Revolutionize your workflows with Geomatica 2014

This release of Geomatica continues the trend that was started with Geomatica 2012 and continued through Geomatica 2013. Those releases placed the product at the top of the geospatial software industry for performance and flexibility.

Geomatica 2014 has been designed to take advantage of all of the previous improvements as well as adding to them, thereby helping all Geomatics professionals to improve their operational efficiency.

PLATFORM SUPPORT

Geomatica 2014 will continue to support both Windows and Linux platforms.

Operating System	Supported Versions
Windows	Windows XP / Windows 7 / Windows 8, Server 2003 / Server 2008, Server 2012
Linux	Red Hat 6 / Ubuntu 10.04 / Ubuntu 12.04 / SUSE 11

GEOMATICA FOCUS

NEW & INNOVATIVE Live DEM Editing technology:

The new DEM Editing tool is a simple and less expensive, more efficient way to produce terrain models for ortho-mosaics.

See and edit DTM blunders in an ortho-preview that updates with your changes - You immediately see your fix applied without having to reprocess the entire scene. This makes editing faster and easier with no 3D-stereo requirement and no need to regenerate and recheck scenes. The result is a dramatic reduction in cost and much faster turnaround.

- Includes simple operations to solve many terrain editing issues:
  - Flat and rough terrain filters
  - Pit removal
  - Specific filters for linear feature editing
- Includes new, quick, ortho update process

NEW & INNOVATIVE Smart GeoFill tool:

Providing users with georeferenced copy and paste for imagery.

Enhance and retouch ortho-mosaics while maintaining full geo-referencing, channel combinations and bit-depth. By using simple polygon selection in your imagery, you can select, copy and paste the best parts of

the best images for your final mosaic. This new feature extends Geomatica's DEM and ortho-mosaic production, or can be used to enhance other types of overlapping images.

- Geographically smart capabilities:
  - Reproject on-the-fly
  - Multi-channel, full bit-depth
  - Blending and colour balancing options
  - Enhancement options

Applications for this tool include, but are not limited to:

- Editing elevation data
- Eliminating cloud cover
- Masking sensitive areas

NEW Python Scripting Panel

Users can modify and execute Python command files in the Geomatica Focus Python scripting panel.

Tools available in this panel include: Open, new, save, save as, execute, cut, copy, paste, and clear.

NEW: Change Detection

Simple, straight-forward change detection tool that can be useful in numerous circumstances in which you may want to analyze change, such as:

- Storm damage
- Forest-fire damage
- Flooding
- Urban sprawl

You can use the Focus change detection panel to analyze virtually any aspect of "then versus now" or "before versus after".

Atmospheric Correction

The Atmospheric Correction capabilities in Geomatica Focus were improved in Geomatica 2014 with the following changes:

- **NEW** Automatic DEM Clipping
- Improved Top-of-the-Atmosphere algorithm
- Improved progress monitoring
- Improved haze and cloud masking interface
- New sensors supported:
  - Kompsat-3
  - Landsat 8
  - SPOT-6
  - ZY-3

Improved performance

PCI is continually improving the performance and quality of Geomatica tools. For Geomatica 2014 visualization in Focus has been upgraded with smoother, faster panning and zoom functionality

OrthoEngine

Improved DSM Extraction

DSM extraction workflows have been improved in the following ways:

- Improved large project handling:
  - Elevations are calculated from multiple, overlapping stereo-pairs instead of just one.
  - Automatic stitching of a DSM mosaic for the entire project area
- Improved DSM extraction:
  - Faster, denser point collection for all resolutions
- Optimizations for high-resolution satellite and aerial data
- Improved DSM to DTM filtering
- Integrated with new Live DEM and Smart GeoFill features that are part of Geomatica Focus

Improved Project overview window

- Point error display – which allows for visual inspection of trends in the errors for all points in the project.
- Upgraded user control of window contents through the treelist
- Tighter integration with OrthoEngine point-collection tools

New Mosaicking options

Two new options have been added to improve mosaic accuracy and appearance:

- New minimum-square-difference algorithm improves automated cutline selection
- Local Adaptive Enhancement improves colour balancing by maintaining or enhancing contrast

NEW True Orthorectification

Generating true ortho-images from overlapping airphotos removes building lean and shadow from the mosaic.

Geomatica 2014 now enables true ortho-image production in the OrthoEngine workflow

Other Improvements

- Geomatica OrthoEngine 2014 now includes support for import and export of projects from/to BINGO and PatB, allowing users to more easily calculate and refine AT.
- Menu clean-up, including:

  - NEW - Options panel
  - Redesigned - Rename/Remove panel

- Rigorous Satellite Modeling
  - Improved accuracy
  - Improved performance (up to 10x faster)

Data Interchange

PCI Geomatics continues its provision of the latest imaging sensors available.

