HEXAGON

Product Description

ERDAS APOLLO 2022

Product Features and Comparisons

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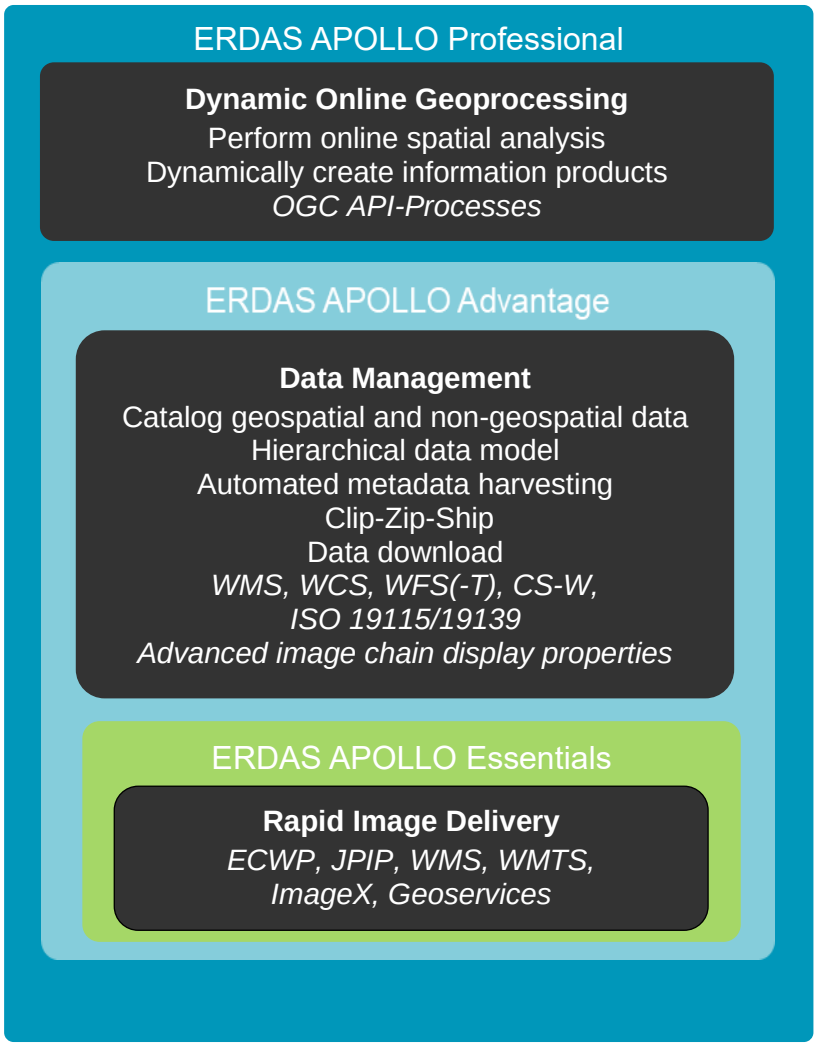
Introduction

ERDAS APOLLO provides a comprehensive data management and delivery server solution to address the challenges of enterprise-class spatial data repositories. It helps identify, locate, secure, and organize geospatial and business data into a searchable repository and enables simple distribution of that data. Complete with a variety of delivery options, ERDAS APOLLO consistently delivers geospatial data faster and with less hardware than competing server-based products. Implementing an out-of-the-box, service-oriented architecture, ERDAS APOLLO can be customized and extended to satisfy both your geospatial and business process requirements.

ERDAS APOLLO also alleviates pressures associated with expanding imagery data holdings through Hexagon's industry leading image compression technology.

Available in three product tiers, ERDAS APOLLO suits a spectrum of organizations — integrating with other geospatial or enterprise software and offering industry leading performance irrespective of geospatial data size.



Features Comparison Chart

Functionality	ERDAS APOLLO Essentials	ERDAS APOLLO Advantage	ERDAS APOLLO Professional
Rapid image web delivery			
Distribute massive volumes of geospatial imagery to thousands of users from a single standard server	•	•	•
Deliver terapixel-sized imagery to thousands of users via high-performance ECWP (streaming protocol) or OGC WMTS tiled delivery without requiring any pre-rendering or tile caches	•	•	•
Deliver to various GIS, CAD, mobile, web applications, and geospatial workstations across Hexagon and third-party software	•	•	•
Leverage common industry standards for deployment, including OGC WMS, OGC WMTS, OGC WCS, Esri Geoservices, KML, and JPIP	•	•	•
Utilize raster algorithms and Spatial Models from ERDAS IMAGINE for on-the-fly geoprocessing	•	•	•
Aggregate and connect thousands of datasets together as a single seamless layer using virtual mosaic and aggregate concepts	•	•	•
Cloud compatible — all geospatial server products can be deployed in the cloud (via Amazon EC2 and Azure Virtual Machines)	•	•	•
Large-volume distributed data management			
Catalog, manage, and deliver large volumes of distributed spatial and non-spatial data, including raster, vector, point cloud, terrain, and digital object or business data (pdf, mov, doc, jpeg, and so forth)		•	•
Schedule automatic data crawlers and metadata harvesters for continuous spatial and non-spatial data discovery at distributed file data stores		•	•
Automatically provide data for optimized end-user consumption, including pyramid and thumbnail generation and metadata translation to ISO 19115		•	•
Facilitate interoperable web service interfaces for data, including OGC/ISO WMS, WMTS, WCS, WFS, and WFS-T with GML, KML, GeoRSS, and SLD support		•	•

Deliver data to OGC-compliant web applications		•	•
Aggregate disparate data stores into homogenous layers with out-of-the-box hierarchical data models		•	•
Leverage extremely fine-grained security model to assign access, scale, and spatial security permissions to every aggregate/dataset in the system per user/role (also supports LDAP and single sign-on using Integrated Windows Authentication)		•	•
Download original datasets including metadata		•	•
Utilize the Clip, Zip, and Ship workflow to subset and download precise gridded, vector, and LAS formatted point cloud data in the catalog		•	•
Catalog third-party OGC web services (WMS, WFS, WCS)		•	•
Automatically harvest metadata from services and layer descriptions		•	•
Connect with Geospatial SDI to provide INSPIRE compliance through View and Discovery services (WMS 1.3.0 ONLY)		•	•
Create, style, and publish online maps from cataloged service layers		•	•
Search, filter, and edit vector data from thin-client front end		•	•
Conduct complex searches of data assets and service layers via CSW (ebRIM) and/or ISO interoperable web service or Catalog REST interface		•	•
Utilize integrated customizable web clients with built-in data workflows		•	•
Manage the ERDAS APOLLO server remotely from the ERDAS APOLLO Studio web client		•	•
Server-side Geoprocessing			
Publish complex spatial models from ERDAS IMAGINE or GeoMedia to the Geoprocessing Server			•
Create value-added data products from thin clients (on-demand spatial analysis)			•
Execute spatial models through an OGC-compliant OGC API — Processes interface			•
Enhance processing times by scaling out vertically or horizontally via Geoprocessing Workers			•

ERDAS APOLLO Essentials

ERDAS APOLLO Essentials is the fastest geospatial image server in the world. A single entry-level server can serve terabytes of data to thousands of concurrent users. Save days, or even weeks, delivering your data to the field by compressing it 5x faster to ECW or JPEG 2000 format. ERDAS APOLLO Essentials expedites your Desktop or Web GIS to provide geospatial imagery as quickly as possible, regardless of the format.

