



ERDAS Production Suite for ArcGIS®

Stereo Analyst® for ArcGIS®

ERDAS Terrain Editor for ArcGIS®

FeatureAssist for ArcGIS®

Product Descriptions

Stereo Analyst® for ArcGIS®

Product Description

Stereo Analyst® for ArcGIS® allows users to collect and revise features in a stereo environment and store them directly in a geodatabase or shapefile. In addition to the interpretability advantages, stereo collection of feature data is more spatially accurate than digitizing features from an orthorectified image. With orthorectified images, positional accuracy depends on the quality of the digital elevation model (DEM). Many features such as buildings aren't represented in the DEM.

Features are collected and attributed with an X,Y and Z position for each vertex. The software can also update existing feature datasets with 2D to 3D feature conversion tools and has multiple geo-linked windows directly embedded in ArcMap. It also supports multi-user topological feature editing in a geodatabase, along with multiple ergonomic digitizing devices and much more.

Key Features

ArcGIS Integration - Stereo Analyst is tightly integrated with ArcGIS and can run on ArcView, ArcEditor or ArcInfo. The standard ArcMap Editor tools are used for creating and modifying features within the Stereo View. Custom developed edit tools will work automatically in the stereo environment if they are built to accept and store a Z.

Supported Formats for Import and Direct Load of Images - Stereo Analyst supports importing data from several image triangulation package formats. The raw image data is imported using the photogrammetry project file and supporting files that contain the information about the sensor, projection and triangulation information. During the import process, information is appended to the image header or .aux file to "orient" or calibrate the image. This one time orienting task allows the imagery to be added into the viewer on subsequent loads via the Add Data button or drag 'n drop into ArcMap.

- **Wizard Importer for the following formats:**
 - LPS Block Files
 - SOCET SET Project Files*
 - ImageStation Automatic Triangulation™ (ISAT)*
 - MATCH-AT™ Project Files*
 - IKONOS RPC Stereo Data import via metadata.txt file
 - DigitalGlobe QuickBird and WorldView stereo pairs

(*Standard Frame Camera data or data with RPCs Only)

A documented COM API and component category registration make it possible for developers to add support for custom or currently unsupported photogrammetry project formats.

- **Direct load of "oriented images."** - Imagery may come from vendors in a format that Stereo Analyst can read as an oriented image without the need to import. Examples of these formats include:
 - NITF formatted images
 - Calibrated images from LPS or Image Analysis™ for ArcGIS.
 - SOCET SET .sup files. .SUP files are ASCII files that contain path references to their corresponding image files.
 - Images previously imported via the Photogrammetry Project Importer Wizard of Stereo Analyst
- **MultiView Window** – Launched from the Stereo tab of the ArcMap Table of Contents, the MultiView window allows for an alternate data source to be displayed. That source may be an alternate stereo pair,

orthorectified image or calibrated image. The MultiView window will honor display option settings for the display of vector data, orientation and tracking with respect to the primary stereo window. Data collection may be performed in this view. Multiple windows can be launched and is a preference controlled number.

Horizontal and Vertical Coordinate System Support - When the horizontal and vertical coordinate systems are defined for the oriented images and the ArcMap data frame, Stereo Analyst will perform appropriate coordinate transformations so features extracted from oriented images are in the same Coordinate System as that defined for the ArcMap document data frame.

Some photogrammetry project formats do not support maintaining coordinate system information in the project file. The Photogrammetry Project Import Wizard allows you to reassociate the project's original horizontal and vertical coordinate system information.

Feature Data Conversion Tools - Feature data must be attributed with X, Y, Z vertex information before it will display in the Stereo View. Stereo Analyst has functions for creating 3D data out of existing 2D data. If you need to remove the Z values after your update is complete, a function is provided to automatically strip that information from the feature data leaving only the X and Y coordinate information.

