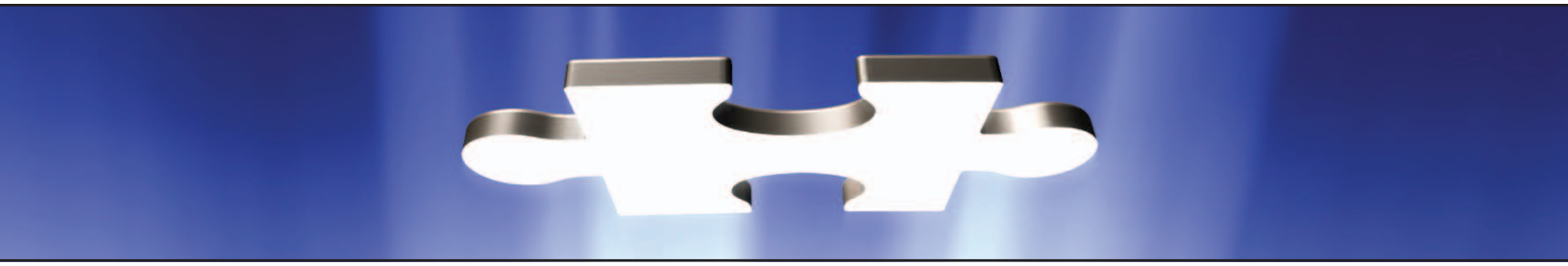
Satellite XL for GXL

PCI Geomatics

High-performance Satellite Orthorectification for the GeoImaging Accelerator



By moving to the GPU-based GXL architecture, satellite orthorectification, pansharpen and mosaics have gained remarkable speed and performance boosts. This automated workflow provides Rational Function model calculation and orthorectification within the GPU-based, load-balanced, distributed GXL architecture.

New speed and flexibility

With the launch of the GeoImaging Accelerator (GXL), a high-performance, hardware-optimized image processing system, PCI Geomatics is fielding a powerful competitor in the photogrammetric pre-processing and value add segments. Based on off-the-shelf hardware components and industry standards such as nVidia CUDA, the GeoImaging Accelerator provides a framework for high-speed image processing through automation and technical expertise, including:

Ortho Metrics – Dual GPU

Product Type	Dataset	Resolution [m]	Volume [GB/min]	Volume [TB/Day]	Area [km²/day]
SPOT5 - Level 1A 2.5 meter	8U Pan	2.5	1.42	2.00	13.7 Million (Europe: 10.1M)
IKONOS - Geo Ortho Kit	16U Pan Ikonos	1.0	2.09	2.94	1.62 Million (Saudi Arabia: 1.96M)
WorldView-1 and Quickbird Level 1B	16U Pan	0.5	2.32	3.26	448k (Sweden: 450k)
Quickbird - OrthoReady - 4 channel PS	16U Multispectral	0.6	2.50	3.52	174k (Florida: 170k)
Quickbird - Level 1B	16U Multispectral	2.4	3.25	4.57	3.62 Million (India: 3.17M)

► **GPU chipsets:** Graphical Processing Units are uniquely suited to complex mathematical transformations with greater speed and precision than traditional CPUs.

► **Distributed Computing:** The GXL Job Processing System (JPS) provides a simple web interface for job submission and management, in addition to balancing multi-core CPU, GPU processing in multi-node, distributed networks.

► **Modular workflows:** Image processing jobs can be chained together, run with multiple parameter sets, and components can be re-used to reduce migration and update costs.

► **Knowledge:** Built on over 25 years in the industry and proven OrthoEngine pedigree, the GeoImaging Accelerator raises the bar for earth imaging processing and performance.

Satellite XL Capabilities

- **Automatic Rational Function Model Calculation**
  High-accuracy, fully automated model calculation with or without additional ground control

- **High Speed Satellite Orthorectification**
  Calculate your satellite orthos at full 1:1 sampling faster than ever before, thanks to nVidia GPU processing
- **Full Sensor Support**
  For satellite sensors including GeoEye-1, IKONOS, KompSat-2, LANDSAT 7, OrbView-3, QUICKBIRD, RapidEye, SPOT 5 and WorldView-1 and 2.

Benchmark 2 Results:Rapideye (78 Images)

		Ingest	Ortho	MosPrep	Mosaic	Total
Non GXL	Elapsed Time	2.5d	5d	5.5d	7d	20d
	Images/Hour					0.16
GXL (1 Node)	Elapsed Time	7h35	9h45	3h15	6h15	26h50
	Images/Hour					2.9
GXL 1 Node processing improvements 18 x						
GXL (3 Nodes)	Elapsed Time	2h35	3h15	3h15	2h05	11h10
	Images/Hour					6.9
GXL 3 Nodes processing improvements 42 x						

Satellite XL takes full advantage of the GXL architecture

- **Distributed network computing**
  Flexible processing nodes on standard hardware report their availability and optimize their workloads.
- **Job and process management**
  Included in the GXL is the Job Processing System for defining and automating job classes, user permissions, priorities, and node management.
- **Sustainable growth**
  Using standard hardware and new, expanded XL workflows, the GXL will scale in throughput and capability as your projects do.
- **Ortho speed and performance**
  Orthorectification results show significant gains, even from a conservative desktop system using dual nVidia GTX 280 GPUs and 7200RPM HDDs.
- **Integrated workflow**
  Due to the flexible GXL architecture, additional workflows can be added to complete your project, including Mosaic XL:
  - ▶ Automatic tie-point collection
  - ▶ Automatic GCP collection using image-to-image registration
  - ▶ Automatic color-balancing
  - ▶ Automatic cutline selection
  - ▶ Mosaic preview generation for manual QA/QC
  - ▶ Formatting, clipping, tiling, and reprojection

> "COTESA has considered the wide spectrum of image processing products in the marketplace and has chosen PCI Geomatics due to the high quality of the results provided by Geomatica's algorithms and the substantial increase in processing capability acquired with the solution implemented."
>
> - Dr. Francisca Gómez head of COTESA's Environment Department

About PCI Geomatics

PCI Geomatics is a world-leading developer of hardware/software systems for geo-imaging solutions. Since 1982, we have specialized in remote sensing, digital photogrammetry, spatial analysis, cartographic production, automated production systems, image management and on demand mapping solutions. PCI Geomatics' advanced hardware/software systems address a wide variety of industry applications including the environment, agriculture, security and intelligence, aerospace & defense, and satellite receiving stations. We have the expertise and know-how to turn images into useful information.

PCI Geomatics

PCI Geomatics Headquarters
50 West Wilmot Street
Richmond Hill, Ontario
CANADA L4B 1M5

Phone: 905 764-0614
Fax: 905 764-9604
Email: info@pcigeomatics.com
Web: www.pcigeomatics.com/gitools