Key Features

Performance

- Supports massive imagery data: Deliver terabytes of data using a single server
    - Native 64-bit architecture: True 64-bit support enables large memory caches and faster overall performance due to 64-bit registers
    - Hardware accelerated to optimize CPU intrinsics to support more users, with less hardware load than any other software
    - Windows® and Linux® platform compatibility
    - Scales efficiently to support thousands of concurrent users by implementing ECWP delivery protocol to stream compressed data to clients to create a distributed decompression environment.
    - Supports ECW streaming protocol, JPEG 2000, and NITF files (JPEG 2000 codestreams only)
- Web Map Service (WMS) and Web Map Tiling Service (WMTS) protocols
    - High-performance, standards-compliant interfaces
    - Enable OGC-compliant third-party applications to consume many image formats immediately
- Narrow to broadband scalability
    - Capable of serving images faster regardless of the bandwidth or network latency to users — ERDAS APOLLO Essentials will serve image data faster than any other solution

Multiple Image Serving Protocols

- Multi-protocol support
- Expose images via different protocols without duplicating, pre-rendering, or reformatting data

Enhanced Compression Wavelet Protocol (ECWP) Image Streaming Protocol

Client-side decompression of image data, providing:

- Asynchronous panning and zooming
- Intelligent client-side caching and image decompression
- Reduced bandwidth requirements
- Optimal user experience
- Serve ECW, JPEG 2000 formats via this protocol
- Browser support now available via our new WebAssembly Decoder in Catalog Explorer

OGC WMS 1.1.1 and 1.3.0

- On-the-fly image reprojection
- Configure multiple WMS services in the click of a few buttons — no code, no delays in publishing
- Fully compliant with OGC WMS v1.1.1 and v1.3.0
- Scale dependent images from WMS services
- Fastest and most efficient OGC WMS for imagery data in terms of data storage requirements, hardware requirements, and delivery speed

OGC WMTS v1.0.0

- High-performance tile delivery through the Web Map Tiling Service interface
- Deliver tiles as fast as tile caching solutions, without the tile cache headaches
- Allow third-party applications to consume OTDF, ECW, and many other formats through WMTS
- Enable only selected images through the WMTS service interface
- Select from default OGC Well Known Tiles Matrix Sets per layer or configure custom ones, all without data duplication
- Fully compliant with the OGC WMTS v1.0 TEAM Engine
- Easily create mashups with consumer base maps including OpenStreetMap® and Google Maps™

Other Protocols

- JPEG 2000 Interactive Protocol (JPIP)

File Format Support

Premium file formats: Read and serve ECW and JPEG 2000 wavelet-based compressed data formats.

- These highly efficient file formats are read directly from disk. No complex publishing workflow, cache generation, or database wrapping.

Standard industry file formats: GeoTIFF, IMG, MrSID, and many other industry standard raster formats are supported.

- For optimal performance, conversion to ECW or JPEG 2000 is recommended.

Security

- SSL communication
    - Data is encrypted for protocols (ECWPS/HTTPS — encryption strength based on browser capabilities)
- Basic file system security
    - Data is secured on the server and user/group access is controlled by username/password (built on operating system security)
- Advanced security

    - Users and their permissions can be stored in a third-party credential management system that the server can access and use for authentication

- Security based on IP address — filter user permissions based on originating IP address
- Image resolution/region security — limit the resolution an image can be viewed at (ground scale) and deny access to particular regions of an image (for example, security zone)

Integration with Desktop Applications

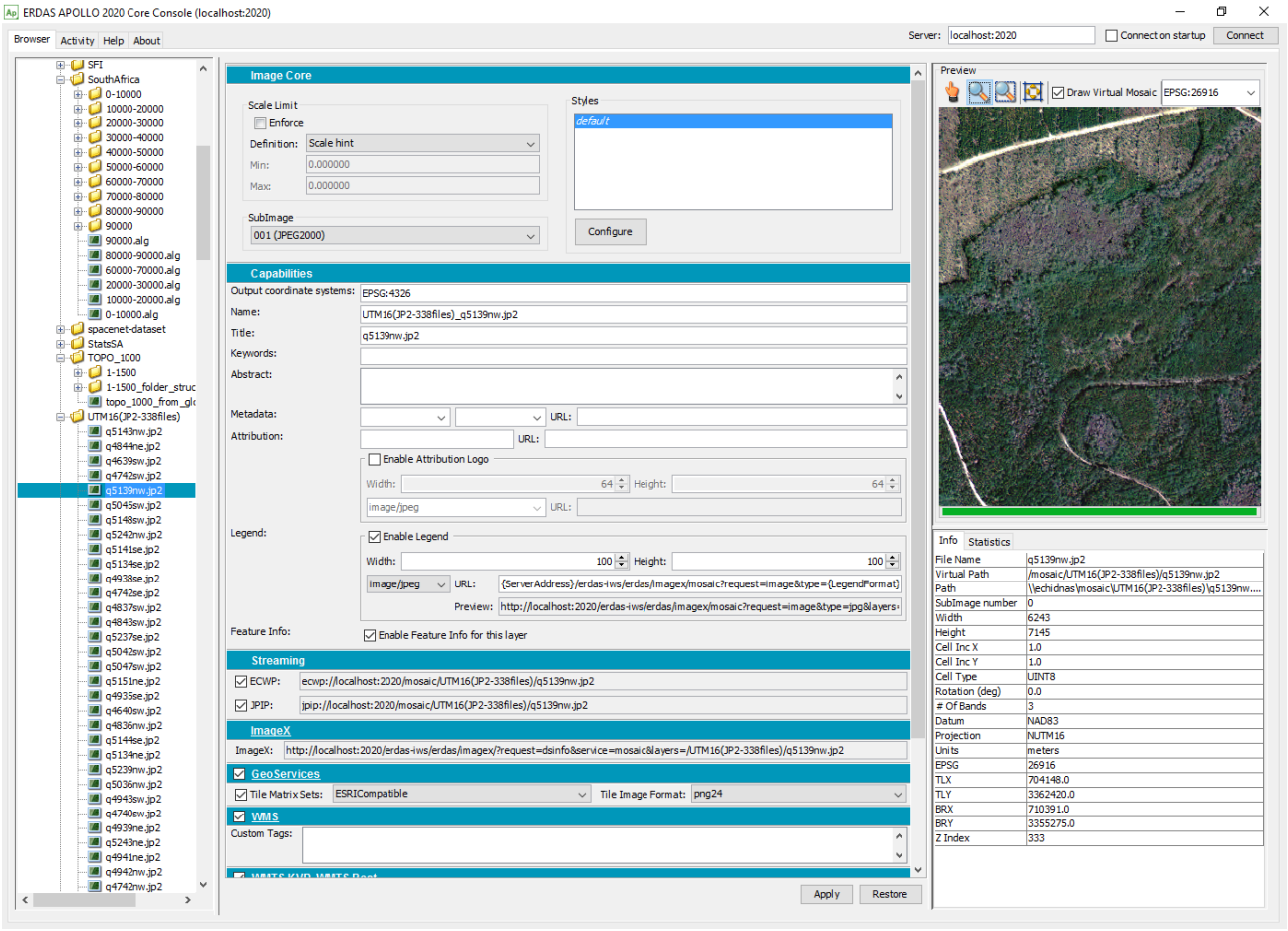
- High-performance streaming for major GIS workstations
- Plugins for native support are available for the following industry workstations to enable efficient streaming access with client-side caching:
    - Esri — ArcGIS for Desktop v8 to v10.x
    - MapInfo Professional
    - AutoCAD
    - Bentley MicroStation