- Convert Features to 3D for stereo update
 - Adds Z values to an existing 2D dataset from a DEM, TIN or by user defined constant elevation
- Supports updating a selection of features' Z values
 - Allows for constant Z specification
 - Specifying a scale factor for Z
 - Converting Z units between meters and feet and visa versa.
- Supports Virtual 2D to 3D
 - Allows the specification of a Z value from a DEM, TIN or user defined constant elevation. Those values are not written to the file, but stored in memory to enable editing. Z values are not stored.
- Convert 3D Features to 2D
 - Will remove the Z value from each vertex leaving only X and Y coordinate information

Feature Data Collection Tools - In addition to the tools available from the ArcGIS Editor Toolbar, Stereo Analyst for ArcGIS adds a tool to aid in the collection of a regular grid. There are also a number of other additional tools and user options to aid in collection as well as a user configurable feature cache.

- Stereo Advanced Editing Tools
 - Operate the same as the standard ESRI tools with the exception of Z handling
 - 3D Auto Complete Polygon
 - 3D Reshape Feature
 - 3D Parallel Collection
 - 3D Trace Tool
- Automatic Feature Attribution
 - Available for any polygonal feature
 - Average Base, 'Roof' and height above ground values can be calculated and mapped to attribute fields within a layer
- Grid Tool
 - User defined X and Y spacing
 - Extent and Starting Location options for collection
 - Snap to Ground operation performed each time a point is collected
 - Automatic advancement to the next grid location
 - Keyboard shortcuts to drive to, skip or return to current or next position.
- 3D Measurement Tool for measuring slope, length and heights
- 3D Position Tool for driving to a location
- Supports Squaring Mode
- Monotonic Mode
 - Set mode to increase, decrease or remain level
 - Increment field allows for the step control
- Lock Z Tool
- Fixed Cursor Mode

- Terrain Following Cursor Mode
 - Option of using image correlation or specifying an external elevation source
 - Can be used in conjunction with Streaming mode

Area of Interest – An area of interest may be specified or graphically defined to improve performance when working with extremely large, dense feature layers with sizable attributes.

3D Layer Based Snapping Tools

- 3D Snap tab added to the Table of Contents tabs for easy access to layer based snapping tools. An alternate tabular view can be launched from the Stereo View toolbar.
 - Can set individual 2D or 3D snapping settings and targets per feature layer.
 - Snap order preferences are set on the 3D snap tab and are independent from ArcMap Table of Contents order.
 - Toggle for enabling/disabling all 3D snapping or specific snap targets (i.e. End, Vertex and Edge, Fallback to 2D if outside tolerance)
 - Toggle commands are mappable to keyboard shortcut keys and device buttons.
- User Configurable Feature Cache with indexing
 - Allows for the feature cache settings to be customized for the user's dataset.
 - Indexing improves the snapping cursor's performance when locating a snap target

General User Options

- Autoload available adjacent stereo pairs into the Stereo View as you near the edge of the current displayed pair
- Toggle features on/off in the Stereo Window
- Stereo Window symbology may be controlled independently of the symbology defined for the ArcMap document window.
- Feature layers may be “turned off” for the Stereo Window but remain displayed in the ArcMap document window
- Duplicate Feature classes can automatically be excluded from display in the Stereo Window
- ArcMap document follows Stereo Cursor option
- Synchronize Stereo View and ArcMap document displays
- Select Stereo Pair from ground point selection in ArcMap document
- Orient ArcMap document to Image Pair
- North Arrow
- Invert Stereo Pair
- Override Default Load Point – allows for the specification of a more reasonable ground point value to reduce the amount of parallax exhibited when loading data directly
- Cursor Size, Color and Shape is user definable
 - Can also be set to change color based on whether or not cursor is resting on the ground
 - Graticule Cursor option is available with user defined number of rings and diameter
- Coordinate values for geographic datasets may be displayed in Decimal Degrees or be automatically converted to a Degrees Minutes Seconds format display
- A number of default options for Stereo Analyst may be defined in a preference file for more automatic setup of new ArcMap sessions

