

What's New in 2012 Geomatica

Geomatica is designed to support the analytical demands of the most challenging problems confronted in our stewardship of the environment as well as to provide day-to-day support for the common tasks of GIS and Image Processing. With the newest release of Geomatica, PCI Geomatics continues to push the boundaries of performance and enable geospatial professionals to solve real-world problems faster and more cost effectively.

Platform Support

Geomatica 2012 will be available on the following platforms:

Operating System	Vendor	Hardware	Supported Versions
Windows	Microsoft	Intel/AMD x86_64 64bit	Windows XP / Vista / Windows 7 / Server 2003 / Server 2008
Linux	Various	Intel/AMD x86_64 64bit	Kernel version 2.6.27, glibc version 2.9, gcc 4.3

Note: Linux Support - Supported versions indicate that the software was either built on (the lowest version listed) or tested on that version. You can install and run software on other versions that are binary-compatible with those listed. The Linux version of the software is built on a SUSE 11.2 system. If your version of Linux is compatible with the listed kernel and glibc versions, you should be able to install and run the software.

Licensing

Geomatica 2012 includes licensing tools from Sentinel that now include the ability to lock the software without the use of a hardware dongle. Users with existing dongles will still be able to lock the software using the dongle or may switch to the dongle-less licensing solution.

Geomatica 2012 also includes upgraded License Server tools, moving to the latest version of Sentinel's licensing tools.

For more information on Licensing in Geomatica, please see the Installation Guide or contact PCI Support.

New Features

Geomatica Focus

Focus is the main visualization engine in Geomatica. For the 2012 release PCI is taking visualization to the next level. Improvements include:

- Geomatica Focus is now Open-MP enabled, which will revolutionize the performance of every day tasks like the loading, panning and zooming of imagery.
- "On-the-fly" automatic image enhancements. As one roams around large volumes of data, the visual appearance will update to reveal the most information.
- Enhance all images tool – enhance multiple images in a single click.



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- Locate image in tree list – Geomatica automatically identifies images being viewed based on visual selection in the view window
- Geomatica Focus allows the visualization of ground control points (GCPs) collected during orthorectification.
- Assignment of class descriptions and thematic color schemas for various Polarimetric processing algorithms.

Geomatica OrthoEngine

In Geomatica 2012, PCI Geomatics continues delivering the best orthorectification and mosaicking tools in the market; including improvements in:

- Manual Mosaicking – This streamlined workflow allows users to manually visualize their mosaic prior to actually running the process. In Geomatica 2012, there are also improved functions for:
 - Masking; including the use of both Local and Global masks
 - Improved colour balancing
 - Outline editing tool upgrades
- Physical Modeling – Orthorectification of ADS40/ADS80 level 1 images now uses a physical sensor model, giving greater accuracy to the results of this process. Also available in this version is the ability to stitch multiple raster components into a single file for ease of processing.
- Adjust Orthos – It is common for orthorectified images used in a mosaic to be misaligned due to inaccurate ground control points (GCPs) or a low-accuracy digital elevation model (DEM) associated with the images. The Adjust Orthos method in OrthoEngine can be used to fix misalignments in order to make mosaicking results more accurate.
- Automated Processing – Automated GCP collection uses a new methodology for Image to Image matching for greatly improved performance.

SAR Polarimetry Target Analysis (SPTA)

The SAR Polarimetry Target Analysis application has been integrated into Geomatica installation for the 2012 release. It is no longer a separate application that runs outside of the Geomatica environment.

This tool, which is a key component of the SAR Polarimetry add-on module, is now available from the Geomatica toolbar. The application has also had a number of enhancements to streamline usage and improve output reporting and results.

New Sensors and Increased Support for Online Data Providers

PCI Geomatics is consistently first to market with new sensor and format support. Geomatica 2012 continues this tradition by not only adding new sensor support, but also adding to the list of online data providers with the ability to access data from ArcGIS Online.



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- With Geomatica 2012, users will be able to use data from ArcGIS Online as a backdrop in Geomatica Focus, and also as a potential GCP source or elevation dataset in OrthoEngine workflows.

Also included in Geomatica 2012 are the following improvements in Sensor and format support:

- PALSAR support – Updated PALSAR support so that the SPW functions are able to use ERSDAC format data.
- KompSat – DIMAP format support
- PostGreSQL – Geomatica can read image and vector data from PostgreSQL databases and FEXPORT can be used to load file-based data sets into a PostgreSQL database.
- ADO.NET – Geomatica now supports the following ADO.NET file formats:
 - Microsoft Excel (XLS)
 - Microsoft Access (MDB)
 - ESRI Personal GeoDatabase (PGDB)
- Oracle – Geomatica supports Oracle 11g R1 and R2 tables and views for read-write access. Oracle Spatial (sdo_geometry) and GeoRaster (sdo_georaster) data types are also fully supported for read-write access.
- ESRI Geodatabase support – Geomatica now includes read-only support for ESRI File Geodatabases.
- PNG - Geomatica supports the reading and writing of PNG files.

