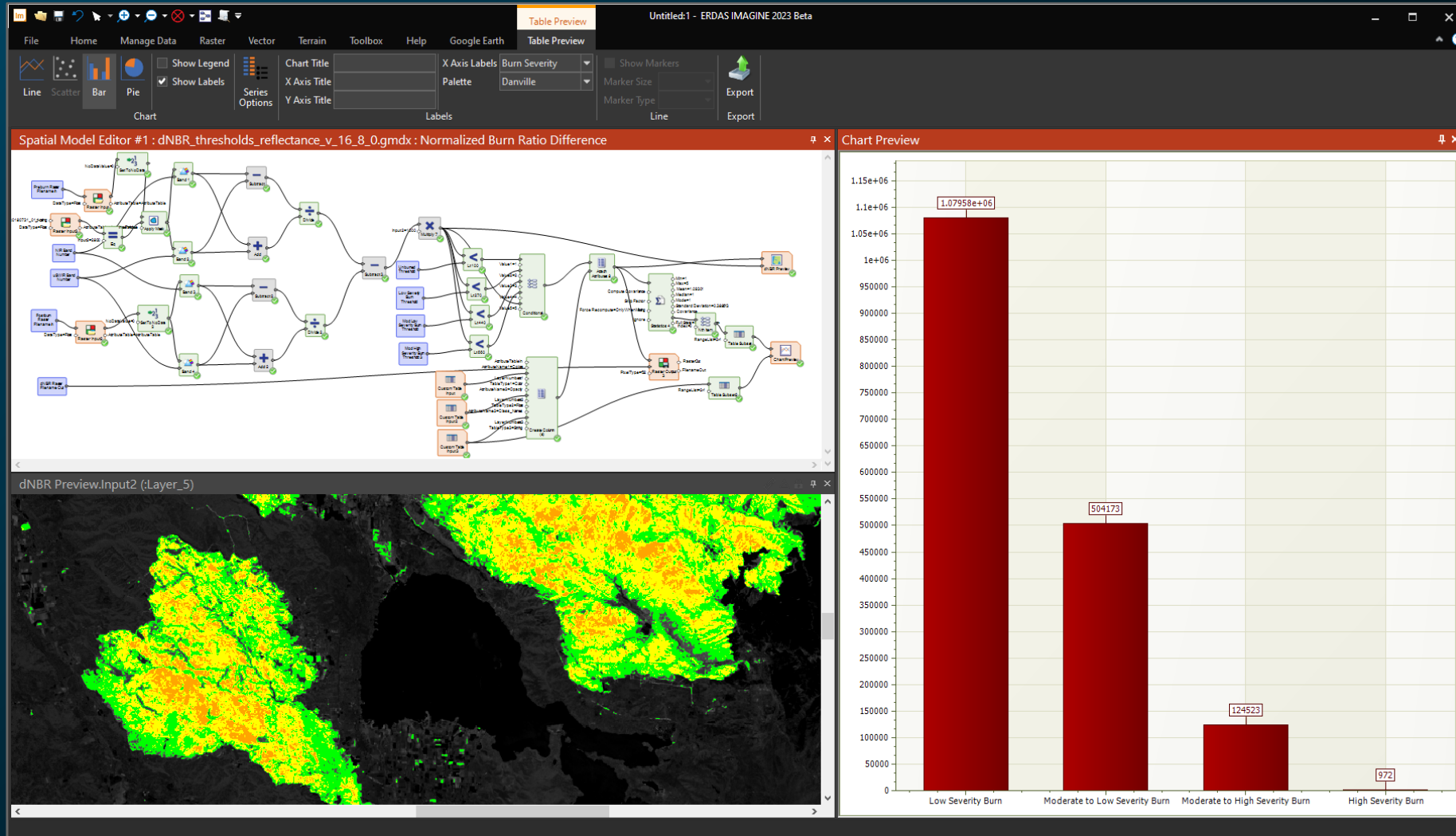
Chart Preview operator

View tabular data on the fly in a charting application

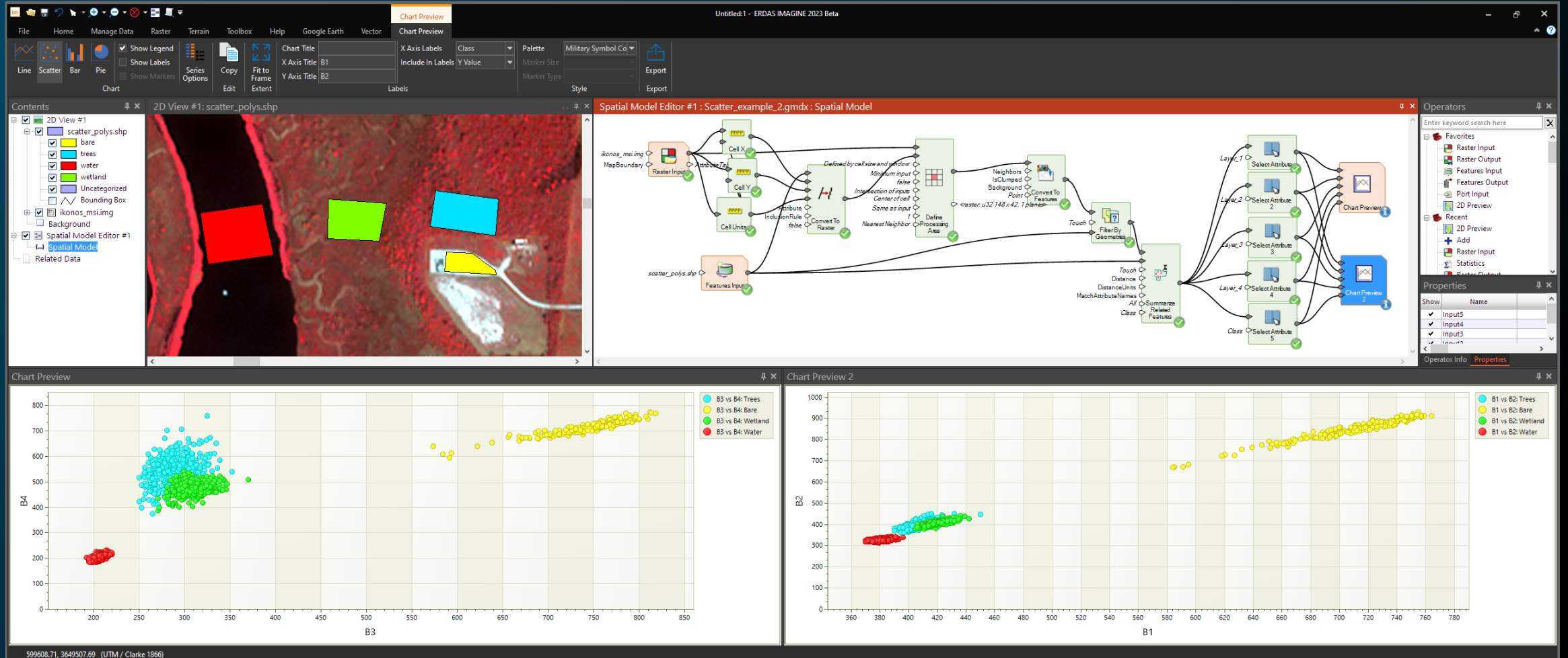
- Previews are Spatial Model Editor tools for interactively exploring and analyzing derived data
- Chart Preview inputs