Viewing

- Dynamic roam and zoom — fast, interactive user experience
- Native streaming support in many applications
- Free application plugins — plugins for common applications so that users can take advantage of ECWP streaming

Administration

- Powerful, flexible, and straightforward administration console
- Add datasets, define protocols/access levels, and so forth
- Remote administration
- Administer the server from anywhere in the world
- View data within administration console



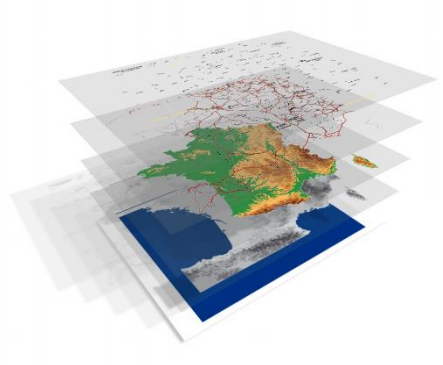
View data within the console to verify user experience

Online Image Processing Support

- Dynamically portray imagery in multiple ways. Complex formulas, resolution merge, band selection, and band algebra are all supported via ERDAS ER Mapper Algorithm files.
- Desktop clients consume these dynamically processed files, unaware of the complex tasks the server is performing. It's just another layer to a user, but to the administrator it's not a duplicate dataset.
- For server-side administrators, this yields massive benefits for time to publish, entirely removing the need to create derivative datasets.

ERDAS APOLLO Advantage

ERDAS APOLLO Advantage is a comprehensive data management and delivery solution providing remarkable business value. This OGC/ISO standards-based solution can organize, securely manage, and disseminate data within databases as well as massive volumes of dynamic and static images, point cloud data, terrain, vector data, third-party web services, and any digital resource in the enterprise. ERDAS APOLLO Advantage is scalable through clustering to meet an organization's specific needs, ensuring unprecedented performance even when handling the largest data archives.



ERDAS APOLLO Advantage integrates the feature set of ERDAS APOLLO Essentials, so please read the ERDAS APOLLO Essentials product description for more information about imagery data protocols.

Enterprise Application Integration: ERDAS APOLLO Advantage is designed to fulfill the requirements of the most demanding enterprises. Fully scalable through clustering, ERDAS APOLLO smoothly supports the extension of your geospatial business system with improved performance. Proven technological standards such as Java EE also ease the integration of ERDAS APOLLO into secure IT environments.

Key Features

Advanced Data Management

Using ERDAS APOLLO, you can easily catalog databases, geospatial imagery, vector, terrain, LAS, any OGC-compliant third-party web service, CAD data, full-motion video, and business data such as documents, movies, pictures, URLs, and electronic content. ERDAS APOLLO catalog automatically harvests web services and retrieves their metadata, including spatial extent, keywords, title, ISO, and thumbnails. Web services metadata is automatically exposed through an OGC-compliant CSW (ebRIM) web interface, as well as through RESTful endpoints.

ERDAS APOLLO Studio: ERDAS APOLLO Advantage provides a web-based application to remotely and securely crawl, manage, and deliver geospatial imagery, terrain, vectors, point clouds, database information, and any digital data across the enterprise. Background maps are provided for global base map context. ERDAS APOLLO Studio can be fully internationalized.

Input Geospatial Data Formats: One of the main problems that GIS professionals face is the heterogeneity of data formats. Legacy and third-party data can be used together in ERDAS APOLLO in a common environment.

Data Type	Vector	Images	Imagery	Sensors	Terrain	Metadata	CAD	FMV
Service Interfaces	WMS, WFS	WMS	WCS/WMS	WCS/WMS	WCS/ WMS	All		
Input Formats	GML, Esri Shapefile, File Geodatabase, Oracle, SQL Server, PostGIS	Including JPG, GIF, PNG, BMP, TIFF, WBMP, TGA, PCX	Including, but not limited to, GeoTIFF, ECW, OTDF, ALG, ERS, JPEG 2000, NITF, HFA (ERDAS IMAGINE) MrSID, GRIB, BIL/BSQ, CADRG, SOCET SET L0&L1 data	Including Landsat, IKONOS, QuickBird, SPOT, Envisat, RADARSAT, ERS, LIDAR	DTED DEM LAS	ISO 19115/ 19139	DGN, DWG, DXF	MPEG Transport Streams (must include MPEG-2 or H.264 embedded video CODECs and MISB 0601.x and MISB 0104.x metadata in Key Length Value)

ERDAS APOLLO SDK allows you to extend these supported capabilities to new, custom, or classified formats at the source of your workflow.

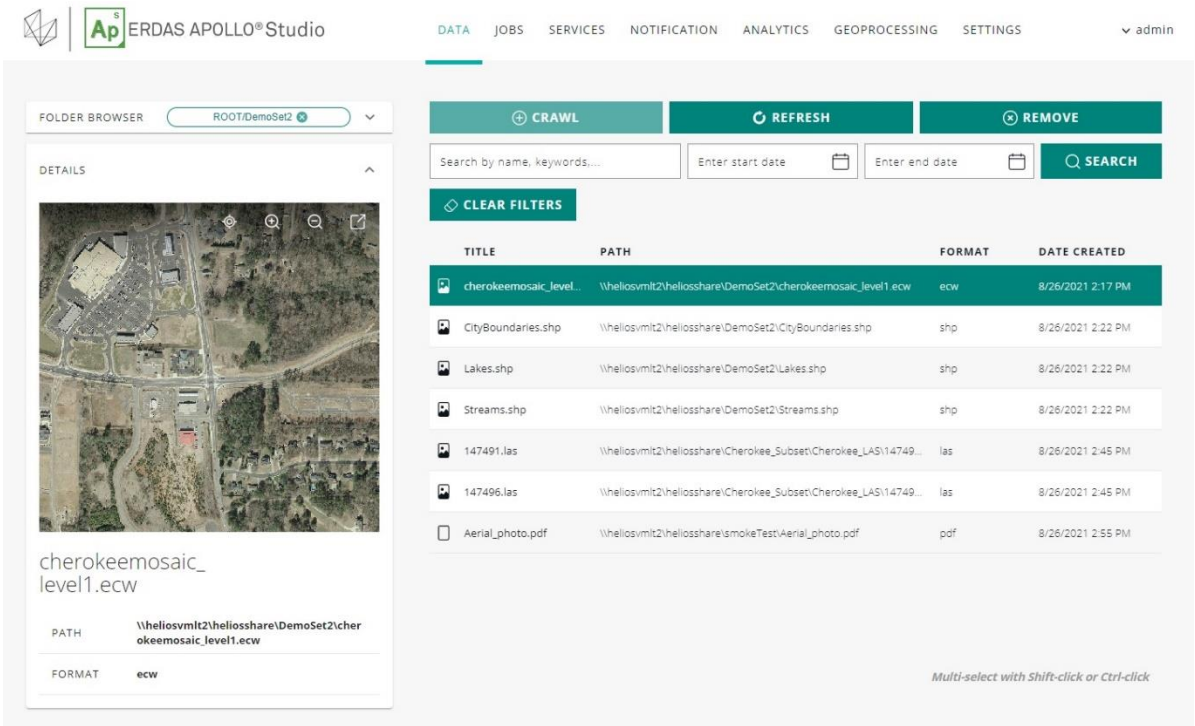
Output Geospatial Data Formats: Supporting multiple output formats increases the interoperability of OGC web services. ERDAS APOLLO supports numerous vector, raster, and point cloud output formats and provides smooth interaction with many CAD and GIS applications, such as ERDAS IMAGINE, GeoMedia, Geospatial Portal, Catalog Explorer, Google Earth, AutoCAD, ArcGIS, open-source OGC clients, and custom applications.