Data Visualization in the Stereo View

- Brightness/Contrast Adjustment
- Dynamic Range Adjustment option
- Pan tool with automatic roam
- Default Zoom
- Zoom to data extent
- Zoom to a user defined scale or preset default options

Stereo Data in ArcCatalog

Stereo Analyst enables ArcCatalog to be able to recognize and browse photogrammetry projects and preview the connected images. Stereo Analyst also automatically repairs explicit image paths inside SOCET SET .sup and .prj files so they don't need to be manually edited in a text editor.

ERDAS Terrain Editor for ArcGIS

Product Description

ERDAS Terrain Editor for ArcGIS is an optional add-on extension to Stereo Analyst for ArcGIS for editing Geodatabase Terrain files.

Key Features

Geodatabase Terrain format support - Geodatabase Terrains are represented in the Stereo Window as points and breaklines and triangles. Contours are constructed to assist in the visualization and interpretation of the terrain and are dynamically updated as the terrain is edited. The symbolization and display of these terrain components may be user defined and can be set to display at certain scale ranges. The ability to edit the terrain may also be locked to a given scale so that edits do not occur outside what is appropriate.

Note: The LTF format is not supported. Format support is limited to ESRI Geodatabase Terrain only.

General Terrain Edit Tools –

- Add or edit a terrain point
- Delete single or multiple terrain points
- Add or edit a breakline
- Delete single or multiple breaklines
- Selection tools
 - Select all features in current extent of the stereo window
 - Select by rectangle
 - Select by custom defined area

Terrain Area Operators – The following operators are provided for the manipulation of areas of the terrain. Feathering may be optionally applied.

- Delete Selected Points
- Remove Elevation Spikes
- Fit Surface to Points
- Thin Points
- Bias Elevations
- Smooth Elevations
- Smooth Elevations and Thin Points
- Set Constant Z
- Delete Selected Breaklines
- Remove Breaklines and buffer points
- Clip and Delete Selected Points or Breaklines
- Densify Points
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Autocorrelation of New Points – ERDAS Terrain Editor for ArcGIS allows for the autocorrelation of new points to participate in the terrain where needed. The user may define a limited area for autocorrelation by dragging an area

selection box or dynamically defining an area. Contours may optionally be displayed to assist in the evaluation of those points. A coefficient value slider on the Autocorrelation toolbar allows for the filtering of autocorrelated points by their correlation coefficient value to remove points automatically with low correlation values. Any points removed by the slider and therefore not visible in the Stereo Window, will not be merged into the terrain when the merge command is executed.

Bulldozer Templates and Manager – ERDAS Terrain Editor for ArcGIS allows for the creation of custom Bulldozer templates to modify the terrain. A number of templates come predefined and may be accessed by the dropdown on the Terrain Editor toolbar. The Templates Manager allows for the definition of custom templates. The templates may be created in the Template Manager dialog or captured dynamically in the Stereo Window.

FeatureAssist for ArcGIS

Product Description

FeatureAssist for ArcGIS is an optional add-on extension to Stereo Analyst for ArcGIS for the collection of complex roofs and model generation. The format supported for use with the product is the standard ESRI Multipatch shapefile which may be optionally textured for realistic 3D scene generation.

The extension adds a number of toolbars to ArcMap. After selecting a template and collecting the rooftop base, rubber-banding lines appear, allowing you to define the ridgeline(s) of the roof. Once the template has been matched to the rooftop, you can finish sketch to simply collect the roof, 'drop to ground' or existing terrain to construct a 3D model, or finish part and select another template or manual construction tool to 'add' to your existing sketch.

Key Features

Manual Construction Tools – Even with the large number of templates provided with the software, not every building shape will ultimately be addressed by a predefined template. FeatureAssist has tools for manually constructing any shape roof base with its Ring Tool. Once the roof base “ring” has been defined, the Ridge Tool may be used to add in a ridgeline for the building.