 - Numeric Tables
 - String Tables (as labels)
- Charting types
 - Line
 - Scatter graph
 - Bar
 - Pie



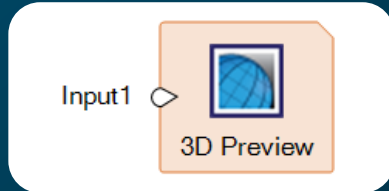
Bar chart example: Relative burn severity areas



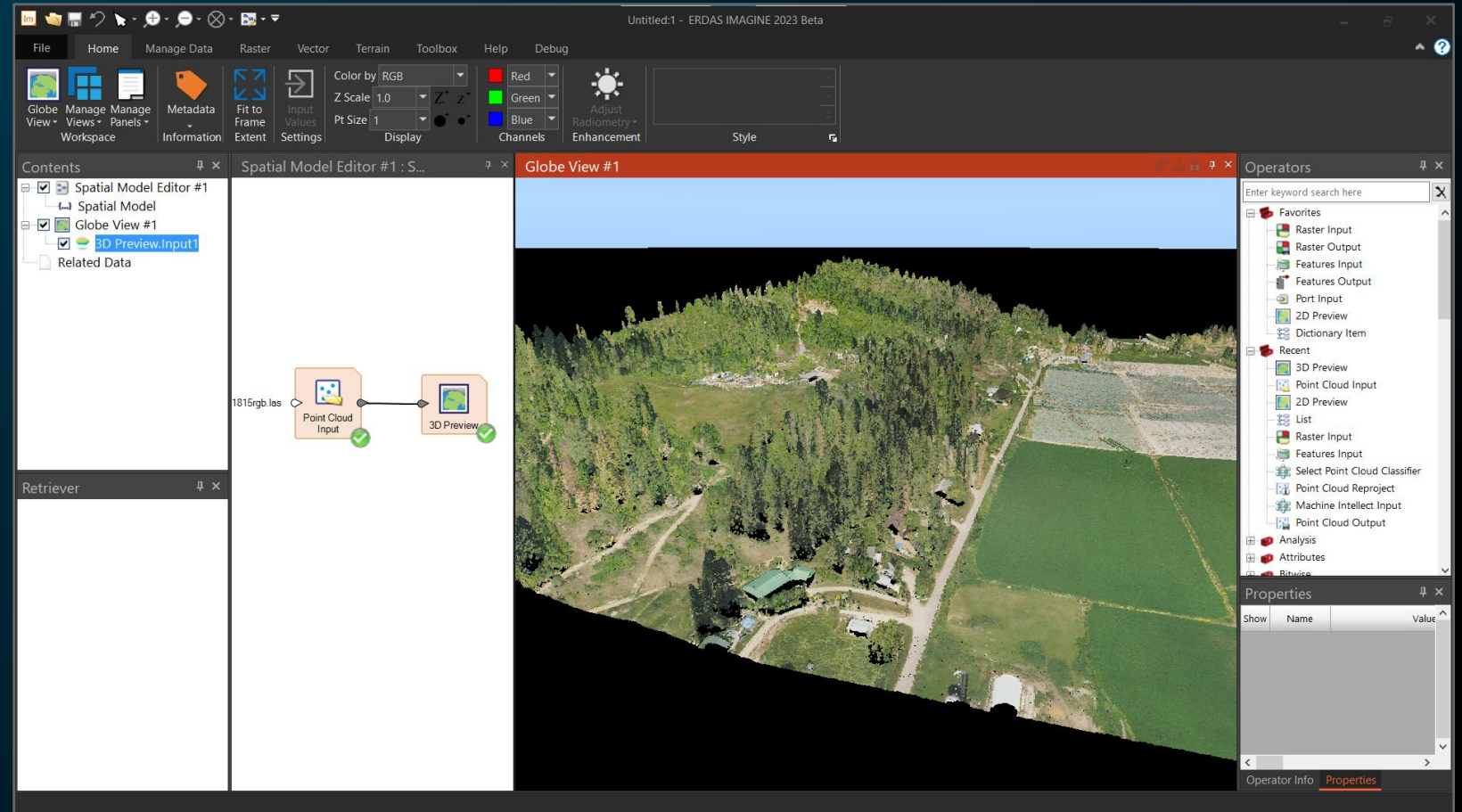
Scatter plot example: Training area cluster separability