Other New Features

- Clip Raw Raster with RPC - The CLIP function in EASI and Modeler, as well as the Clipping/Subsetting tool in Focus now properly adjust and transfer the associated RPC data as well as the imagery.
- Improved Projection Support - The projection support in Geomatica has been re-written and there is now significant improvements in the reprojection of Geospatial data both in Focus and via the new REPROJ2 function.
- Complex data support - Geomatica 2012 includes more extensive support for complex data. This support makes the processing of SAR data much easier and faster, specifically for Polarimetric SAR data. This support includes:
 - New complex data type in PCIDSK format
 - Focus now displays intensity based on complex data
 - Focus numeric values panel now shows not only – complex, but also shows amplitude etc...
- KML Export Google KML export now includes support for PNG data, which allows transparency support. This is possible via the “Export to Google Earth” capability in Focus as well as the EXPORT2KML function in EASI and Modeler.



New Functions

Coherent Change Detection

The CCD functions are a complete set of tools designed specifically for the detection and analysis of changes extracted from a user-specified test and reference SAR image pair. This includes the following functions:

AUTOSHIFT - Function to prepare data for Coherent Change Detection workflow. Allows a user to align a target image to a reference image.

CCDINTEN - Measures the change in total radar backscattering between a test image and a reference image by comparing the sum of the intensities of the input channels.

CCDPHASE - Measures change based on the average coherence (over a specified window size) between two co-registered single look complex SAR images.

CCDWISH - Measures change between two single-look complex SAR images based on modified Wishart statistics.

CCDWM - Combines the results from multiple change detection techniques in a weighted manner.

Optical Change Detection

PCI has also implemented Change Detection functionality based on the Feature ObjX add-on package. This includes:

CHDETOP - Detects differences between two input raster images ("new" and "reference"). Typically, the function is used on a pair of images from the same optical satellite sensor and, depending on the sensor; tasseled caps can be used to determine the changes.

EXPOLRAS - Converts an input raster image to a binary image using a specified threshold value, then extracts polygons from the resulting binary image and filters them based on area and compactness values.

Upgraded Performance

Specific functionality in Geomatica 2012 has been designed specifically to take advantage of multiple processor machines and hyper-threading. New functions have been written to take advantage of all the power your system has to offer. Eventually the old versions of these functions will be retired. In Geomatica 2012 this includes:

ORTHO2 - Uses different geometric models to orthorectify images.

MOSRUN2 - Assembles the various input source images into a continuous mosaic.

REPROJ2 - Reprojects both raster and vector data from a valid projection to another valid projection



Other New Functions

The following are other new functions that have been added to Geomatica 2012:

SARINGEST - SARINGEST imports the specified SAR (POLARSAR) data set into the PCIDSK image file. For polarimetric data, SARINGEST stores the data into PCIDSK Complex imagery for subsequent processing in the SAR Polarimetry Workstation, Sar Polarimetric Target Analysis and Coherent Change Detection. Both image data and metadata are imported. The SARINGEST function replaces the older Polarimetric SAR import programs.

CDADS - Generates an ADS math model for Leica ADS40/ADS80 data and optionally imports raster data to a PCIDSK file.

DSM2DEM - Converts a digital surface model (DSM) into a bare-Earth digital elevation model (DEM).

Updated Functions

Performance

The following functions have been modified for Geomatica 2012 as well to take advantage of all performance options. Their functional footprint has not been changed however.

FFROST	- Frost filter
FLE	- Lee filter
FELEE	- Enhanced Lee filter
FKUAN	- Kuan filter
FEFROST	- Enhanced Frost filter
FGAMMA	- Gamma filter
FLAP	- Laplacian filter
FSTDDEV	- Standard deviation filter
FTOUZI	- Touzi filter
VDEMINT	- Grid DEM from vector segments
SARSEG	- SAR image segmentation
SARCLASS	- Classify regions in a SAR image
PANSHARP2	- High performance image fusion

The following functions have also been updated in the new release. Their functional footprint has not been changed.

SLP	- Slope generation from elevation data
LUTREAD	- Read LUT from a text file
LUTWRIT	- Write LUT to a text file
LUTREP	- Lookup table segment report
ARI	- Image arithmetic
LUT	- Image enhancement using lookup table



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Retired Functionality

The following items have been retired from Geomatica:

OrthoEngine 3-D Feature Extraction - PCI has retired the old 3-D feature extraction technology. PCI resells the DAT/EM Summit software solution for 3-D work.

PSCREATE - The capabilities of PSCREATE are superseded by the new SARINGEST capability

PSINGEST - The capabilities of PSINGEST are superseded by the new SARINGEST capability

PSDTL - Decibel to linear conversion functions is replaced by SARINGEST capabilities.

