



Technical Specifications

FLY! 3D-Perspective Scene Generation and Near Real Time Fly-Throughs

Available in Geomatica® Prime or as a stand-alone software package



FLY!

3-D Perspective Scene Generation and Near Real Time Fly-Throughs:

- Create a terrain using elevation data and color information from an image database file. Choose from the following imagery files:
- Full color - Three-color channels are required, one each for red, green and blue.
- Gray level - One channel is required to specify the brightness.
- 8-bit pseudo color - Only one channel is required. Use imagery such as 8 bit TIFF, BMP and SPANS files.
- Specify a directional light source.
- Save terrain renderings to an image file on disk in a variety of supported formats. Once saved to disk, rendered scenes can be imported or printed by other software packages.
- True vector overlay - (all GeoGateway® vector formats are supported).

OPTIONS

Change Position/Speed/Direction:

- Modify the viewing position as well as the speed and movement direction with user entered values.

Change Render Size:

- Specify the size of the rendering window with user entered values or by interactively resizing display. The minimum is 64 by 64. The maximum is 1024 by 768.

Change Perspective:

- Modify the perspective parameters of the rendered image with user entered values for 'Height Magnification' elevation, 'Horizon Tilt' degrees, 'Pixel Zoom' foreground pixels at low elevations, and 'View Cone' to exaggerate the effects of the perspective.

Change 3-D:

- Modify the parameters which control 3-D viewing with user entered values for 'Base Line' (specifies how far apart the left/right images are) and 'Focal Length' (specifies the focusing point in pixels).

Render mode:

- Fogging - simulates a fogging effect in rendered scenes.
- 2-D perspective color mode.
- Anaglyph 3-D: Render frames which give an appearance of true 3-D depth by generating slightly different left and right eye views. The user must wear anaglyph glasses (glasses with a blue lens for the left eye, red for right) when viewing the merged stereo image.
- SGI workstations, allows for full color true 3-D depth flight that can be played back. The following rendering modes are available:
- Stereoglasses: Puts FLY! into color stereo mode. Special hardware liquid crystal stereoglasses are required to view in this mode.
- Stereoglasses (expanded): The stereo view is expanded in both the vertical and horizontal directions to produce an image 4x as large as the regular stereoglasses mode.

Control Panel:

- Set and report parameters relating to the viewer position, direction, elevation and speed.

Coordinates:

- Choose a reporting system for position: Options:
 - *Display*: Position reported in pixels and lines in the loaded terrain.
 - *Geocoded*: Position reported in geocoded units as eastings and northings.
 - *Geographic*: Position reported in geographic units as longitude and latitude.

Units:

- Choose a reporting unit for distance and speed values. Options:
 - *Metric*: distance reported in m, speed in km per hour.
 - *Imperial*: distance reported in ft, speed in miles per hour.

Speed Options:

- Speed Maximum determines the range of speed values used. The minimum is always 0.
- 'Scaling' determines the type of scale used to translate the range value to an actual speed.

RENDERING WINDOW

- Mouse buttons can be used to turn, pause/run, and change elevation quickly and naturally. The following button assignments are made:
 - *Left button* - Turn. Changes the direction of viewing (and of movement). The new direction faces the position clicked on in the rendered image.
 - *Middle button* - Run/pause. User free flight is a special FLY! mode in which the viewer is continuously moving forward and toggles between pause (stop) and run (go).
 - *Right button* - Change Elevation. Changes elevation proportional to the position of the mouse cursor in the vertical direction.

Elevation Options:

- Set the viewer elevation with the following options:
 - '*Elevation Minimum*' and '*Elevation Maximum*' - determine the range of elevation values used.
 - '*Scaling*' - determines the type of scale used to translate the range value to an actual elevation.
 - '*Mode*' - dictates how the elevation value is actually translated into the viewer's elevation.
 - '*No collision*' mode, - the rendering height is never allowed to occur below the land elevation.
 - '*Relative*' mode, - the view elevation is the land elevation plus the value of the elevation scale.
 - '*Absolute*' mode, the elevation scale value is used directly as the rendering height.

SPEED/QUALITY

Frames Per Second:

- The distance, which the viewer advances, is based on the number of frames being generated per second and the specified flying speed.

Rendering Quality:

- Specify the quality of the images being rendered. Three options are available:
 - *Blocky rendering mode*: each pixel appears as a box with pronounced steps between pixels.
 - *Fitted rendering mode*: the edges of the pixels are interpolated so they fit together without any step effects.
 - *Smooth rendering mode*: the edges of the pixels are interpolated so they fit together without any step effects and the colors of the pixels are smoothly blended.

FLIGHT PANEL

- Create a flight path composed of several user-specified nodes. Nodes are selected on the nadir image.
- Store the position, direction, and speed parameters as well as selected perspective parameters such as pitch, view cone, and zoom level for each node in a flight path.
- The path is composed of a series of Bezier Splines made to fit through the nodes.
- View the total length of the current flight path.
- Edit nodes: Update changes the selected node to the current rendering parameters. Insert a new node. Add a node to the end of the current list. Delete a node. Clear all the nodes.

- Play the flight back, with VCR type controls (forward and reverse). Continuous playback mode can be used to cause the path to be flown repeatedly.

Movie Loop:

- Choose from several movie formats. It is possible to write out the movie as a series of individual images (i.e., frames). TIFF, TARGA, BMP, PPM and JPEG format files are available.
- Report the number of frames that should be generated for each second of playback time in the final movie loop product.

Parallax Movie Loops:

- Generate Movie Loops in the UNIX versions of FLY! that are written to the Parallax JPEG movie format (a Parallax video card is required)

NADIR VIEW

- Show the overhead (or nadir) view of the terrain. This window is approximately 512 pixels by 512 lines in size and shows a decimated overview of the data if the loaded imagery is larger than this size. The window dimensions will vary to maintain a 1:1 aspect ratio.
- Current position is shown in the nadir view as a black and white marker. The extension on the marker indicates the current movement direction.
- Zoom imagery in nadir window.
- Mouse controls on the nadir view:
 - A left click in the nadir view will place the viewer at that location on the terrain.
 - A right click will change the move and viewing directions to point to that location.
 - A middle click changes the viewing direction only.
 - Toggle between views of the nadir terrain imagery or elevation.

Nadir Options:

- Show Path: the flight path is drawn in the nadir view.
- Show Node Numbering: each node in the path is shown with its node number.
- Path Color: flight path color can be changed.
- Highlight Color: currently highlighted node color can be changed.
- Path Resolution: Determines how many total line segments to use for drawing the splined path.

Color Mixer:

- Edit RGB colors in text fields with interactive selection menu.

Spaceball (Only available on SGI platforms):

- If a spaceball is attached to the workstation, it is possible to use it to maneuver through the image. Its usage is intuitive. Simply push the spaceball in the direction of movement: forwards, backward, left, right, up or down. Twisting the ball will also change the view/movement direction as well as the horizontal tilt

IMPORT / EXPORT OF DATA

GDB (GENERIC DATABASE) TECHNOLOGY

PCI Geomatics software uses GDB Technology to directly read and write raster, vector, and other information from an extensive list of supported file formats. This offers the advantage of quick and direct access to data, and eliminates the need to replicate files since conversion is no longer necessary.

Supported Formats: See GDB (Generic Database) Technology Formats Technical Specification Sheet



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