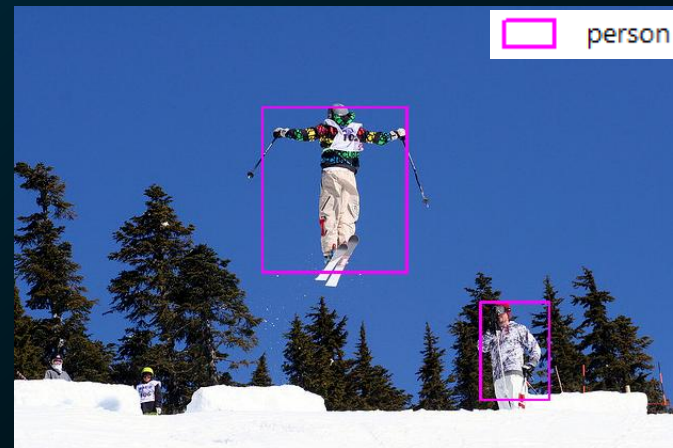
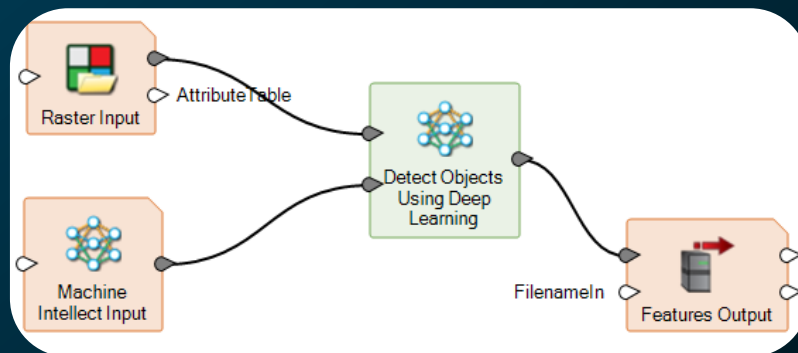
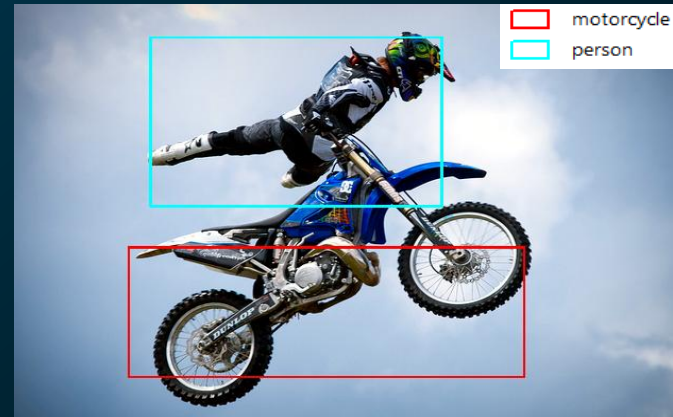
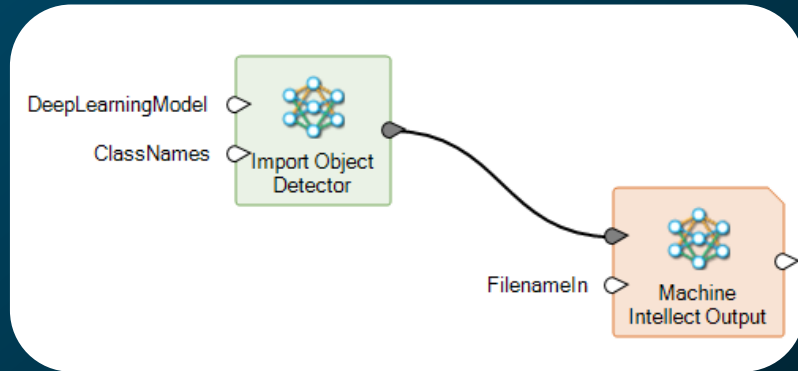
3D Preview



- View point cloud data in the new Globe View with the same styling capabilities as the 2D Preview
- This new Globe View will expand in future updates to include raster, terrains, base maps and more
- Based on HxDR / Luciad technology



