

ERDAS IMAGINE® Product Description



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IMAGINE Essentials®

Overview

IMAGINE Essentials offers the basic tools for image mapping, visualization, enhancement and geocorrection, including enterprise-enabled access to relational databases such as ArcSDE and Oracle Spatial. At the heart of IMAGINE Essentials is the IMAGINE Geospatial Light Table™ (GLT), which provides the basis for all interactive display and processing. The viewer displays, combines, geographically links, analyzes and presents multiple data sets in a single window. IMAGINE Essentials also provides a well-rounded set of tools for geocorrection and reprojection, image analysis, visualization, vector editing, batch processing and map output.

Key Features

Data Types and Integration

There are two types of data format access: direct access to many raster data formats for the use of files in their native format without conversion and import and export routines for data exchange to a broader spectrum of data.

Raster Data Direct Read

- § ADRG Image (.img)
- § ADRG Legend (.lgg)
- § ADRG Overview (.ovr)
- § Alaska SAR Facility (.L)
- § ArcSDE Raster
- § ASRP (.img)
- § AVIRIS
- § Bitmap (.bmp)
- § CADRG
- § CIB
- § DTED
- § ENVI (.hdr)
- § ENVISAT
- § EOS HDF
- § ERDAS IMAGINE® (.img)

- § ERDAS® (.lan)
- § ERDAS® (.gis)
- § ERMapper Raster (.ers)
- § EROS A1 (Imagesat)
- § ESRI GRID and GRID Stack
- § ESRI BIL, BIP and BSQ
- § FIT
- § Generic RAW (binary) access
- § Geodatabase raster
- § GeoTIFF (.tif)
- § GIF
- § HDF Raster
- § HDF Scientific
- § HYDICE (.cub)
- § Hyperion
- § Intergraph (.cit & .cot)
- § JFIF (.jpeg)
- § JPEG 2000 (including GeoJP2)
- § MrSID*
- § Oracle GeoRaster
- § PCI (.pix)
- § Portable Network Graphics (.png)
- § RPF
- § Silicon Graphics FIT
- § SOCET SET Support (.sup)
- § Space Imaging BIL, BIP and BSQ
- § SPOT DIMAP
- § Surfer Grid (.grd)
- § Targa (.tga)
- § TIFF (.tif)
- § USRP (.img)
- § VITEC (.vit)

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Vector Data Direct Read

- § ArcIMS
- § ESRI ArcSDE Vectors
- § DXF
- § ESRI Geodatabase vector features
- § DGN
- § ESRI Shapefiles
- § DWG
- § Geography Network
- § ERDAS IMAGINE Annotation layers (.ovr)
- § TerraModel Project files (.pro)
- § ERDAS IMAGINE Area of Interest layers (.aoi)
- § VPF
- § ESRI ArcInfo coverages (8.x, 7.x, 6.x, 3.5)
- § Oracle Spatial Feature

ERDAS IMAGINE also supports the import and export of numerous satellite, GIS and image file formats. See the chart later in document.

* Availability limited to Microsoft Windows platforms only.

Easy to Learn and Use

- § Intuitive graphical user interface throughout
- § Common tools used throughout the suite
- § Context-sensitive, hypertext-linked on-line help
- § Bubble help
- § All documentation is available within the software in Adobe PDF format

Data Visualization

The IMAGINE Viewer efficiently displays, combines, analyzes and presents disparate geographic data.

- § Drag-and-drop data loading to the viewer (Microsoft Windows only)
- § International 2-byte fonts supported (Microsoft Windows only)
- § Multiple image display types
- § Overlay multiple data types
- § Treat multiple image layers as
 - Discrete, independent files
 - Virtual mosaic
 - Virtual layer stack
- § Arrange layers index
- § Geographic linking
- § User-definable projection system for data display
- § Dynamic roam

- § Fractional zoom, rectangle zoom, pyramid level zoom and continuous zoom
- § Continuous rotate
- § Zoom to a specific scale
- § Zoom to layer extent
- § Font to symbol utility
- § User-selectable resampling techniques
 - Nearest Neighbor
 - Bilinear Interpolation
 - Cubic Convolution
 - Bicubic Spline
- § Rotation of data to user-defined angles
- § Interactive north arrow and scale bar
- § On-the-fly resampling
- § Print using Map Composer templates
- § Area of Interest (AOI) definition
- § Use AOI layers for masking
- § Image histogram modification
 - Automatic statistics calculation option
 - Simple brightness/contrast tools
 - Piecewise linear adjustments
 - Standard, statistically-based automatic lookup tables (LUTs)
 - Full graphical histogram contrast adjustment tool
 - Save and reload multiple LUTs
- § Window extent statistics
 - Avoids poor utilization of available screen contrast
 - Quickly calculate statistics for current viewer
- § Pseudo color table editing for thematic layers
 - Define new attribute fields
 - Apply color patches
 - Statistical report generation
 - Attribute-based criteria selection and display
 - Point-and-click attribute selection
- § Recode class values
- § Filtering for thematic images (Neighborhood Analysis)
- § Filtering for continuous images
 - Standard smoothing, edge enhancement and edge detection filters
 - Custom filter editor and librarian
- § Interpolation methods for editing image regions
- § General raster editing tools
- § Visual change detection between any data types
 - Swipe
 - Blend
 - Flicker
- § Inquire cursor and inquire box

