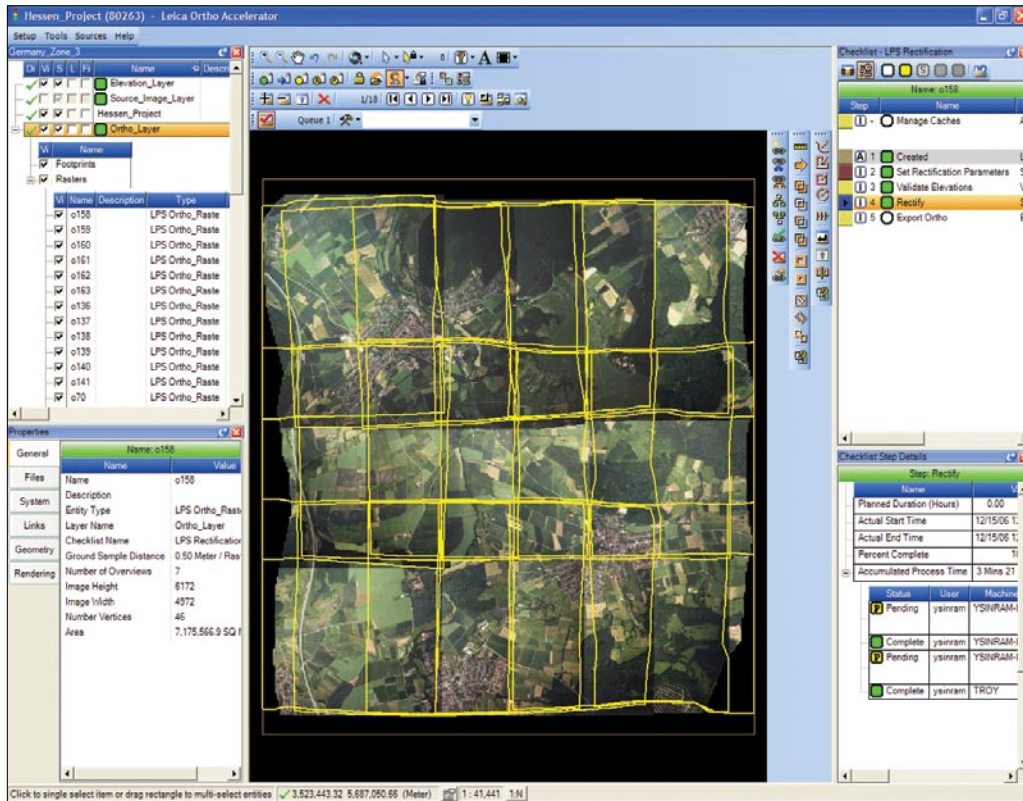


Leica Ortho Accelerator Product Description





Overview

Leica Ortho Accelerator (LOA) provides a new environment for streamlined digital orthophoto and mosaic production. It is an enterprise-enabled product that guides users through the orthorectification process to eventually produce image mosaics.

LOA takes maximum advantage of distributed and scheduled workflow processing provided by the command dispatch system in GeoCue. Dedicated workstations can be used for alternative processing tasks, while ortho jobs are dispatched to a series of computers or "nodes", which will result in faster ortho production.

LOA integrates Leica photogrammetric processing components into the GeoCue geospatial process management framework. LOA is a CuePac add-on to GeoCue, which is a framework application for geospatial process management. A CuePac is a collection of GeoCue menus, checklist and auxiliary programs that implement a preset group of workflows. As such, LOA benefits from the many process management tools offered within GeoCue.

The system is capable of ingesting a variety of formats in terms of photogrammetric orientation data, imagery and terrain. These inputs are then used in a project-based workflow.

While LOA uses technology adapted from Leica Photogrammetry Suite (LPS), users are not required to have LPS installed or licensed.

Key Features

The user is guided through the processing steps using the strong process management system in GeoCue. The Leica Ortho and Mosaic tools are automatically invoked and the data is automatically loaded into the applications.