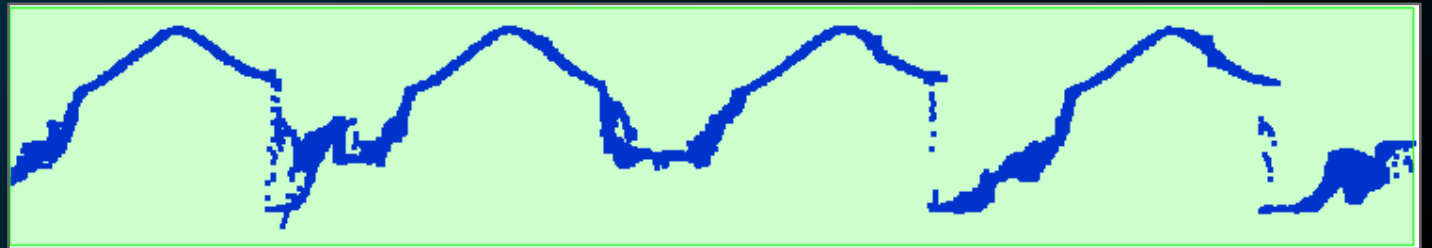
Import Deep Learning Models



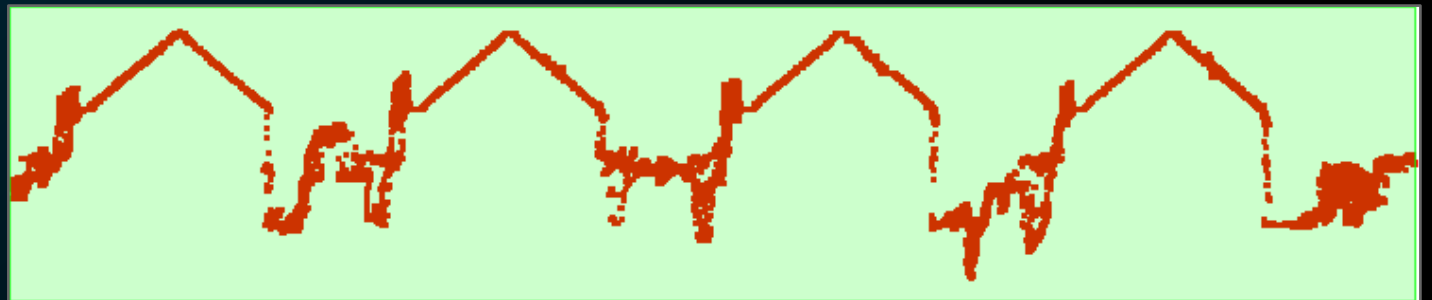
Improved DSM extraction



Xpro SGM



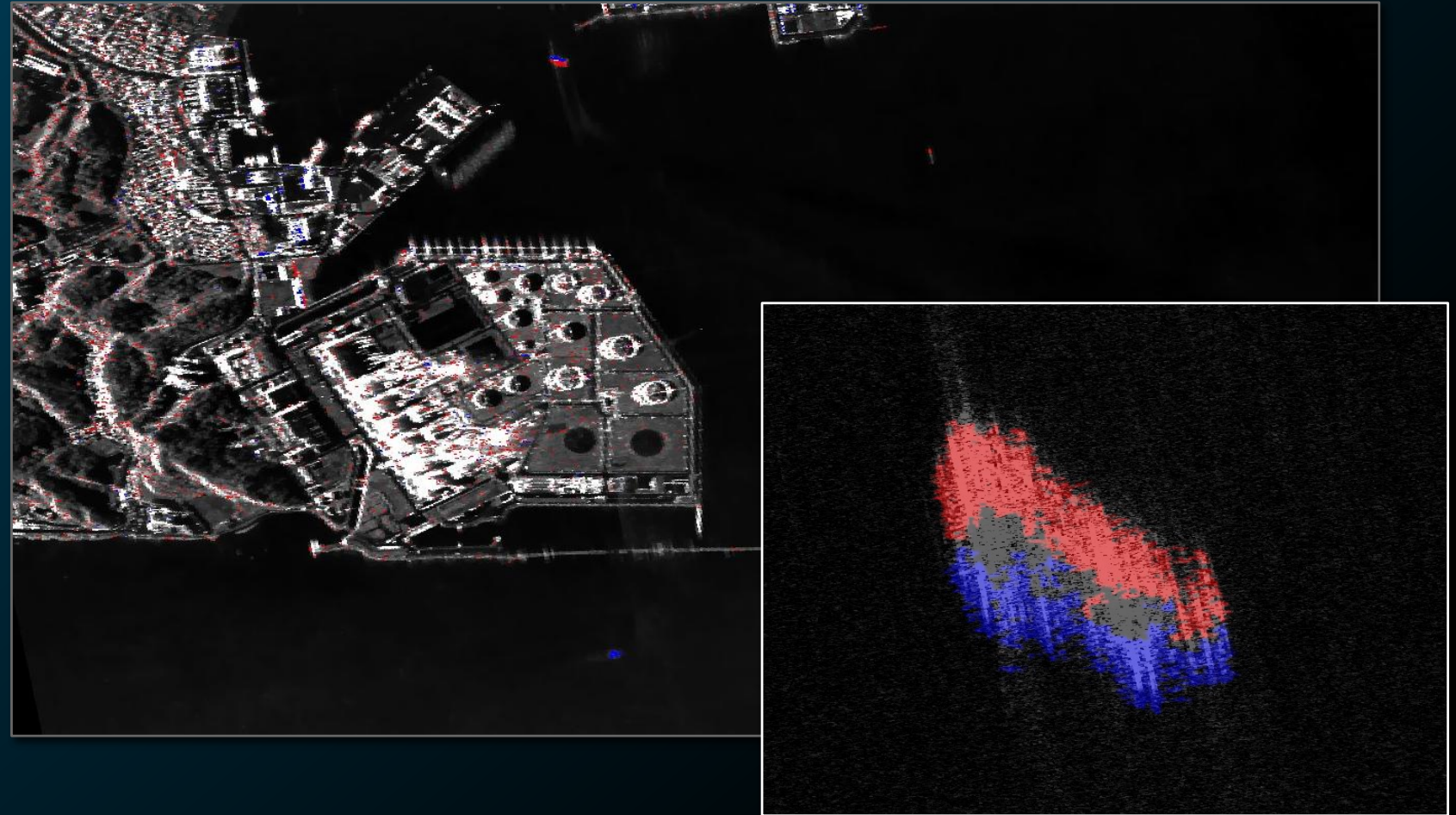
ERDAS IMAGINE 2022



ERDAS IMAGINE 2023

Single SAR image motion detection

- Sub-aperture motion detection from a single SAR image
- Fourier processing used to detect motion