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- § Measurement tool
 - Point locations
 - Lengths, bearings and angles
 - Polygonal areas and perimeters
 - Cylinder lying on ground
 - Ellipse
 - Control of units and coordinate systems for reporting
- § MGRS coordinate display and drive to
- § Profile tools
 - Spectral profile for hyperspectral analysis
 - Spectral reference libraries
 - Spatial profile for cross-section, surface distance and line-of-sight analysis
 - Surface profile for rapid isometric surface views
- § Image Drape Tool for creating perspective views on platforms supporting OpenGL
 - Rendering of DEM or any surface information as a 2.5D view
 - Control vertical exaggeration
 - Specify observer position and viewing geometry
 - Customizable backgrounds
 - Atmospheric effects
 - Draping of multiple data layers
 - Retention of geographic coordinates
- § Annotation layers
 - Manually digitize objects
 - Objects include text, polylines, rectangles, ellipses, polygons, symbols, arcs and points
 - Style editor
 - Freehand (streaming) polyline editor
 - Lock annotation rotation angle
- § Vector layers
 - Built-in ArcInfo, Geodatabase, Shapefile and ArcSDE vector data models
 - Display and present as points, polygons, polylines, tics or in combination
 - Select features by point-and-click, regional selection or attribute-based criteria
 - Style editor, including attribute-based symbolization
 - Display and print all or selected features only
- § TerraModel layers
 - Define color palettes
- § GPS live-link
 - Display location in viewer based on NMEA-0183 communication
 - Drive View based on GPS coordinates in real time

In addition, the IMAGINE GLT™ provides the following on the Microsoft Windows platform only.

- § Multiple viewers embedded into a single dialog for easy screen management
- § Dedicated “overview” linked window, ideal for dual monitor configurations
- § DirectX hardware acceleration
- § Dual CPU support
- § Thumbwheels for brightness, contrast, zoom and rotation control
- § Percentage Look-Up Table (ideal for 16-bit data such as IKONOS and QuickBird)
- § Dynamic Range Adjustment (DRA) with user definable clipping parameters
- § Snail Trails
- § Auto-roaming with regular or user-defined search paths
- § Contextual Magnifier (lens magnifier)
- § Auto-rotate images
 - Grid North
 - True North
 - Sensor Look Angle (Up is Up)
 - Common rotation angles (45°, 90°, etc.)
- § Lock rotation angles of GLT with Overview windows
- § Image chipping
- § Snapshot view content to standard image format
- § Copy view content to Windows clipboard
- § Feature Counting Tool with user-customizable categories and icons
- § Ruler integration (Ruler 14 and 16)
- § Intelligent (sensor-specific) band combination selectors
- § Session saving and loading
- § Jump Roam to a user-selected location from overview
- § Research and Negation tools for multi-image change detection
- § Automatic application of MTFC kernels
- § Spatial Mixer tool for predefined weighted band combinations

Vector Data Handling

IMAGINE Essentials enables coverage data to be created and/or edited and provides extensive tools for this purpose through the viewer.

- § ArcSDE and Enterprise Geodatabase vector clients
- § ESRI Shapefile, Arc Coverage and Simple Personal Geodatabase (Microsoft Windows only) read/write/create
- § Create points, arcs, polygons and tics
- § Digitize and split existing polygons with shared boundaries
- § Reshape an existing shape
- § Create and enter attribute data
- § Cut, copy, paste and delete
- § Unlimited undo levels
- § User-defined symbolization
- § Node and arc snapping
- § Split and unsplit arcs
- § Specify weed and grain tolerance
- § Splining, densifying and generalization
- § Node and polygon error detection
- § Arc reshaping
- § Drag and drop individual arc vertices or arc segments
- § Continuous, "hands-free" roam while editing
- § Automatic feature extraction
- § Heads-up digitizing in viewer, digitizing tablet input or keyboard data entry
- § Rename, copy, delete and external coverages
- § Reproject to another projection
- § Add hyperlinks to Microsoft Windows applications or Web pages from vector features

Raster Data Handling

- § Writeable raster DLLs for IMG, TIFF (including GeoTIFF and TIFF World) and ESRI GRID Stack formats
- § Enhanced TIFF image creation for control over parameters such as compression, tiling and creation of TIFF world files in the resulting image file
- § Support for files over 2 GB in size
- § DLL extendible
- § Default format filtering including "All Rasters" option
- § Pyramid layer generation for rapid and visually accurate image zooming

Image Management

The IMAGINE Image Catalog provides a database that serves as an image library, softcopy search and information management system.