Data Type	Vector	Images	Imagery/Terrain	Point Clouds	Metadata
Service Interfaces	WMS, WFS	WMS	WCS/CZS	3D Tiles (with Luciad Fusion Extension)	All
Output Formats	PNG, JPG, GML	PNG, JPG	GeoTIFF, ECW, JPEG 2000, NITF, IMG (ERDAS IMAGINE), DTED	LAS	ISO 19115/ 19139

*Above table only represents processed output products. You can directly download the original file format for any cataloged data source.

Catalog and deliver spatial and non-spatial data using intuitive wizards.

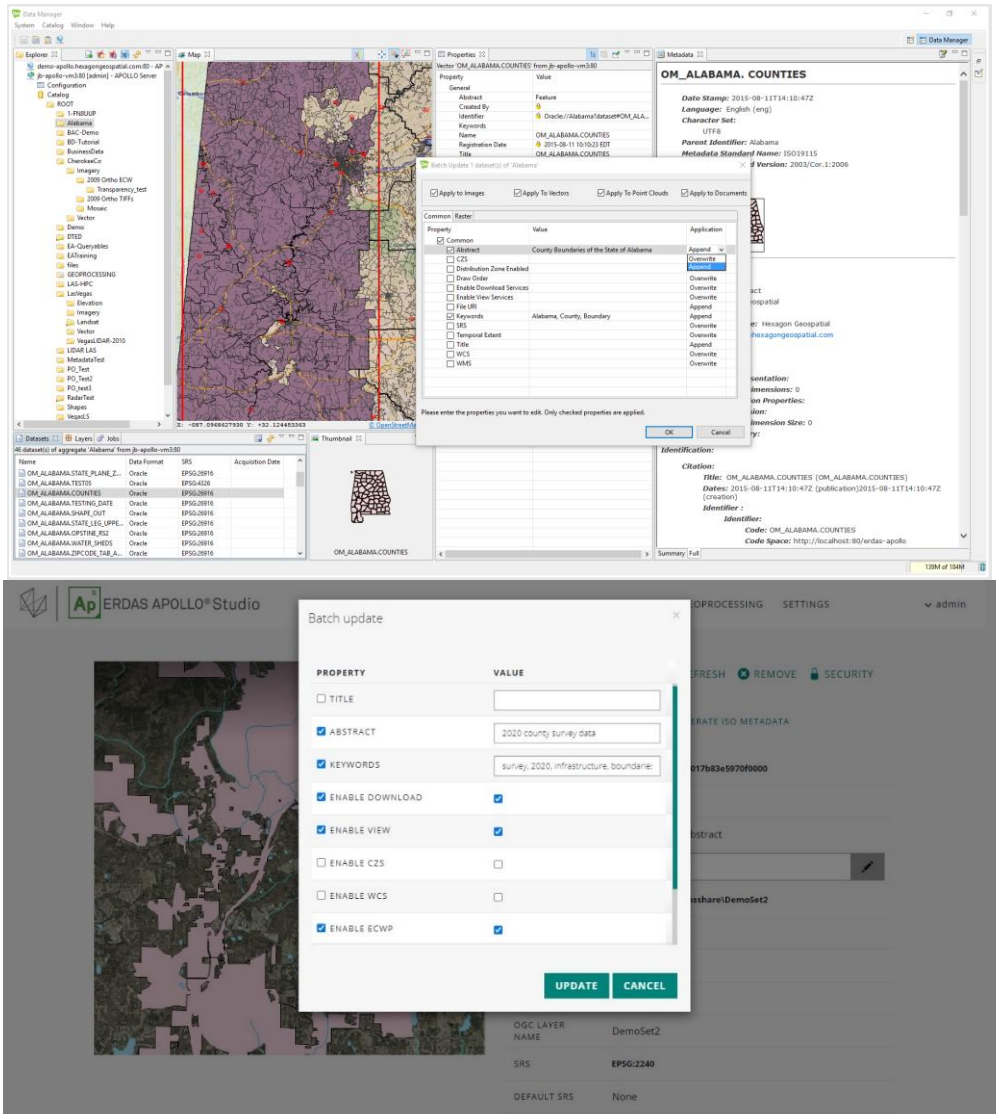
- Instantly set up OGC web services on vector, imagery, and terrain data using intuitive interfaces
- Catalog business data (documents, pictures, movies, URLs, any electronic content)
- Catalog photos based on Exif metadata location information
- Catalog databases including Oracle, SQL Server, and PostGIS
- Fully configure the services' metadata, behavior, and properties using service editors
- Automatically register and update services in the catalog
- Intuitive workflows to automatically:
    - Index data
    - Compute mosaic pyramids
    - Generate vector data schema and mapping
    - Style raster and vector data
    - Upload data to the server or remotely browse the server data folders
    - Instantly visualize your services on the map view
    - Edit and validate the ISO metadata (ISO 19115/19139 and associated profiles such as ANZLIC) served through the OGC interfaces



Administrators can remotely set up and manage geospatial data and services using ERDAS APOLLO Studio

Powerful workflows for imagery, vector, point cloud, terrain, and business data.

- Set up and configure data crawlers using both simple and advanced interfaces for imagery, terrain, vector, point cloud, and business data
- Manage the hierarchical data model of raster, vector, point cloud, and business data per dataset or collection (sub-tree)
- Manage security options, including users and roles, permissions, and geospatial security
- Instantly visualize the datasets and mosaics with the map tool
- View thumbnail images and edit detailed metadata for all data holdings
- Batch edit metadata for multiple datasets at once or use simple and efficient cell editing
- Define on-the-fly styling rules for raster data in Web Mapping Service
    - Simple style options such as contrast enhancement, color mapping, hill shading
    - Advanced synchronous styling options using Image Chain functionality
- Define simple styling rules to use built-in symbols, size, transparency, stroke, and fill color for point, line, and polygon feature data with stacked draw (advanced styling supports complex attribute-based symbology for vector data)
- Remotely manage the most frequently used configuration parameters on the server
- Monitor jobs running on the system (supports multi-user access)



Batch edit metadata and propagate changes down the aggregate (subfolder) hierarchy

Catalog Data Model: ERDAS APOLLO Advantage catalog enables data managers to develop complex hierarchical data models of heterogeneous gridded data to securely expose well-defined web service layers to end users.