GDB Improvements

- QuickBird/WV1/WV2 format (CDQB)
- Ikonos/GeoEye format (CDIKONOS)
- Landsat format (CDLAND7)
- SPOT-5 (CDSPOT5)
- Old Landsat data in new style
- CBERS 2B

Sensor support updates:

- Spot 6 (2013 SP2)
- RASAT (2013 SP1)
- Kompsat 3
- TH-1 (China)
- Landsat 8
- Gokturk2
- HJ-A/B/C
- ZY-3
- GF1
- GF2
- YG2
- YG8
- YG14
- SJ9

Metadata handling

Geomatica 2014 includes improved metadata reading when importing data using GDB. This includes metadata that is:

- Generic to any file
- Specific to image files
- Specific to the type of image file
  - Optical
  - Thermal

- Elevation
- SAR

There is also band-specific metadata read that can be used for processes such as SAR Polarimetry Analysis and Atmospheric Correction.

Extended Complex Data Support

- NEW - Native support of complex values (channels) for Radarsat-2, TerraSAR-X, Cosmos-Skymed and UAVSAR data.
- Improved - Possibility to modify the complex SAR data interpretation in Focus, Ortho-Engine and SPTA. Change of the fly the complex data interpretation to intensity, amplitude or decibels.
- NEW - Conversion of complex channels to detected channel (amplitude, intensity, decibels) and extraction of phase, real or imaginary parts in separate channels.
- NEW - Full support of complex data in OrthoEngine (orthorectification and mosaicking)

New Functions

The following new functions are now included in Geomatica:

DN2TOA: Convert image digital number (DN) value to "Top of the Atmosphere reflectance".

LAEPREP: Local Adaptive Enhancement (LAE) Preparation

LAEFIL: Local Adaptive Enhancement (LAE) Filtering

LAERUN: Apply Local Adaptive Enhancement (LAE)

MODEL2RPC: Generates a rational-polynomial-coefficient (RPC)-model segment or text file from an input math-model segment.

PSCONF: Estimate the conformity coefficient for each pixel in a POLSAR image.

PSFARA: Estimate Faraday rotation from fully polarimetric scattering data.

PSG4U2: Estimate the new general four-component scattering power decomposition with unitary transformation of the coherency matrix.

PSQINTERP: Convert SAR images in single (SLC) or multilook (MLC) complex format to other interpretations, such as detected data or phase product

PSKROG: Estimate Krogager decomposition (sphere, diplane, and helix) from fully polarimetric data.

PSPHDW: Estimate the power contributions for plate, helix, diplane and wire.

PSS2C: Generate two user-defined coherent channels from fully polarimetric data sets. This module can be used to synthesize any arbitrary pair of polarizations (for example, RH, VV) or compact polarimetric data sets (for example, RH, RV).

PYRINT: Fast-interpolation function to fill holes in digital elevation models (DEMs) and imagery using surrounding good-quality data pixels. It can also generate DEMs from raster-encoded points, break lines, and polygons.

TRUEORTHO: Allows users to create true-ortho images during ortho-image production.

Upgraded Functions

The following functions have been included in previous versions of Geomatica, but with this release have seen significant improvements:

DSM2DTM: The conversion process has been improved for performance and also algorithmically. The new function does a better job of preserving real land details while removing above-surface features such as trees and buildings.

The following functions were part of Geomatica either in either the PCI Modeler or EASI environment. They are now available in all environments:

BIT2POLY: Convert a bitmap layer to a whole polygon layer

LINE2PNT: Convert a line segment or layer to a point layer

LINE2POLY: Convert a line segment or layer to a polygon layer

LINE2RAS: Encode a line layer into a raster image channel using an attribute or Z-value associated with each line and/or point in the layer.

POLY2LINE: Creates a set of topological layers (arcs and nodes) or a line layer from an input polygon layer

RAS2LINE: Convert a raster or thematic raster layer to a line layer

RAS2POLY: Convert a raster or thematic raster layer to a whole polygon layer

NEW Python Scripting

Script your Geomatica image processing and combine it with other tasks in Python to streamline your data management applications, generate intelligent business products, or customize your output. The powerful, free, and open-source scripting software can be used as a programming language to better leverage your own imagery for use in ArcGIS and other GIS applications.

Geomatica 2014 offers support for scripting of processing algorithms in the Python language. Python scripting is offered as an alternative to the Geomatica EASI scripting environment. All of the processing algorithms in EASI are available in Python.

- Integrates with other standard Python packages and third party Python tools.
- Support for Python Unicode string parameters for use on non-English operating systems.
- No limitation on the length of parameter strings.
- Uses standard Python exception handling.
- Offered on both Windows and Linux operating systems.
- Support for Python 2.7.

SAR Polarimetry Workstation

The SAR tools in Geomatica 2014 include the following improvements:

- Extended complex data support as described in the GDB section.
- Improved metadata ingest and a full review of all metadata tags. New tags include:
  - Radar band
  - Beam mode
  - Pulse repetition frequency
  - Incidence angle array
  - Nominal processing elevation
  - Number of looks
- New PPFs (SAR decomposition and analysis), as mentioned in the new functions section.
- Support for "No Data" regions in processing
- Support for vector based bitmasks
  - Replacing the use of bitmasks, leading to more accurate ability to define areas.
- Synthesized compact pole

License Server

Improvements to our license server technology include the following:

- Redundant license servers – allow users to have back-up license servers so that when a server goes down, the software will still be able to run.
- Commuter licensing - allows customers to temporarily use the software on a portable computer that is not connected to the network.

For more information on these license server capabilities, please contact license@pcigeomatics.com