- § Attribute-based querying of records (images)
- § View image footprints on reference maps
- § Customize reference maps
- § Display selected images

Batch Wizard Processing

- § Record and repeat common functions
- § Automation to provide multi-file input/output support
- § Wildcard selection of files
- § Drag-and-drop data loading
- § Image Command tool for changing projection and map information

Geometric Correction

IMAGINE Essentials provides an intuitive set of tools to georeference raw image data.

- § Automatic geometric correction from valid ephemeris information
- § Manual georeferencing can be applied to any raster data
 - Affine
 - Polynomial (first to tenth order)
 - Rubber sheeting
 - Reprojection
- § Edit Ground Control Points (GCPs)
 - Intuitive graphical user interface
 - GCP selection from map, image, vector or keyboard
 - Automatic coordinate conversion
 - Automatic error reporting
 - Independent verification of accuracy with check points
 - Chip extraction (magnifier) viewers
 - Automatic drive-to-point
 - Automatic point prediction
 - Automatically position a predicted GCP
- § Drop point simple geocoding
- § Image resampling to coordinate system
 - Nearest Neighbor, Bilinear, Cubic Convolution or Bicubic Spline resampling
 - User-defined pixel sizes and geographic subsets
 - DLL extendible
- § Over 1000 projected coordinate systems included
- § Over 65 spheroids and 500 datums included
- § User may add more spheroids and datums
- § Vertical datums, including vertical datum transformations
- § Support for both standard and user-defined projection libraries, allowing thousands of projection systems to be defined
- § ArcInfo Vector Transformations: affine or projective
- § Viewer Geographic Link by reproject
- § Viewer reproject images on-the-fly
- § Mapmaker reproject images on-the-fly
- § Reproject command interface
- § Read/create World Files

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Simple Classification

Easy-to-use unsupervised classification routine (ISODATA) with only file names and the number of classes needed for input.

User control of:

- § Number of iterations
- § Number of classes
- § Skip factors
- § Initial class means on diagonal or principal axis
- § Scaling of class ranges
- § Color scheme initialization options
- § Convergence threshold

Map Composer

Create or access individual custom maps of user-defined size.

- § Add any of the following:
 - o Multiple data frames containing one or more data layers each
 - o Automatically generated grid ticks, lines and graticules
 - o Titles
 - o Lines, bounding boxes and symbols
 - o Annotation
 - o Logos
 - o North arrows
 - o Scale bars
 - o Automatically generated legends
 - o User-definable styles
- § Build customized map templates
- § Automatically generate USGS maps at standard scales
- § Automatically generate international map series at any scale
- § Industry-standard printer languages and devices

General Tools and Utilities

- § File Chooser mechanism
 - o File system and network navigation
 - o Recent list of files accessed
 - o "Go To" list of directories accessed
 - o Select multiple files at once
 - o Preview thumbnail
 - o Rename/delete/set permissions on files
 - o "All Rasters" and "All Vectors" filters
- § Enterprise database spatial selection tool, including:
 - o User-customizable backdrop maps
 - o MBR footprint display
 - o Thumbnail image display
 - o Image selection by attribute query, spatial and/or point and click criteria
- § Quickly customize ERDAS IMAGINE to the production environment through the Preference Editor
- § Access to peripherals and networks
- § Text editor
- § Layer information tools
- § View binary data
- § Data compression
- § Coordinate calculator
- § Subset tool
- § Movie player and sequence editor
- § Spreadsheet functionality via the CellArray™
- § Convert fonts to symbol libraries