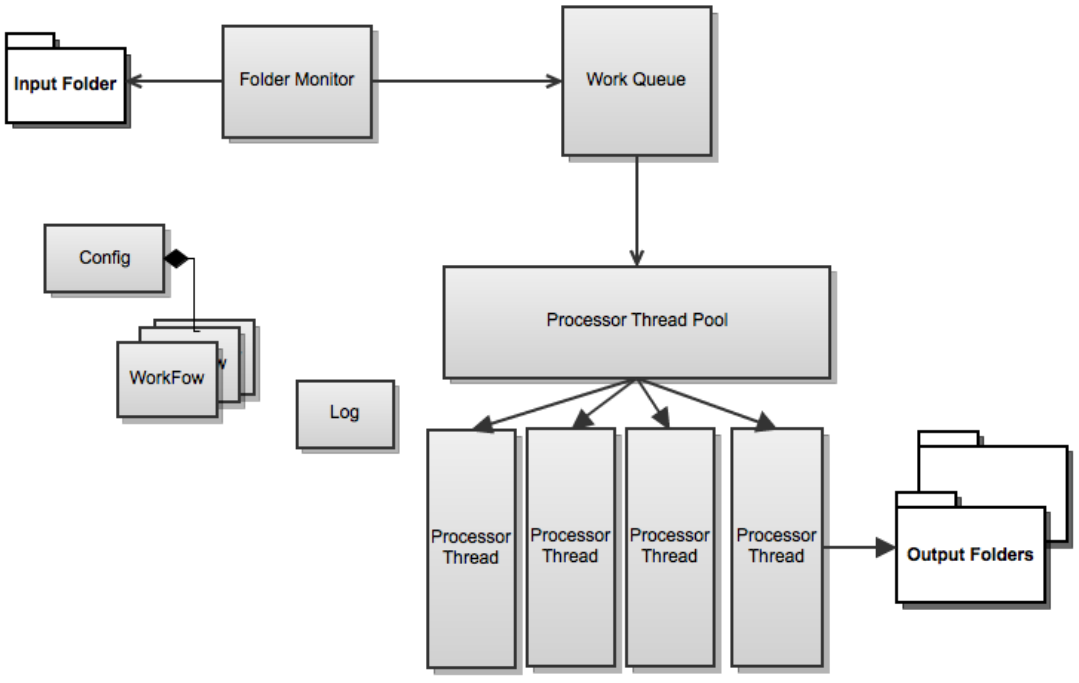
- Hierarchically aggregate disparate data sources into homogenous layers
- Assign access and spatial security permissions to each user/role for every aggregate/dataset in the system
- Web services (WMS and WCS) will automatically mosaic all raster data referenced in an aggregate sub-tree with pyramid provisioning
- Web service (WMS) will automatically mash up raster and vector datasets referenced in an aggregate sub-tree as a seamless map using the defined styles in the system
- Drag and drop to reorganize the catalog hierarchy

Crawlers: Geospatial information crawlers are scheduled server jobs for continuous discovery of geospatial data at user-specified dataset store locations.

- Run asynchronously on the server — set it and forget it
- Run on a regularly scheduled basis to enable automatic catalog updates
- Automatically discover imagery, terrain, vector, point cloud, and business data
- Automatically harvest imagery/sensor metadata and translate into ISO 19115/19139 (support for Landsat 5, Landsat 7, IKONOS, QuickBird, SPOT, CEOS, RADARSAT, ERS, IRS, EROS, ODL, GeoTurk-1, Pleiades DiMAP2, TanDEM-X, TerraSAR-X, Sentinel-2, and Russian satellites metadata)
- Automatically provide data for optimized end-user consumption (pyramids, thumbnails, and metadata generation, footprint computation, and security configuration)
- Fine-grained configuration of the web delivery services per dataset/aggregate (WMS, WMTS, ECWP, JPIP, ImageX, Geoservices, WCS, and CZS)

Drop Box – Automatically Catalog Incoming Data: This feature sets up listeners on directories to automatically crawl incoming raster, vector, and multimedia files. A dedicated application runs on its own server and monitors the input folders (the drop box). When a file is added to an input folder, the drop box determines if it is a file of interest. If it is, it then places that file in the queue, from which it is retrieved when it is ready to ingest.

- Configure multiple drop box directories, destination aggregates, and filters for specific data formats
- Configure publishing, provisioning, security, and metadata options (same as for the crawlers)
- Drag and drop data in the drop box directories using the Windows Explorer — no need to start the Apollo Studio application to publish new data
- Set up FTP on drop box directories to remotely upload and publish data
- Manage multi-file datasets and file copy completion and handle broken files



It is no longer necessary to open the ERDAS APOLLO Studio to publish data. Drop box folders can be configured so that any new data copied will automatically be discovered and published through the ERDAS APOLLO interfaces. Couple with an FTP server to create a remote drop box.

LAS Workflow: ERDAS APOLLO can automatically catalog point cloud data (LAS and LAZ files) and enables end users to discover, view, and consume large collections of LiDAR data from thin clients. With the addition of LuciadFusion, LiDAR data can be streamed using the OGC 3D Tiles standard for 3D visualization. Since ERDAS APOLLO is supported by automatic data crawlers, metadata harvesters, and web enablement, an organization can easily catalog its LAS data holdings and securely share them.

- Crawl LAS files
    - Supported in automatic crawler and drop box workflows
    - Using LuciadFusion, LiDAR data can be streamed in the OGC 3D Tiles format for easy viewing and distribution
    - Data automatically available in the following client workflows:
        - Point cloud representation delivery via 3D Tiles and WMS
        - Server-side geoprocessing via OGC API — Processes (ERDAS APOLLO Professional only)
        - Download original datasets as LAS
        - Clip, Zip, and Ship to download subsets and selected classification as LAS-formatted point cloud data

OGC Web Services Management Workflow: ERDAS APOLLO can act as a metadata repository for any third-party OGC WMS, WFS, or WCS by harvesting service and layer metadata. ERDAS APOLLO will store the URL and metadata, and this metadata can be further described within the catalog. End users can access and utilize the web service layers directly in client applications.

Advanced Security

Secure Geospatial Information Centrally: ERDAS APOLLO Advantage features a user/role-based, integrated security system to define fine-grained and geospatial credentials at the service and layer levels.

- User and role management to create as many users and roles as required
- Supports LDAP/Active Directory, Database, XML, and all other Java EE-compliant realms for security
- Support for single sign-on using Integrated Windows Authentication
- Full HTTPS/TLS support
- Global and homogenous security across all components — credentials are applied at the dataset level and will homogeneously impact the catalog searches and imagery data visualization and download
- Centralized and smart security configuration — using ERDAS APOLLO Studio, administrators can grant rights to read, write, update, and manage imagery data collections and individual datasets, as well as secure the data spatially with inclusion and exclusion areas and valid visible scale ranges (this configuration can be applied to crawler jobs so that fine-grained and geospatial credentials can be configured automatically during dataset indexing)
- Realm login into the web client — once logged in, the user gets access to all functionalities without additional prompts when it accesses different ERDAS APOLLO web services.

For each layer of the service, ERDAS APOLLO Studio can configure three types of security settings:

- Coarse-grained security: to authorize/deny service access per user role
- Fine-grained security: to authorize/deny layer access per user role
- Geospatial security:
    - Area credentials: to authorize/deny access to an area defined by a bounding box or polygon (a specific GUI is provided within the security feature to select authorized and unauthorized bounding box using a map within the Studio)
    - Scale-range credentials: to deny access below a minimum and above a maximum scale per user role.
    - Masking: to prevent any or precise visualization of an area defined by a bounding box or polygon (the polygon can be blurred, transparent, or hidden by a color filling)

ERDAS APOLLO Advantage security:

- All catalog searches and filters search results are based on the user/role permissions
- All data accessed for portrayed maps and data downloads are based on the user/role permissions
- Scale range visibility for portrayed maps
- Create inclusion and exclusion areas for aggregates and datasets per user/role
- Global resolution masking of sensitive geographic areas (the polygon can be blurred, transparent, or hidden by a solid color fill for portrayed maps)

Enhanced Logging/Auditing: Additional logging information can be recorded for security or auditing purposes. The following activities can be logged when clients attempt to access services.