- Distributed processing enables the division of large ortho production tasks and dispatching to a series of nodes.
- Dispatch processing enables scheduled orthorectification and mosaic creation to occur at user defined times.
- Dispatched tasks can be run on a machine other than the one on which it was launched.
- The enterprise ortho production system of LOA enables simultaneous access to the same production project by multiple users from any workstation in the production network.
- Synoptic project status viewing enables monitoring the progress of scheduled tasks, rescheduling the tasks that have not started and terminating the scheduled tasks.
- Data is hosted in the GeoCue Server and each manipulation is incrementally saved via transaction processing against the database. Also, the system is protected from unauthorized access to data.

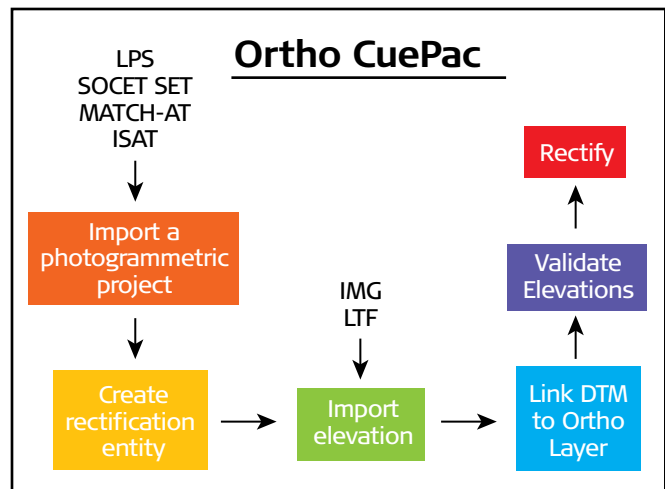
Benefits

- LOA is highly scalable and benefits both large and small customers. Larger organizations find utility in the managed workflows provided by LOA, while smaller organizations achieve greater throughput in their orthophoto production processes.
- Distributed processing increases throughput and frees up operators to perform other tasks.
- Distributed processing harnesses the processing power of several CPU nodes to achieve greater throughput.
- Purchasing nodes instead of full workstations represents lower costs.
- Project Status Viewing provides real-time and accurate status updates of all processing computers as the project progresses. This is very helpful for large projects.

LOA Modules

■ LOA Ortho CuePac

The LOA Ortho CuePac enables orthorectification processes to be executed within GeoCue. Leica ortho tools, based on Leica Photogrammetry Suite technology, are launched automatically within LOA. Various orthorectification parameters can be defined as a part of the workflow. With LOA, data collisions and operator error are kept to a minimum because of strong project management tools inherent to GeoCue. Distributed processing is an important aspect of the Ortho CuePac. This allows for a single orthorectification job, which may involve processing hundreds or thousands of images, to be divided up and processed over several Ortho CuePac "nodes."

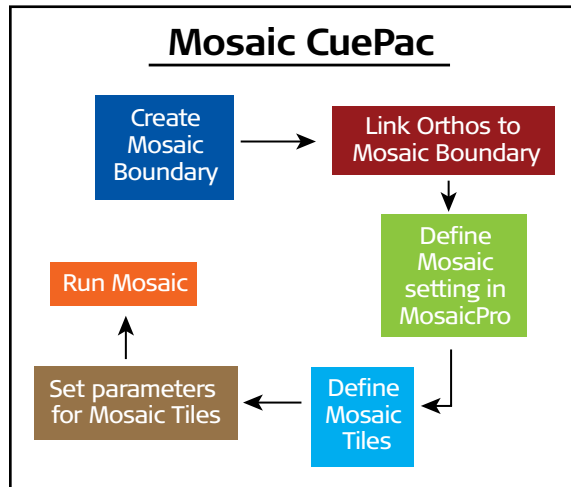


Features

- Based on Leica Photogrammetry Suite orthorectification technology.
- Production step cuing guides users through the steps necessary to create ortho images.
- Multiple users can access the same project from different workstations.
- Data locking mechanism prevents data collisions in a multi-user environment.
- Distributed processing enables:
 - Users submitting large orthorectification jobs to different machines in order to reduce overall processing time.
 - Orthorectification jobs to be submitted from different machines. LOA sorts them in a queue, allows users to choose which machine and when to run jobs.
 - Scheduling the orthorectification jobs at a later time.
- Real-time and accurate status updates of all orthorectification jobs submitted from client workstations. Users are informed when the job is completed.