- Color encoded as
 - blue-is-new
 - red-is-fled



TerraSAR-X, Kurihama Harbor, Japan

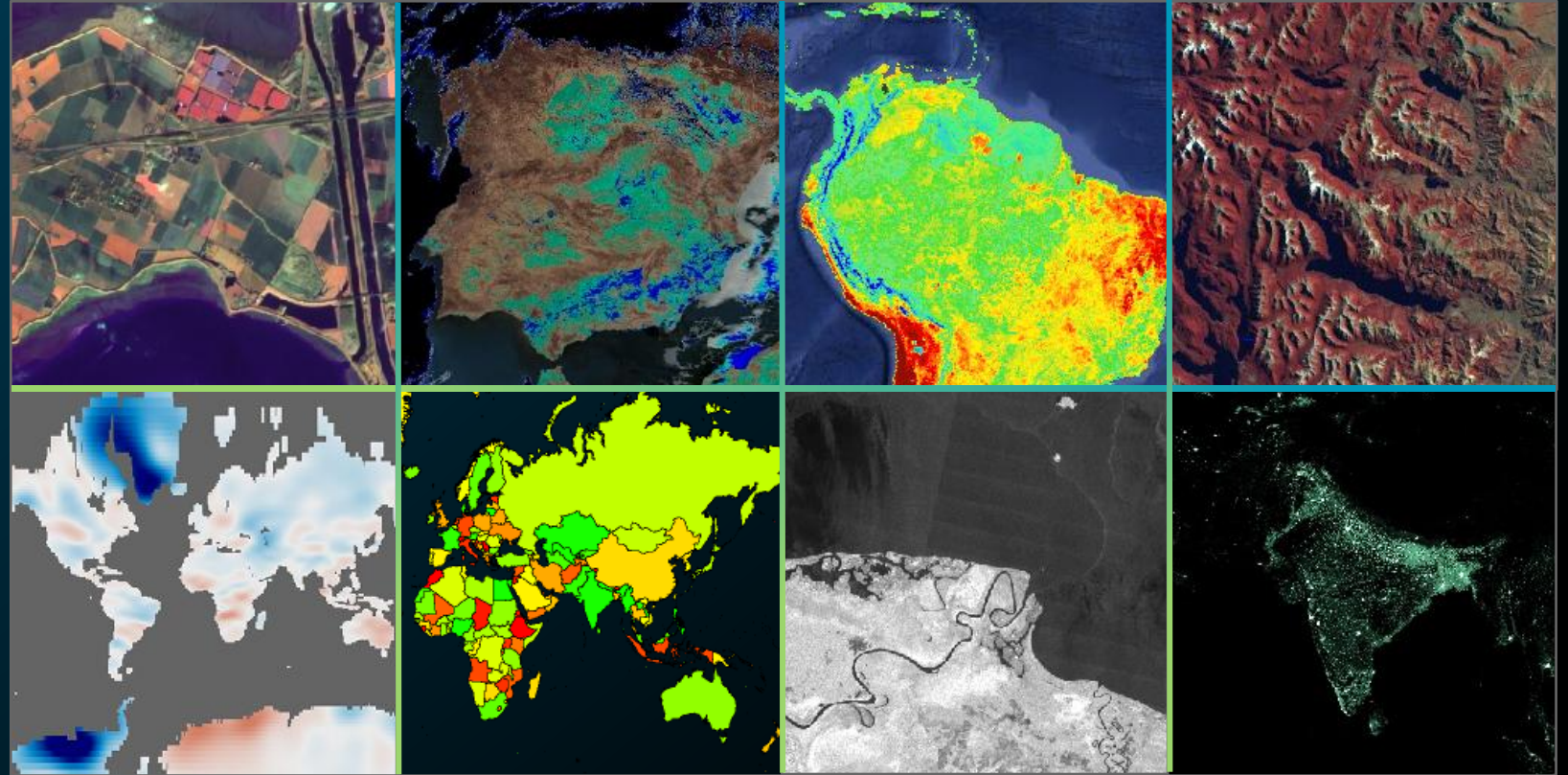
Introducing ERDAS IMAGINE LiveLink for Google Earth Engine



Pairing the intuitive, easy-to-use graphical modeling environment of ERDAS IMAGINE's Spatial Model Editor with the vast data holdings and geoprocessing capabilities of Google Earth Engine.