- Login
- Queries of catalog
- Browsing of data holdings
- Access to files
- Access to attachments
- Access to metadata
- Access to services
- Modification of metadata

Data and Metadata Delivery

Imagery Delivery: ERDAS APOLLO Advantage provides the most comprehensive gridded-data-delivery protocols available on the market in a single server:

- **Web Mapping Service (WMS):** Deliver portrayed GIS-ready and web-client-consumable “styled” map data to any OGC WMS client application (ERDAS IMAGINE, GeoMedia, Geospatial Portal, AutoCAD, ArcGIS, Google Earth, Open Source, ArcGIS, custom applications)
- **Web Map Tiling Service (WMTS):** Deliver portrayed GIS-ready and web-client-consumable tiles to any OGC WMTS client application; easily create mashups with OpenLayers and Google Maps

- **Web Coverage Service (WCS):** Deliver raw pixel data of any supported imagery format and type to OGC imagery exploitation clients as interoperable coverage (ERDAS IMAGINE)
- **ECWP:** Very fast and efficient delivery of ECW and JP2 wavelet-compressed imagery through ECWP protocol (ecwp://) to ECWP clients (ERDAS IMAGINE, AutoCAD, ArcGIS, ERDAS APOLLO Web Client)
- **JPIP:** Fast and efficient delivery of JP2 wavelet-compressed imagery through the JPIP protocol (jpip://) to JPIP-compliant clients (web applications and IAS 3.1.x)

On-the-Fly Data Processing: ERDAS APOLLO Advantage Web Map Service (WMS) and Web Coverage Service (WCS) support on-the-fly:

- Reprojection
- Mosaicking
- Band selection and ordering
- Creation of imagery pyramids
- Contextual rendering and styling
- Format conversion
- Temporal or attribute-based selection
- Spatial subset creation
- Data export

ISO 19115/19139 Metadata: ERDAS APOLLO Advantage contains a detailed ISO 19115 profile for describing aggregates and datasets, stylized viewer for ISO 19115 metadata, detailed editing interface, and validation tool, ensuring required fields are populated and contain correct values. Persist and disseminate your metadata interoperably.

OGC-Compliant Catalog Service: ERDAS APOLLO Advantage catalog exposes an internationally accepted, interoperable web service for searching the catalog: Catalog Service for the Web — CSW (ebRIM) and ISO profile.

- Enables complex searches of any catalog attribute(s) with standard search operators (>, <, =, NOT, LIKE, and so forth)
- Provides a standardized search response result set
- Independent of any persistence model
- Allows third-party integration with your spatial data infrastructure data holdings in an interoperable service (OGC standard)

Interoperability Based on Open Standards

Based on the open standards of Open Geospatial Consortium and International Standardization Organization (ISO), ERDAS APOLLO provides an interoperable platform for enterprises to share their data internally and with third parties. Web Map Service (WMS), Web Feature Service (WFS and WFS-T), and Web Coverage Service (WCS), coupled with mature support for GML 3 and ISO 19115/19139 metadata, give ERDAS APOLLO the ability to communicate with any GIS or CAD application supporting those standards.

Supported standards include:

OGC Specification	Supported OGC Specification Versions	ISO Specification
OGC Web Map Service (WMS)	WMS 1.3.0, WMS 1.1.1, WMS 1.1	ISO 19128
OGC Web Feature Service (WFS-T)	WFS 1.1, WFS(T) 1.1, WFS 1.0	ISO 19142
OGC Web Coverage Service (WCS)	WCS 1.0.0	
OGC Catalog Service Web (CS-W)	CS-W 2.0.2, CAT2 AP ebRIM 1.0.0	
OGC Web Map Context (WMC)	WMC 1.1, WMC 1.0	
Styled Layer Descriptor (SLD)	SLD 1.1, SLD 1.0	
Geographic Markup Language (GML)	GML 3.2.1, GML 3.1.1, GML 2.1.2, GMLsf 1.0.0	ISO 19136
Filter Encoding	Filter 1.1, Filter 1.0	ISO 19143
Geoprocessing	OGC API – Processes 1.0	
Metadata		ISO 19115/19139
Others	KML 2.1.0, WSDL/SOAP/UDDI 1.0, SOAP 0.8, URN 1.1.0, URN 1.0.0, GeoRSS 1.0.0, OWS common 0.3.0, Gaz 0.8, GeoPackage	

Data Services – On-the-fly data processing

All ERDAS APOLLO web services support on-the-fly:

- Reprojection
- Contextual rendering and styling
- Format conversion
- Temporal or attribute-based selection
- Spatial subset creation
- Data export

ERDAS APOLLO imagery web services support on-the-fly:

- Mosaicking
- Band selection and ordering
- Creation of imagery pyramids
- Provisioning of temporal enabled layers

ERDAS APOLLO vector web services support on-the-fly:

- Filtering
- Editing

Advanced WFS/WFS-T Data Services

OGC web services can be created on top of databases to support vector data access and editing.

Advanced WFS/WFS-T Workflows: ERDAS APOLLO offers a workflow for vector data, including the ability to publish, edit, and update vector data geometry and attributes, using a Transactional Web Feature Service (WFS-T). Whatever the feature data model, ERDAS APOLLO Data Manager can automatically generate and customize the mapping between the data properties and attributes and the feature model exposed by ERDAS APOLLO WFS. ERDAS APOLLO WFS supports advanced searching and filtering functionality through Catalog Explorer. This functionality is also usable by any external client application that is compliant with WFS-(T). WFS service capabilities include the ability to expose vector data using different versions of WFS and GML.

Catalog Explorer also provides the client-side interface to ingest vectors from the new OGC API — Features interface.

Input Data Formats: One of the main problems that GIS professionals face is the heterogeneity of data formats. Legacy and third-party data can be used together in a common environment with ERDAS APOLLO.

Data Type	Vector
Service Interfaces	WFS(-T)/WMS
Input Formats	Microsoft SQL Server Oracle PostgreSQL Spatial GML Shapefile (WFS/WMS only)