■ Mosaic CuePac

The LOA Mosaic CuePac is a GeoCue environment that integrates Leica MosaicPro into the GeoCue geospatial process management framework. This framework is an efficient, enterprise-enabled orthophoto and mosaic production environment. LOA launches Leica MosaicPro as an external process to generate seam lines, perform color adjustment and decide on parameters as feathering and smoothing options.



Leica MosaicPro improves the seam editing portion of mosaicking as well as offering additional radiometric adjustment capabilities. Leica MosaicPro is especially useful for high volume production users who need an efficient means of processing for large projects that may involve hundreds of images.

Features

- The Mosaic CuePac provides a rich set of tools for easy and effective seamline generation, seam feathering and smoothing, and also color correction options to improve the artifacts of the images.
- A tiled mosaic output can be produced defining mosaic grid parameters.
- A remote computer can be selected for processing the mosaic.
- The mosaic job can be scheduled to be processed at a later time.

■ Project Importer

The LOA Project Importer introduces a photogrammetric project into the GeoCue managed workflow. LOA supports LPS Block files, BAE SOCET SET[®] projects, INPHO MATCH-AT projects and Intergraph Z/I Imaging[®] and ImageStation[®] Automatic Triangulation (ISAT) projects. Within the LOA flow, a photogrammetric project is directly imported into the production environment which results in several actions:

- Graphical objects (entities) are created in GeoCue with geographically correct footprints and locations in the Map View.
- Metadata is attached to each entity that includes fields such as Exterior Orientation, image size and so forth. This data can be extended by user.
- Digital image files associated with the metadata are either referenced in their original locations or imported into the GeoCue file management system.

■ GeoCue Server

GeoCue is a client-server, multi-user application. Designed as a multi-tier architecture with "thick" clients running on each production desktop, the actual project data is stored in the centrally located GeoCue Server. This server provides the central control and management functions and is the heart of the GeoCue process management system. Storage and management of project data is a critically important aspect of a process management system. GeoCue Server uses a conventional database (currently only Microsoft SQL Server is supported) for the storage of project metadata with disk-based files used for the storage of large data types such as imagery, elevation data, laser point data and so forth.

■ GeoCue Web Server

GeoCue Web Server is an optional component of GeoCue that is used to dynamically publish elements of projects for viewing by remote clients connected to a web server either via the Internet or Intranets. GeoCue Web Server is a collection of services hosted within Microsoft's Internet Information Server.

■ GeoCue Client

GeoCue Client is a graphical view into the GeoCue Server. The system provides instant and accurate views of the status of a project to all users logged into the same project. When one user performs an operation such as locking a data entity for editing, an event is sent to all GeoCue clients that are currently logged onto the same project. This event causes the client displays to reflect the locked status of the object. There are many of these events supported in GeoCue, all using the Server to notify connected clients.

■ PM CuePac

Project Manager (PM) is a new CuePac for GeoCue that adds the ability to view project status and to plan production at any level from synoptic process status to an individual checklist step on a single entity. PM CuePac provides an interactive Excel-like window into the history and planning data of project checklists. Through this interface, planning data can be set for groups of entities in a fast and efficient way. In addition, PM provides powerful query tools that allow users to mine project data in a variety of ways - from which working segments have passed QC to how much time has been spent on the project this week.

■ LIDAR 1 CuePac

LIDAR 1 is a CuePac for GeoCue, a geospatial integration framework. LIDAR 1 provides tools to integrate a TerraScan-based LIDAR processing workflow into a managed, synoptic production environment. The bottom line result is faster, higher quality and more profitable jobs.