Google Earth Engine Data Catalog

- Multiple petabytes of geospatial data
- Worldwide coverage
- Spanning 40 years of collection in some cases
- Data Includes:
 - Landsat
 - Sentinel
 - MODIS
 - Land cover maps
 - Land use maps
 - Geophysical
 - Political
 - And much more





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**Image Compression
And Web Delivery**

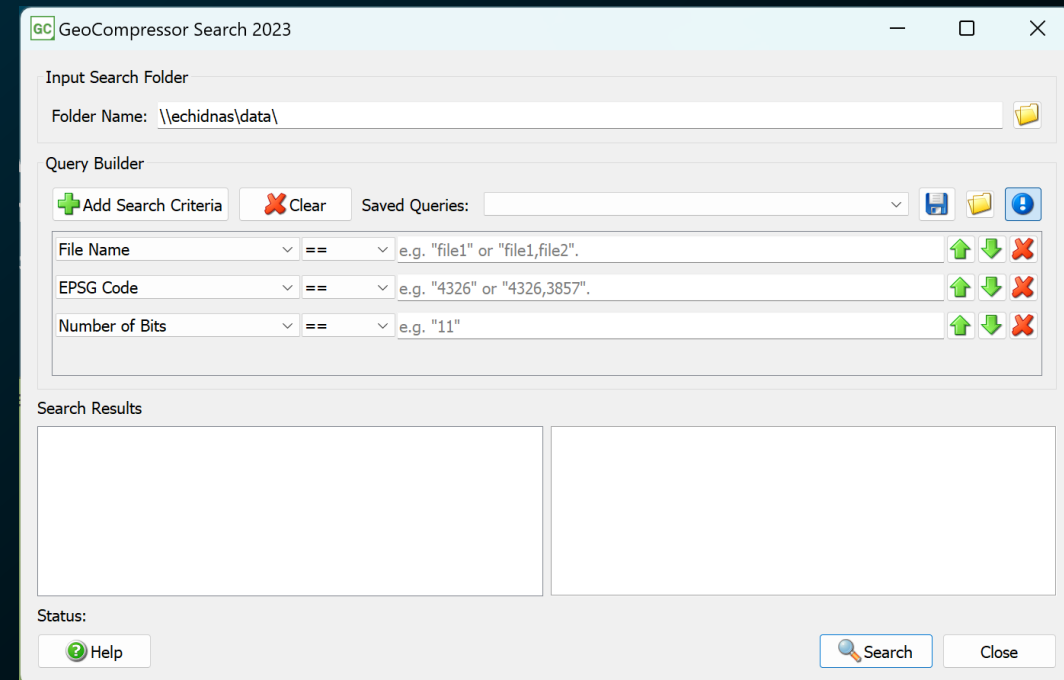


GeoCompressor v2023

What's new

- GC remains our bulletproof solution for large image mosaic creation workflows
- New dataset search utility to locate raster files with specific characteristics
- Variety of platform updates and bug fixes
- Performance improvements on average:
 - 17% faster compression to ECW format
 - 6% faster compression to JPEG2000 format
 - 10% faster decoding GeoTIFF input formats

ECW Format compresses visually lossless to 25:1 file compression! Saving Storage Costs and Removing a lot of cache demands



ERDAS APOLLO v2023

The best of both platforms

- LuciadFusion, plus
 - Security
 - Folder-based data management
 - Thumbnails
 - Extended metadata parsers
 - Additional data types like documents
 - Improved raster support
 - Geoprocessing
 - AOI notifications
 - Upload/download analytics
 - Product level installation/configuration/documentation



Simplified positioning

	V2023
Professional	Geoprocessing Data extraction Maritime, aviation standards
Advantage	3D (point cloud, BIM, terrain and mesh) Panoramic imagery Vector database
Essentials	Foundational enterprise platform Security, catalog, base 2D format support Integrated security, REST API and service types Full featured client and administrator clients

Professional retains geoprocessing with value adds.

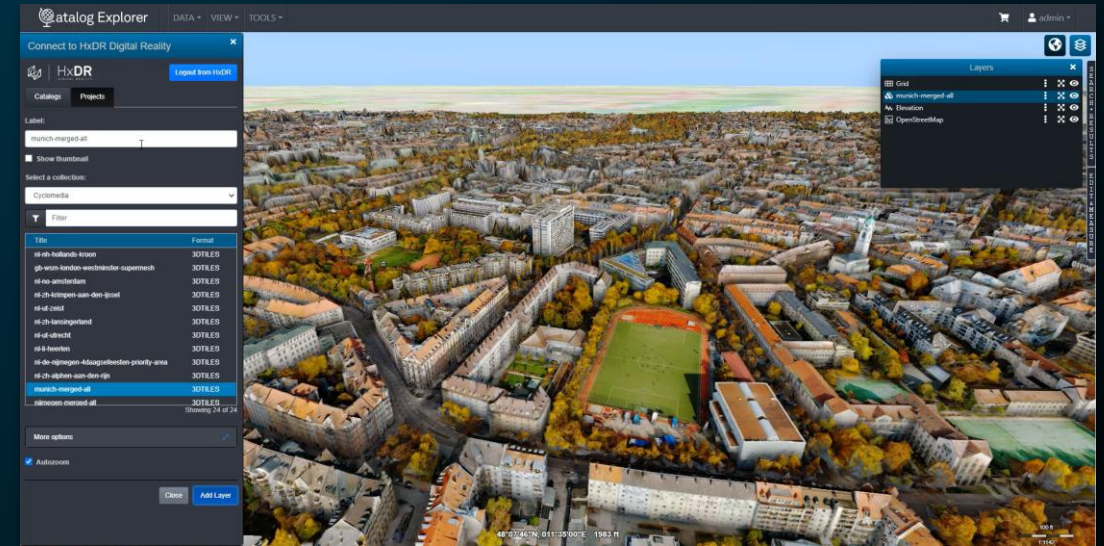
Advantage adds key market format types
=> ERDAS APOLLO “going 3D.”