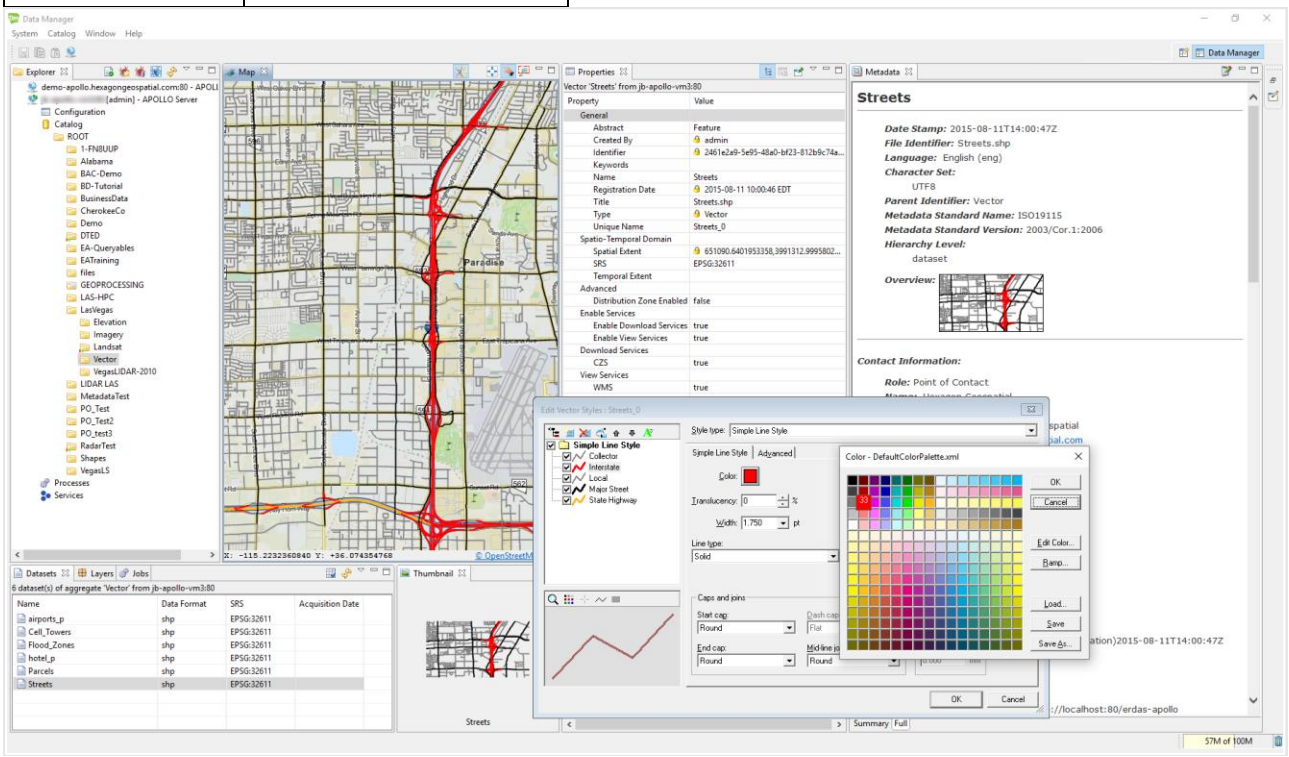
Output Data Formats: Supporting multiple output formats increases the interoperability of OGC web services. ERDAS APOLLO supports numerous vector and raster output formats and provides smooth interaction with many CAD and GIS applications such as ERDAS IMAGINE, GeoMedia, Catalog Explorer, Geospatial Portal, Google Earth, AutoCAD, ArcGIS, open-source OGC clients, and custom applications.

Data Type	Vector
Service Interfaces	WMS/WFS(-T)
Output Formats	GML, GeoRSS, Esri Shapefile, JPG, GIF, PNG, TIFF, WBMP, KML, SVG, GeoPackage

Due to configurable styling and on-the-fly rendering, the WFS services automatically expose a WMS interface, providing JPG, GIF, PNG, TIFF, WBMP, and KML output on vector inputs.

Web Service Styling and Portrayal Capabilities: ERDAS APOLLO provides visualization of raster, vector, and point cloud datasets. Styles are configured, plus a built-in portrayal engine provides on-the-fly contextual rendering through the OGC Web Map Service (WMS) interface with Styled Layer Descriptor (SLD) support. This allows data providers and users to define multiple styles for each data source and to visualize them in many different ways. Configuring of basic styles is enabled for vector datasets, including fill and stroke color, symbols, and point labels.

Data Type	Vector
Service Interfaces	WFS(-T) ⇒ WMS
Styling	Stroke (color, cap, join, and dashing), fill color, labels, markers, symbols, discrete/range classification, clash management



Apply scale-dependent styles to vector data using ERDAS APOLLO Style Editor Web Client Interface for End Users — Catalog Explorer

End-User Web Client: Catalog Explorer provides data search and discovery, online navigation/mapping interface, and a data provisioning workflow (Clip, Zip, and Ship).

- Consume web services from ERDAS APOLLO including WMS, WFS, and WMTS
- Search ERDAS APOLLO catalog using spatial, temporal, and metadata constraints
- Browse ERDAS APOLLO catalog hierarchy and third-party services repository
- View data in the map

- Download data
  - Original files, ERDAS IMAGINE formats, and Google formats
- Clip, Zip, and Ship
  - Clip, Zip, and Ship imagery, vector, or LAS-formatted point cloud data (in whole or just a subset) using the Catalog Explorer
    - Select polygonal clip areas, search the catalog, and download multiple aggregates or individual datasets of gridded data
    - ERDAS APOLLO Advantage maintains a large download job query, executes jobs asynchronously, and provides e-mail notification when the download jobs begin and complete
    - In the job completion e-mail, the user is given a hyperlink to the download location
    - Automatic mosaic of results when clipping across multiple datasets in a given aggregate to return one single file
  - LAS-formatted point cloud data
    - Output options include output format, resolution, SRS, classification, and more
  - Imagery (raster)
    - Select classifications
    - Filter by return value
    - Output can be written to an OGC GeoPackage
  - Vector
    - Output options include output format, resolution, SRS, and more
    - Output can be written to an OGC GeoPackage

ERDAS APOLLO Professional

ERDAS APOLLO Professional builds on the Advantage level, adding on-the-fly geoprocessing through a powerful option called Geoprocessing Server that implements the OGC API — Processes specification. ERDAS APOLLO Geoprocessing Server empowers many more end users at the organization to create value-added data products. The component is distributed separately from the main ERDAS APOLLO installer to enable more flexible deployment options but still requires an ERDAS APOLLO Professional license to function.

Leveraging Spatial Models created by experts within GeoMedia® or ERDAS IMAGINE® Geoprocessing Server enables any user to execute them with nothing more than a web browser and data sourced from the ERDAS APOLLO catalog. Not only does this increase accessibility, but it will also mean in many cases the outputs are created faster by utilizing more powerful server hardware, deployed closer to the data sources.

Key Features

Geoprocessing Service

ERDAS APOLLO Professional provides an OGC API — Processes interface with enhanced performance, enabling users to run a variety of spatial models published from ERDAS IMAGINE.

Remotely Control the Geoprocessing: ERDAS APOLLO Professional provides asynchronous server-side processing through a web service, distributing the computational power of the server everywhere, inside and outside the enterprise.

- Remotely select, manage, and configure the spatial models using APOLLO Studio
- Execute the given models through an interface within the Catalog Explorer that provides dynamic input fields based on the schema of the process
- Connect and login anytime, from any computer, to monitor the progress
- Visualize and/or download the processing results as well as catalog the results when written to a pre-configured Apollo drop box

Server-Side Technology: ERDAS APOLLO's OGC API — Processes and RESTful interfaces work together closely with ERDAS APOLLO catalog in the optimized server environment.