LIDAR data is notoriously difficult to process due to the inherently unorganized structure and volume. GeoCue with LIDAR 1 provides a high performance LIDAR production environment with features such as:

- Graphic project management clients that provide a real-time project view across the entire company
- A centralized process and data management repository
- Support for project reference data such as scanned maps and orthophotos
- Tools to import LIDAR data and display true ground footprints
- Analysis tools to verify project coverage quality
- Delta Z analysis images to quickly assess relative vertical accuracy
- Import and display of Applanix SBET data
- Automatic creation of TerraScan trajectories from SBET
- Integrated PointVue for 3D visualization of LIDAR data
- A very powerful and flexible system to allow you to divide LIDAR projects into work segments for processing

- A complete set of functions for planning work segment processing including assignment of process steps and production operators
- Multiuser workflow management tools for locking work segments, invoking production tools and managing/ reporting problems
- Seamless integration with TerraScan for LIDAR filtering and editing
- TerraScan macro library assignment and application tools
- Distributed processing of batch operations such as TerraScan macro processing (Enterprise version)
- Full support for horizontal and vertical (including geoid) coordinate transformations of LIDAR data
- Merging tools for combining work segments into products
- Creation of LIDAR stereo models for direct breakline collecting using existing photogrammetry tools
- An optional web-deployable viewing system with definable views to keep the customer in the loop.

■ DEM CuePac

The Digital Elevation Modeling (DEM) CuePac provides a range of functions for managing and processing elevation data within GeoCue. DEM CuePac is useful for a wide variety of tasks that require visualizing elevation coverages, merging and extracting elevation data and exporting those data in a variety of formats for downstream processing. A prime use for DEM CuePac is the visualization and preparation of elevation surfaces for orthorectification. When combined with GeoCue's LIDAR 1 CuePac, LIDAR data can be directly converted into elevation sources suitable for orthorectification.

• LAS as a standard format

The DEM CuePac uses the American Society for Photogrammetry and Remote Sensing (ASPRS) LAS point cloud format as a common manipulation standard within the DEM CuePac. Elevation sources of various formats can be imported into GeoCue, converted to LAS, processed and then converted to export format.

• Merge/Extract

DEM CuePac provides features for merging multiple elevation models and for extracting from models.

- **Advanced Geometric Constructions**

DEM CuePac provides functions for very rapidly creating specialized elevation models for orthorectification workflows, even when the rectification process is not GeoCue encapsulated.

- **Full Horizontal and Vertical Transformation Support**

DEM CuePac provides complete support for both horizontal and vertical coordinate transformations.

- **Quality Check/Quality Assurance**

DEM CuePac provides a number of tools for performing QA/QC tasks. Project-wide rendering of elevation “orthos” allows quick synoptic checking of data. In addition, DEM CuePac allows probing of elevation surfaces with control points for testing absolute accuracy.

- **Special Image Rendering Tools**

DEM CuePac extends the GeoCue “LIDARgrammetry” concept to all elevation data. Simply import a source into DEM CuePac, create LAS Working Segments and generate synthetic stereo models. Use hybrid merged models to fill in detail. Currently supported stereo systems include BAE Socet Set®, DAT/EM and Intergraph SSK.

Features

- Input Formats: USGS DEM, LAS, ASCII, Arc Grid, EarthData GeoSAR, others
- Processing Functions: Merge, Extract, Filter by LAS parameter, transform horizontal and vertical coordinates, render elevation ortho, render elevation stereo model, various geometric construction operations (union, intersect, buffer grow, buffer shrink, segment polygon by line).
- Output Formats: LAS, ERDAS IMAGINE IMG, Intergraph TTN, MicroStation DGN

■ **Remoting License**

Remote access allows ortho processing to occur on ortho nodes without consuming a Client License.

■ **GeoCue SDK**

GeoCue SDK is the software development kit for GeoCue Server.

About Leica Geosystems Geospatial Imaging Division

Leica Geosystems Geospatial Imaging offers a range of workflow solutions for photogrammetry, mapping, remote sensing, catalog management and exploitation of geospatial imagery. Enterprise organizations use this imagery as the basis for generating information for both education and decision making processes.

As the expert in geospatial imaging, Leica Geosystems facilitates the efficient capture of data, accurate referencing of imagery, easy measurement and analysis of 4D referenced information. Leica Geosystems delivers an entire suite of geospatial solutions, enabling users to work across the enterprise to catalog and manage imagery resources, utilizing a variety of clients for imagery exploitation and data delivery.

Those who use Leica Geosystems products every day trust them for their precision, seamless integration, interoperability and superior customer support. Geospatial imaging solutions from Leica Geosystems - **when it has to be right.**

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