Extensibility

- § ERDAS Macro Language (EML)
- § Font manager

Import/Export Routines

Data type	Import	Export
ADRG	Yes	Yes
ADRI	Yes	No
Alaska SAR Facility	Yes	No
ArcSDE (Raster)	Yes	Yes
ARC INTERCHANGE to GRID/Coverage	Yes	Yes
ASCII	Yes	Yes
ASRP	Yes	Yes
ASTER EOS-HDF	Yes	No
AVHRR (NOAA KLM, Sharp & Dundee)	Yes	No
AVIRIS	Yes	No
Binary (Generic BIL, BIP, BSQ & Tiled)	Yes	Yes
BMP	Yes	No
CADRG	Yes	Yes*
CIB	Yes	Yes*
Daedalus (AMS and ABS sensors)	Yes	No
DEM (SDTS)	Yes	No
DEM (USGS)	Yes	Yes
Digital Orthophoto Quads (DOQ)	Yes	Yes
Digital Point Positioning Database (DPPDB)	Yes	No
DTED	Yes	Yes
DXF to Annotation	Yes	Yes
EDC Landsat 7 HDF	Yes	No
ENVI	Yes	No
ENVISAT	Yes	No
ERDAS Annotation (*.ant)	Yes	No
ERDAS Digitize	Yes	No
ERDAS GIS	Yes	Yes
ERDAS LAN	Yes	Yes
ERMapper	Yes	No
EROS A1 (ImageSat)	Yes	No
ERS (CEOS)	Yes	No
FIT	Yes	No
GeoSPOT (4-band data)	Yes	No
GIF	Yes	No
GRASS	Yes	Yes
GRID/GRID Stack	Yes	Yes
HDF (Scientific, Raster and EOS)	Yes	No
HYDICE	Yes	No
Hyperion	Yes	No
Intergraph CCITT Group 4 (*.cit)	Yes	No
Intergraph COT	Yes	No
IRS-1C & 1D (EOSAT & Euromap Fast Format C, Superstructure formats)	Yes	No
IRS-P4 OCM (Superstructure format)	Yes	No

Data type	Import	Export
JFIF (JPEG)	Yes	Yes
JPEG200 (including GeoJP2)	Yes	Yes
Landsat MSS	Yes	No
Landsat TM Fast Format (ACRES, EROSAT, ESA, IRS, Radarsat)	Yes	No
Landsat TM Standard Format (ACRES, EROSAT, ESA, IRS, Radarsat)	Yes	No
Landsat 7 CEOS (Eurimage)	Yes	No
Landsat 7 Fast-L7A (ACRES, EROS, Eurimage)	Yes	No
Landsat 7 HDF	Yes	No
MapInfo (*.mif & *.mid)	Yes	Yes
MODIS (EOS-HDF)	Yes	No
MODIS (IMAPP format)	Yes	No
MrSID (Generation 2)	Yes	Yes**
MrSID (Generation 3 – Geo Express)	Yes	Yes**
NASDA (CEOS)	Yes	No
NDF (NLAPS Data Format)	Yes	No
Oracle GeoRaster	Yes	Yes***
Oracle Spatial Feature	Yes	Yes***
PCI (*.pix)	Yes	No
PCX	Yes	Yes
PNG	Yes	No
Radarsat (CEOS Format)	Yes	No
RPF (CIB & CADRG)	Yes	Yes*
SeaWiFS HDF	Yes	No
SeaWiFS level 1B & 2A data (OrbView CEOS format)	Yes	No
SDTS (Raster)	Yes	Yes
Shapefile	Yes	Yes
SPOT 4 (CAP format)	Yes	No
SPOT 5 (GeoTIFF)	Yes	No
SPOT GIS GeoSPOT, SPOTView, & METROView	Yes	No
SPOT 5 (DIMAP)	Yes	No
SPOT XS, XI, Pan & P/XI (SPOT, ACRES, CCRS)	Yes	No
Sun Raster	Yes	No
Surfer (Binary, ASCII, Surfer 7)	Yes	No
Surfer Grid files	Yes	No
TIFF (including GeoTIFF, TIFF World, TiledTIFF, TIFF 6.0 & compression)	Yes	Yes
USGS (keyword format)	Yes	No
USRP	Yes	Yes
VITEC	Yes	No

* IMAGINE Advantage

** IMAGINE MrSID Encoder

*** IMAGINE Enterprise Loader

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About Leica Geosystems Geospatial Imaging Division

When building image-based maps, you need reliable measurements and solutions for your entire workflow. So when it has to be right, more geospatial professionals trust Leica Geosystems Geospatial Imaging, LLC to help them collect, analyze, and present spatial information. Leica Geosystems is powering geospatial imaging by putting precise imaging to work. Its broad array of photogrammetry and remote sensing software solutions capture data efficiently, reference imagery accurately, measure and analyze easily and present spatial information, even in 3D. Those who use Leica Geosystems Geospatial Imaging products every day trust them for their precision, their seamless integration, and their superior customer support. Delivering geospatial imaging solutions with precision, integration, and service from Leica Geosystems.

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