- Any imagery dataset or collection registered in ERDAS APOLLO catalog can be used as input data for geoprocessing
    - Data stays on the server — no need to download onto the local system
    - Saves bandwidth, time, and disk space
    - Reduces data duplication
    - End users work with data from the collective data pool
- Geoprocessing services run on the server, benefitting from optimized data access and optimized hardware environment
- Administrators can manage the number of worker nodes to create a highly scalable environment
- Geoprocessing results are added back into ERDAS APOLLO catalog
    - Others can visualize and download the results

- Results can be used as inputs for additional geoprocessing

Reduced Need for Domain Knowledge: The workflow has been designed so that end users can execute the spatial models with very little domain knowledge. When publishing a new spatial model, the image analyst can:

- Define the spatial model description
- Define human-readable titles for each spatial model input parameter
- Define default values for each input parameter
- Predefine the catalog query that will automatically propose valid imagery data inputs to the end users

OGC Web Service: ERDAS APOLLO Geoprocessing Service implements the OGC API — Processes 1.0 specification.

- List published spatial models
- Provide full spatial model descriptions
- Remotely Execute Spatial Models Through the OGC API — Processes Execute Request Manage Processes

Use ERDAS APOLLO Studio to manage the published spatial models and configure scalability of the worker nodes.

Manage Processes and Jobs: Use ERDAS APOLLO Studio to manage the processes and jobs.

- Browse and view both server-defined and custom models within the service
- Upload new models, edit existing models, and delete old models from the service
- View and manage the geoprocessing “jobs” running on the server

Execute Processes over the Web

End users are able to select, configure, and execute the processes remotely in Catalog Explorer.

Fully Described Processes: Catalog Explorer provides an interface that fully describes the processes.

- Displays all processes that the user can read and execute
- Provides a detailed description of the model that the user selected to execute
- Displays all process arguments and provides ability to configure them
- Provides support for multiple data inputs
- Provides configurable input fields based on type
- Provides default values for arguments
- Validates required arguments

Process Monitoring: Catalog Explorer provides the ability to monitor the process execution and access the processing results.

- Lists all processes that the user has run
- Displays job metadata: when the process was run, which process was run, and its progress

Visualize and Download Process Outputs”: Geospatial Portal provides for visualization and downloading of the processing results.

- Add process outputs to the map as map layers
- Use any map and layer tools to manipulate the outputs
    - Configure layer opacity, visibility, and styling
    - Zoom in, zoom out, and pan
    - Measure distances and identify pixel values
    - Generate a Web Map Context (WMC) for distribution of a user-created map
- Use the Clip, Zip, and Ship feature of Geospatial Portal to download the process results

ERDAS Geoprocessing Workflow

Using ERDAS IMAGINE, the remote sensing data analyst can:

- Author spatial models
- Publish spatial models to the ERDAS APOLLO Geoprocessing Server

Using ERDAS APOLLO Studio, the ERDAS APOLLO administrator can:

- Browse processes, both system and custom-created
- Manage the scalability of the server and its worker nodes
- Access and monitor jobs currently running and those previously executed
- Delete processes

Using Catalog Explorer, the end user can:

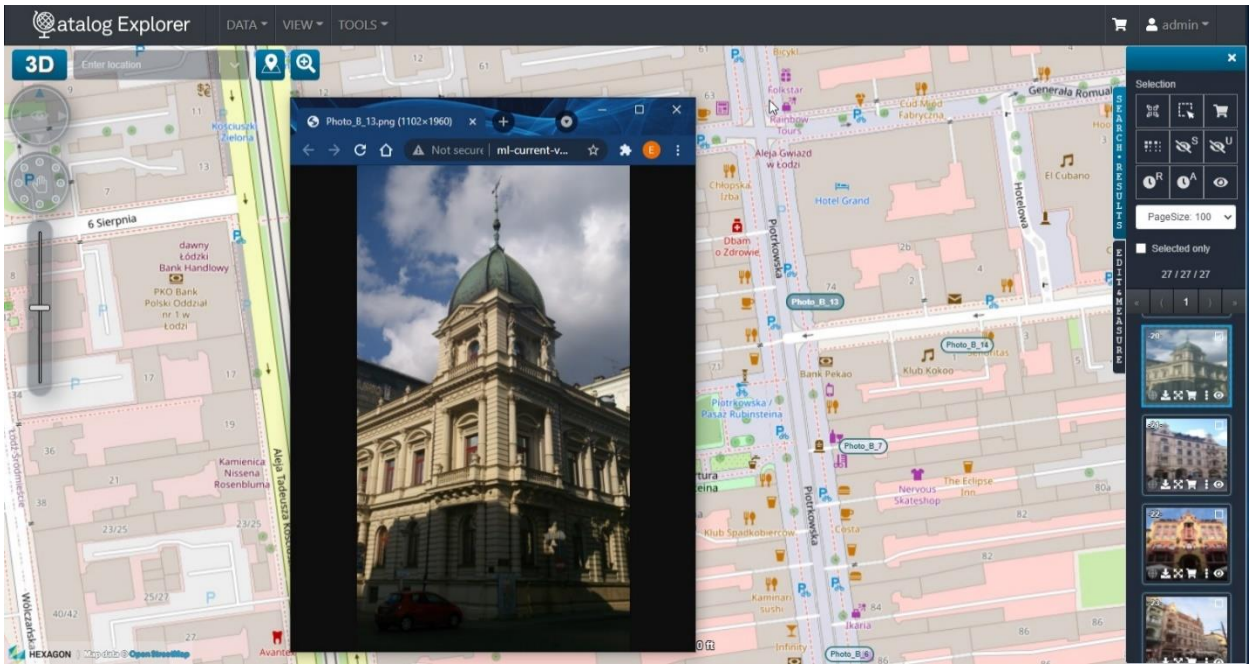
- Execute complex spatial models in a map area of interest, with detailed knowledge of the process or data
- Visualize the geoprocessing outputs on the map and download them

Catalog Explorer — Integrated Web Client

Catalog Explorer is a configurable browser-based web portal that can be used for locating, viewing, querying, and analyzing geospatial data published by Hexagon products and/or other standard web services. Using modern services-oriented and RESTful architectures, you can connect to many data sources at the same time.

Catalog Explorer integrates multiple data sources into a single map view, providing easy navigation and interaction.

The renewed Catalog Explorer web client experience builds around the catalog search to provide other features such as a Gazetteer, robust OGC® API Web Service support, and integration of the new ERDAS APOLLO Geoprocessing Server capability.



Catalog Explorer can be used to connect to ERDAS APOLLO to browse and search the catalog, consume and view data and services, download and clip datasets, and create value-added data products on-demand

Catalog Explorer is used to connect to ERDAS APOLLO Essentials, Advantage, and Professional for core operations including consuming services, browsing and searching the catalog, downloading datasets, and server-side geoprocessing (Professional version only). Core functionality includes:

- Consume web services from ERDAS APOLLO including WMS, WMTS, and ECWP
- Search ERDAS APOLLO catalog using spatial, temporal, and metadata constraints
- Browse ERDAS APOLLO catalog hierarchy and third-party services repository
- View data in the map
- Download data
    - Original files, ERDAS IMAGINE, and Google formats

- Clip, Zip, and Ship data
  - Output options include output format, resolution, SRS, bands, and more
  - Clip raster, vector, and point cloud data
  - Raster and vector outputs can be written to an OGC GeoPackage
- Create value-added data products (server-side geoprocessing)
- Data styling for raster, vector, and point cloud data
  - Create user-defined styles for data
  - Utilize pre-defined styles provided by the server

About Hexagon

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Safety, Infrastructure & Geospatial division improves the performance, efficiency and resilience of vital services. Its Safety & Infrastructure solutions enable smart and safe cities. Its Geospatial software leverages the power of location intelligence.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 21,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at hexagon.com and follow us @HexagonAB.