Essentials is no longer just relevant for raster.
It provides a complete foundational geospatial data management server.

Catalog Explorer

Now included as part of the ERDAS APOLLO installer

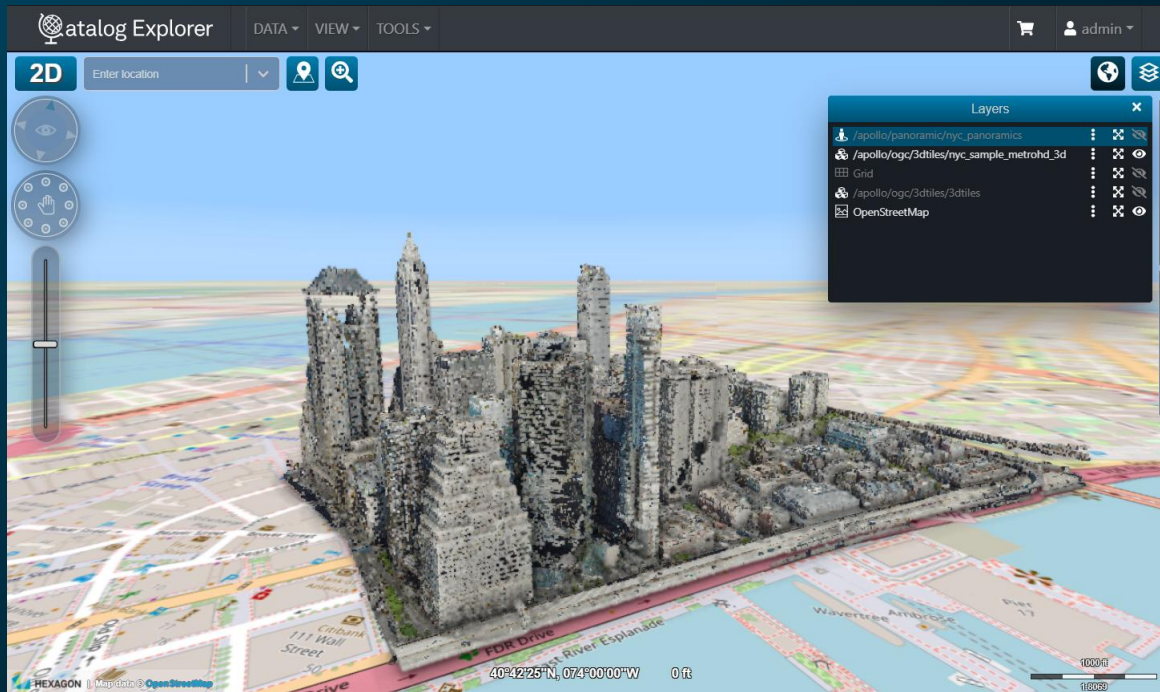
- LuciadRIA V2023
- HxDR Integration
- 3D extrusion
- Panoramic imagery
- Extension through JavaScript insertion
- Vector overlays
- IFC with a WFS features



Service Types

Point Cloud

- Hexagon Smart Point Cloud (HSPC service)
- LAS/LAZ (OGC 3D Tiles service).



Create Service

METADATA PRODUCTS

Service title

Service type

Service name

Point cloud Compression
Point cloud compression reduces content size and loading times, but requires a compatible client.

Endpoint URL

Abstract

Keywords
Enter a comma-separated list of keywords. For example: satellite,multispectral,landsat

Start service?

