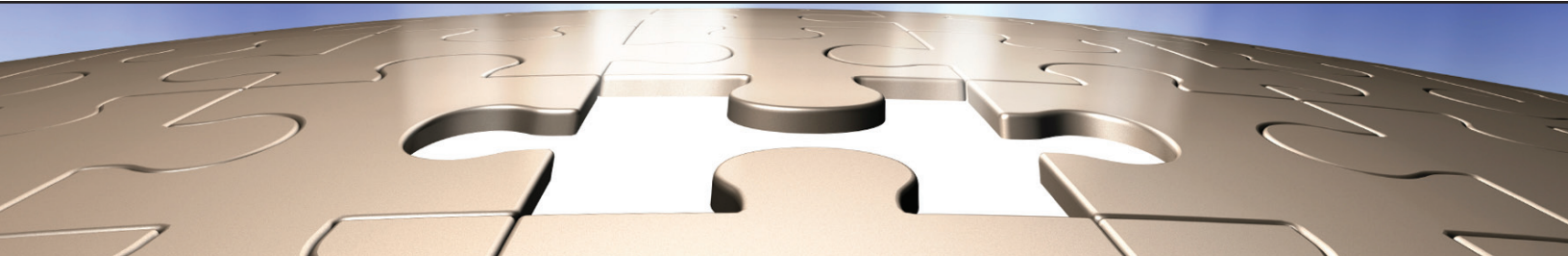# GeoImaging Accelerator
Aerial

PCI Geomatics

## High-performance airphoto orthorectification for the GeoImaging Accelerator

The newest addition to the growing capability of the GeoImaging Accelerator (GXL) is airphoto processing. In addition to speed and throughput advances in satellite processing and pansharpening, this new ProLine provides airphoto model calculation and ortho-rectification within the GPU-based, load-balanced, distributed GXL architecture.

New capabilities

- **Airphoto model calculation**
  Calculate your airphoto models from interior and exterior orientation metadata, including GPS/INS, XYZ/ωφκ.

- **Airphoto orthorectification**
  Calculate your airphoto orthos at full 1:1 sampling faster than ever before, thanks to nVidia GPU processing

- **Camera support**
  For Digital Frame Cameras including UltraCam X, Xp and L, with upcoming support for Leica ADS40/80 and Z/I DMC.

Airphoto XL ProLine takes full advantage of the GXL architecture

- **Distributed cloud 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 ProLines, 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 a single nVidia GTX 280 GPU and a single 7200RPM HDD.

Sample Workflow / Component / Inputs
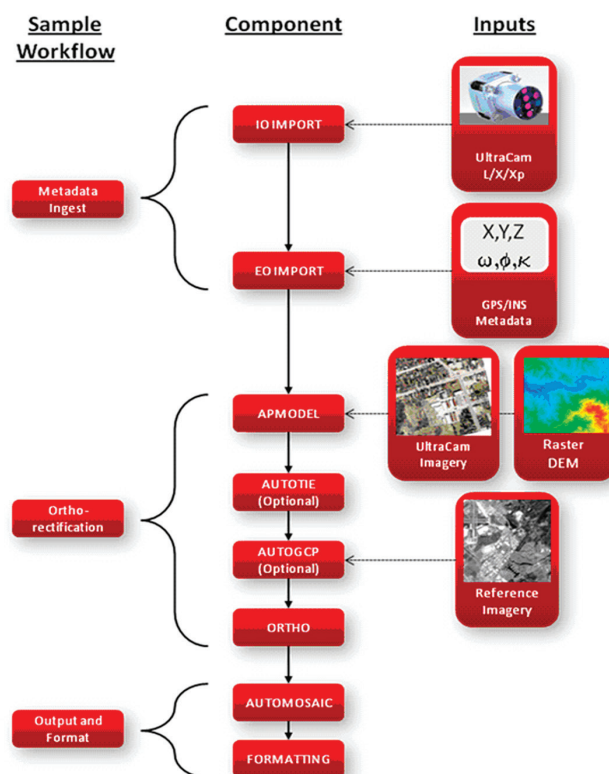
	Vexcel UltraCam	Film-based aerial frame sensor
Image characteristics	8U 11500P x 7500R x 3C	8U 11200P x 11200L x 3C
Source image size	259 MB avg. (20 images)	370 MB avg. (20 images)
Flightline orientation	200°, 290°, 110°	East-West
Ortho resolution	10 cm	1 m
Processing time/scene	22.1 sec	13.1 sec
Throughput (MB/sec)	15.13 MB/sec	18.17 MB/sec
Throughput (TB/day)	1.25 TB/day	1.50 TB/sec

■ **Integrated workflow**
Due to the flexible combination of GXL and ProLines, additional steps can be added to complete your airphoto project, including:

► Semi-automated fiducial collection

► 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

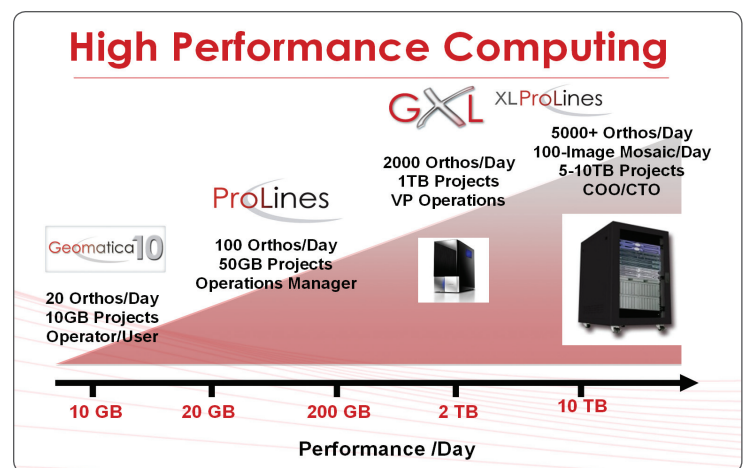UltraCam results of color balancing in urban area

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:

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

► **Cloud processing:** The Job Processing System (JPS) defines and, through a web interface, manages the job capability and workload of each CPU/GPU in an n-node distributed environment.

High Performance Computing

GXL XLProLines

ProLines

Geomatica 10

5000+ Orthos/Day
100-Image Mosaic/Day
5-10TB Projects
COO/CTO

2000 Orthos/Day
1TB Projects
VP Operations

100 Orthos/Day
50GB Projects
Operations Manager

20 Orthos/Day
10GB Projects
Operator/User

10 GB   20 GB   200 GB   2 TB   10 TB

Performance /Day

> "The Airphoto XL ProLine reflects the growth and performance we expect of the GeoImaging Accelerator. This is just the first step in a series of high-performance workflows that will provide our customers in the aerial market with the ability to complete projects faster and with a lower cost of operations."
>
> - David Piekny
> GXL Product Manager

► **Modular workflows:** Image processing jobs can be chained together, run with multiple parameter sets, and components 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.

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
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