

## PCI Geomatics ProSDK v1.5

### PROFESSIONAL SOFTWARE DEVELOPMENT KIT

The PCI Geomatics Professional Software Development Kit (ProSDK) gives users the ability to include PCI software components in applications implemented or extended with the **C++**, **Java**, and **Python** programming languages. The ProSDK v1.5 further offers a flexible development environment with more exposed functionality.

### TECHNICAL SPECIFICATIONS

#### Operating Systems:

The ProSDK v1.5 is released for several operating systems:

- Windows XP
- Windows Vista
- Windows 7
- Linux RedHat Enterprise Workstation 5.4
- SUSE Linux 10.1

#### APIs:

The following APIs will be supported at the indicated level:

- Python (2.6.4)
- Java (J2SE 1.6)
- MSVC++ 2005

#### Contents:

The ProSDK v1.5 contains the following items:

- The PCI Pluggable Function (PPF) Framework
- Generic database (GDB) functions that provide access to a wide variety of geomatics file formats, and data products
- A means for a third-party program to perform a variety of operations through Geomatica Focus

The capabilities of the ProSDK v1.5 are extended by the various **ProPacks** that

are available from PCI Geomatics. Each ProPack contains a set of PCI Pluggable Functions (PPFs) that address a specific geomatics application area. Examples of application areas are orthorectification, mosaicking, elevation extraction, data fusion, and enterprise database support. All PPFs can be called from programs written in C++, Python, and Java and are dynamically loaded.

### THE PCI PLUGGABLE FUNCTION FRAMEWORK

The ProSDK v1.5 provides the **PCI Pluggable Function Framework**, which lets you implement and run PPFs. This framework consists of the following:

- An XML document type that is used in specifying a pluggable function interface
- A program that transform the specification into C++ stub code for the PPF, the code for a PACE program that calls the PPF, and the code for a Python interface to the PPF
- Functions for dynamically loading PPFs.
- Hierarchical C++ exception handling classes
- Non-spatial data output interfaces for outputting auditing information, logs, progress reports, summary reports, warnings, and debugging messages. You can replace the default implementations beneath these interfaces to achieve behaviour that is more appropriate for a specific application (for example, communicating output to a database, or to an operator through e-mail).

A PPF is implemented by adding to the C++ stub code. Typically, calls to the provided GDB functions are included in the implementation.

## GDB FUNCTIONS

The PCI Geomatics exclusive GDB technology provides access to more than 100 geospatial data formats. Access to the certified NITF file format support is available through additional licensing.

The GDB functions that are included in the ProSDK v1.5 consist of a set of functions and a buffer class that can be used to access image data and metadata from a GDB-supported dataset.

## CONNECTING TO THE GEOMATICA FOCUS INTERFACE

The Focus interface is based on the XML-RPC remote procedure call mechanism and a set of Focus operations called **JOLTActions**. A controlling program written in any programming language for which there is an XML-RPC implementation can send requests for different JOLTActions to a running instance of Focus through an XML-RPC connection. This type of connection allows the controlling program and Focus to run on the same computer or on separate networked computers. For separate computers, the programs can run on different hardware and operating systems. The available JOLTActions include the capability to open various Focus windows, load files and projects, and perform operations on raster and vector data.

## PCI GEOMATICS PROPACKS

The PCI Geomatics ProSDK v1.5 release consists of 25 different ProPacks, each of which extends the ProSDK with a set of pluggable functions (PPFs) that address distinct geomatics application areas:

- **UPDATED** Aerial Photography Model ProPack: Orthorectification of imagery acquired from most airborne frame-based cameras and line-scanner systems.
- ALOS Model ProPack: Imports image and geometric data directly from ALOS, PRISM, and AVNIR-2 data product distribution files.
- **NEW** Atmospheric Correction ProPack: Atmospheric correction for satellite sensors
- **UPDATED** Automatic DEM ProPack: Automatic DEM generation from overlapping images
- **NEW** Automatic Image-to-Map Registration ProPack: Extraction of ground control points from vector line and polygon layers
- **UPDATED** Automatic Mosaicking ProPack: Automatic composition of rectified images into mosaics, including tiled output
- **UPDATED** Automatic Registration ProPack: Automatic registration and GCP collection for raw imagery, using corrected reference imagery
- Automatic Tie Point Collection ProPack: Automatic collection of image-to-image tie point and airphoto fiducial marks
- AVHRR Processing ProPack: Specific processing for the AVHRR Sensor.
- Cartosat Model ProPack: Imports image and geometric data directly from CARTOSAT-1 data product distribution files
- **UPDATED** Data Conversion and Interpolation ProPack: Raster, vector and bitmap layer conversions
- **UPDATED** GDB ProPack: Run-time license and GDB format read-write capability.
- GeoRaster ETL ProPack: Loading of image and vector data and metadata into an Oracle spatial database

# Technical Specifications

- High-Resolution Satellite Models ProPack: Sensor-specific orthorectification of image data from high resolution satellite sensors
- **UPDATED** Hyperspectral Analysis ProPack: Extensive analysis tools for hyperspectral data.
- **UPDATED** Image Processing ProPack: Image enhancement, filtering, resampling, and scaling operations
- Pansharpening ProPack: Fusion of low-resolution multispectral and high resolution panchromatic imagery
- **NEW** Pixel Classification ProPack: Supervised and unsupervised spectral-based image classification
- **NEW** Pixelwise Operations ProPack: Logical operations and math for layer comparison and calculation
- **NEW** Polarimetric SAR ProPack: Analysis functions for polarimetric SAR sensors
- **UPDATED** Rational Function Models ProPack: Orthorectification of image data using rational polynomial coefficients
- **UPDATED** Satellite Orbital Models ProPack: Sensor-specific orthorectification of image data from low and medium resolution satellite sensors
- Simple Corrections Models ProPack: geometric correction of imagery using the polynomial or thin plate spline techniques
- **NEW** Spatial Analysis ProPack: GIS functions for spatial analysis of vector layers and attributes
- Terrain Analysis ProPack: Contour generation from digital elevation models.

For more details, please see the technical specification literature for individual ProPacks.

## 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](mailto:info@pcigeomatics.com)

**Web:** [www.pcigeomatics.com](http://www.pcigeomatics.com)