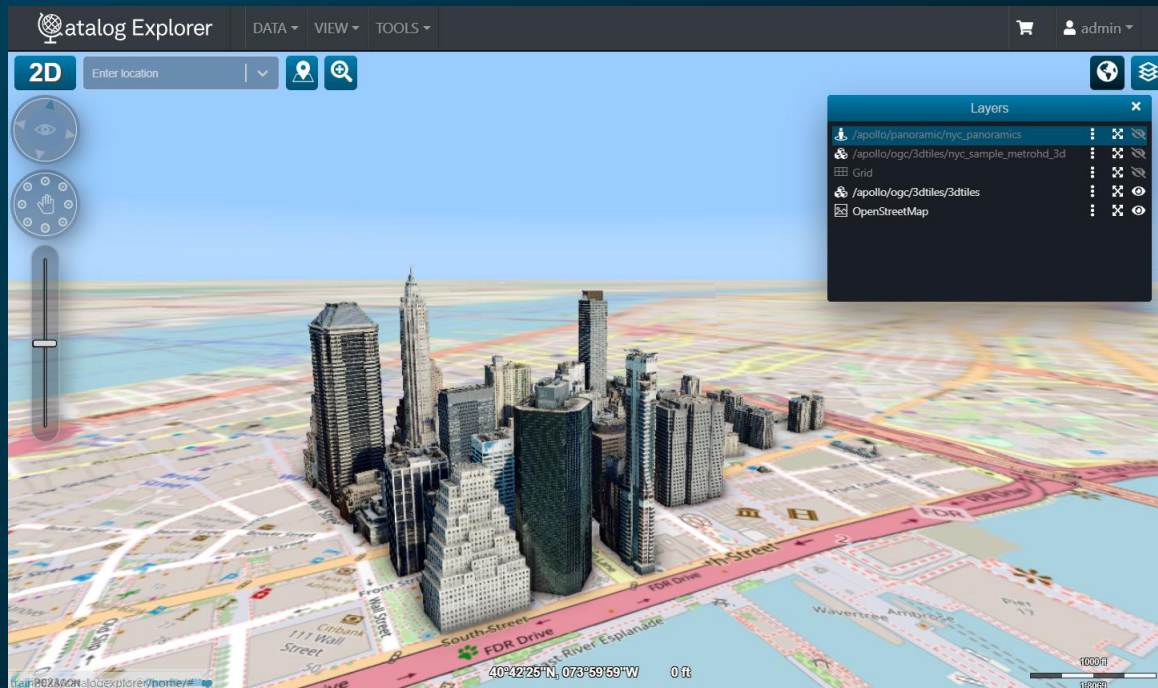
Output Path
Output directory where the preprocessing results will be stored.

CREATE SERVICE **CANCEL**

Service Types

OGC 3D Tiles

- Streaming and rendering massive 3D geospatial content such as Photogrammetry, 3D Buildings, BIM/CAD, Instanced Features, and Point Clouds



Create Service

METADATA PRODUCTS

Service title

Service type

Service name

Mesh Compression
Mesh compression reduces content size and loading times, but requires a compatible client.

Endpoint URL

Abstract

Keywords
Enter a comma-separated list of keywords. For example: satellite,multispectral,landsat

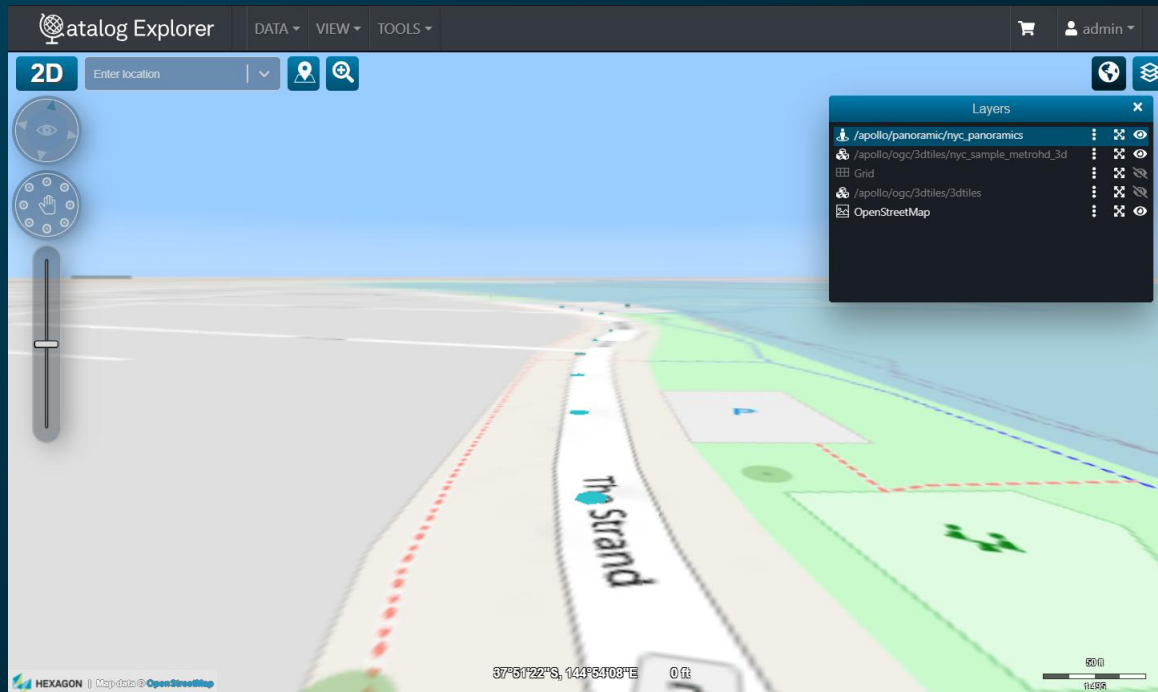
Start service?

Output Path
Output directory where the preprocessing results will be stored.

CREATE SERVICE **CANCEL**

Service Types

Panoramics



Create Service

METADATA PRODUCTS

Service title NYC Panoramics

Service type PANORAMICS

Service name nyc_panoramics

Endpoint URL http://train2023/apollo/panoramic/nyc_panoramics/cubemap.json

Abstract

Keywords
Enter a comma-separated list of keywords. For example: satellite,multispectral,landsat

Start service?

Output Path C:\ProgramData\Hexagon\ERDAS APOLLO\datastore\preprocess\nyc_panoramics
Output directory where the preprocessing results will be stored.

CREATE SERVICE **CANCEL**

Questions?

Angela.Manchester@hexagon.com