Predefined Rooftop Templates – Two toolbars are supplied with access to a number of templates for use during collection. These templates may be combined with other templates or a building manually constructed using the Ring and Ridge Tools to develop a larger, more complex building.

Predefined Templates available from the Stereo Rooftop Toolbar.

- Flat Roof
- Combo tool for the following:
 - Gabled Roof
 - Hipped Roof
 - Steepled Roof
- Gable Ridge Roof
- Hipped Ridge Roof

Predefined Templates available from the Stereo Rooftop Extended Toolbar

- Mansard Roof
- Mono Hip Roof
- Mono Half Hip Roof
- Mono Half Hip Roof (6 clicks)
- Gambrel Roof
- Half Hip Roof

- Half Monitor
- Bent Hip Roof
- Monitor Roof
- Bent-Gable Half Hip
- Barrel Roof
- Barrel Dome Roof
- Dome Roof
- Half Dome Roof
- Cylinder Roof
 - Number of “sides” of the circle determined by a preference in the options dialog allowing for any number of sides to be constructed. With a large number of sides, a perfect circle will be created. If a value such as 15 is entered in the dialog, a 15-sided template will be constructed.
- Cone Roof
- Pentagon Roof
- Hexagon Roof
- Octagon Roof
- Cone Cupola Roof
- Pentagon Cupola Roof
- Hexagon Cupola Roof
- Octagon Cupola Roof

Perspective Viewer – A perspective viewer is available to view the roof or model during creation. The roof or model may be rotated to check all sides of the building. **Note this feature requires a 3D Analyst license.** 3D Analyst is sold and licensed by ESRI. Contact your local ESRI Dealer for information.

Multipatch Shape Edit Tools – A number of tools are supplied for selecting the multipatch shape features or parts of the multipatch shape. Once selected, the tools for modifying those features are enabled on the toolbar or right click menu.

- Cut Building with Polygon
- Copy/Paste Selected Part – allows for the reuse of existing or parts of existing features
- Reshape Selected Face tool
- Bevel Corner Tool
- Merge/Explode
- Delete Interior Walls
- Insert/Delete Vertex

Azimuth Tools – The azimuth tools and settings allow you to define a rotation that will reduce your collection when using a template by one click. The software will automatically rotate the feature by the defined value as you move to collect the second point of the base of the template. This value may be defined a number of different ways including:

- User specified via dialog
- Graphically defined by collection of two points in the Stereo Window
- Via the selection of a side of an existing feature

Snapping and Guidelines – FeatureAssist allows for the use of snapping targets and provides tools for guideline generation to allow the precise alignment of buildings or building components.

- Snap Targets
 - Edge
 - Vertex
 - Face
 - Guidelines
 - Created via collection of two points in Stereo Window
 - Created by selecting the side of an existing feature

Model Generation – Models may be optionally be generated by extending the collected rooftops to the ground. The ground can be defined by the following methods:

- Drop to existing DEM
- Drop to current elevation of the 3D floating cursor

Supported Hardware

See the System Requirements Documentation available on the Web for information about supported graphics cards, puck devices, stereo screens, emitters and glasses.

About ERDAS

ERDAS – The Earth to Business Company – helps organizations harness the information of the changing earth for greater advantage.

ERDAS creates geospatial business systems that transform our earth's data into business information, enabling individuals, businesses and public agencies to quickly access, manage, process and share that information from anywhere.

Using secure geospatial information, ERDAS solutions improve employee, customer and partner visibility to information, enabling them to respond faster and collaborate better. It also means better decision-making, increased productivity and new revenue streams.

ERDAS is a part of the Hexagon Group, Sweden. For more information about ERDAS or its products and services, please call +1 770 776 3400, toll free +1 866 534 2286, or visit www.erdas.com.