Geo-Imaging Accelerator (GXL) System: Mosaic Creation GXL Workflow

MOSAIC CREATION MODULE

The Mosaicking GXL Workflow (MOSAIC) allows the user to produce a single mosaic file or a set of tiles. A supplied source image list XML file (produced from the Mosaic Preparation GXL Workflow - MOSPREP) as input will define the input orthorectified images to be mosaicked, as well as all colour balancing, z-ordering, and cutline parameters. The output of the Mosaicking GXL Workflow is a set of individual tiles which, together, comprise the total mosaic, or a single file.

GXL WORKFLOW PREREQUISITES

This is an add-on GXL Workflow that is used within the Geo-Imaging Accelerator (GXL) System.

MOSPREP is a prerequisite to the MOSAIC GXL Workflow.

GXL WORKFLOW OPERATORS

MOSAIC is a set of two automated jobs. The master job reads the XML source image list file previously produced by MOSPREP. It determines the number and the shape of the tiles and creates a polygon per tile in a pix file. Ultimately it will create children jobs and propagate input parameters. The child job (processing jobs) are then queued and registered for processing. (See JPS guide for more details).

The job processor for the Master Mosaic Generation (GXLMasterMosaicGeneration) has the following operators used for job submission:

Job identifiers

- **User**: name of the user submitting the job
- **Priority**: priority of the job
- **Comment**: comment to distinguish the job

Start

- **On Server**: select the processing server to run the job
- **When**: select when the job is to be started

Input Parameter

- GeoTIFF or HDF **Predefined configurations**: The user can define and select an XML configuration file which automatically sets all parameters for the project. This is useful for when you need to repeat projects.

Workflow values

- **InputSceneFile**: XML file produced by the XGLMosaicPreparation module
- **OutputFolder**: Output directory storing the results
- **OutputChannels**: List of channels to be included in the output mosaic
- **Basename**: Name use for all tiles
- **TileSpecification**: Specifies the desired tiling scheme for the output mosaic
- **Blendwidth**: Specifies the perpendicular distance from the cutline over which image blending will be performed
- **OutputFileType**: File type for the output mosaic
- **CreateSourceMap**: Specifies if the workflow should create source map froe each tile
- **ExistingTileRule**: Specifies what the rule is when a tile already exists.
- **DeleteEmptyTile**: Specifies the rules for empty tiles.

MOSAIC CREATION TECHNOLOGY

The data ingestion module incorporates the GDB technology for importing various-satellite data formats (with associated rational polynomial coefficients) and the GCP automatic collection technology. Both technologies are PCI GDB APIs or PPFs and while not thread safe, parallel jobs can still take advantage of multi-core or GPU hardware.

Mosaic XL accelerated MP/GPU processing will be available as a migration path. This is an independent executable which can automatically recognise if an appropriate graphical processing unit or video card that has been installed on the processing server. If the video card is detected, then the GXL system will utilize the card for processing. Otherwise, the GXL system will use all of the available CPU cores to split the job into parallel threads. .

OUTPUT IMAGES

The Mosaic Creation GXL Workflow currently provides output to the GDB file formats GeoTIFF, PCIDSK, and JPEG2000. With respect to GeoTIFF, the proposed tiling scheme will not produce GeoTIFFs which exceed the GeoTIFF standard of 2 GB per image. If this is the case, then a different tiling scheme should be selected (i.e. PCIDSK).

SUPPORTED SATELLITE FORMATS

The Mosaic Creation GXL Workflow supports a wide range of high and low-resolution optical satellite sensors.

Supported Sensors

- IKONOS GEO:
  - Most economical GEO product in GeoTIFF or HDF format
  - 1-2m accuracy with 10 or more ground control points (GCPs)
- IKONOS GEO Ortho Kit:
  - Satellite Orbital Math model can be used without rational function coefficients
- QUICKBIRD (Basic and Ortho-Ready product):
  - GeoTIFF or NITF with support files (ATT, EPH, GEO, IMD, RPB, TIL)
- SPOT 5:
  - 1A and 1B Products
- SPOT 5 (TIFF)
  - Level 1A SPOT 5 Dimap format

For more information, contact

PCI Geomatics
50 West Wilmot Street
Richmond Hill, ON L4B 1M5
Canada

Phone: 1 905 764 0614
Fax: 1 905 764 9604
Email: info@pcigeomatics.com
Web: www.pcigeomatics.com