

The PCI Geomatics ProSDK V1.2

The PCI Geomatics Professional Software Development Kit (ProSDK) gives users the ability to include Geomatica software components in applications that they implement or extend with the **C++**, **Java**, and **Python** programming languages. The ProSDK V1.2 further offers a flexible development environment with more exposed functionality.

The ProSDK V1.2 is released for Windows XP and Linux (RedHat Enterprise Workstation 5 and SUSE Linux 10.1) and is compatible with Microsoft Visual Studio .NET/C++ 2003, gcc 3.3, Python 2.4, and Java 1.5

The ProSDK V1.2 contains the following:

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

The capabilities of the ProSDK V1.2 are extended by the various **ProPacks** that are available from PCI Geomatics. Each ProPack contains a set of PCI Pluggable Functions (PPFs) that addresses 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. PPFs are dynamically loaded.

THE PCI PLUGGABLE FUNCTION FRAMEWORK

The ProSDK V1.2 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 behavior 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 V1.2 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

FIMPORT and FEXPORT PPFs

The two functions called FIMPORT and FEXPORT are available with the ProSDK V1.2. FIMPORT can import data from a GDB read-supported file or file-set. FEXPORT exports data from a PCIDSK file to a GDB write-supported file or file-set. The Python interfaces to these PPFs are included. The PCI Geomatica desktop software includes FIMPORT and FEXPORT PACE programs that call these pluggable functions.

Connecting to Geomatica Focus

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.

The ProSDK V1.2 includes an installation guide, the ProSDK User Guide, and a set of programming examples.

PCI GEOMATICS PROPACKS

The PCI Geomatics ProPacks V1.2 release consists of 18 different ProPacks, each of which extends the ProSDK V1.2 with a set of pluggable functions that address a distinct geomatics application area:

- **Satellite Models ProPack:** sensor-specific orthorectification of image data from low and medium spatial resolution satellite sensors
- **High-Resolution Satellite Models ProPack:** sensor-specific orthorectification of image data from high spatial resolution satellite sensors
- **Rational Function Models ProPack:** orthorectification of image data using rational polynomial coefficients
- **Aerial Photography Model ProPack:** orthorectification of images acquired from airborne sensors
- **Simple Corrections Models ProPack:** geometric correction of imagery using the polynomial or thin plate spline techniques
- **Automatic Image Registration ProPack:** automatic registration of non-rectified image data to rectified image data
- **Automatic Collection ProPack (Tie Point and Fiducial Marks):** automatic collection of image-to-image tie point and airphoto fiducial marks
- **Automatic DEM ProPack:** automatic DEM generation from overlapping images
- **Automatic Mosaic Composition ProPack:** automatic composition of rectified images into mosaics
- **Pansharpening ProPack:** fusion of low-resolution multispectral and high-

resolution panchromatic
imagery

- **GeoRaster ETL ProPack:**
loading of image and vector
data into an Oracle database
- **ALOS Model Propack:** imports
image and geometric data
directly from ALOS, PRISM, and
AVNIR-2 data products
distribution files.
- **Cartosat Model Propack:**
imports image and geometric
data directly from CARTOSAT-1
data product distribution files
- **Image Processing Propack:**
implement image enhancing,
filtering, resampling, and scaling
operations
- **Layer-to-Layer Conversion
Propack:** transform data from
one layer type to another
- **Automatic Image-to-Map
Registration Propack:**
extraction of control from vector
maps
- **Contour Generation Propack:**
generates elevation contours
from a digital elevation model

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

Note: The ProSDK supports only the
compiling and linking of the available
PPFs and no longer the implementation
of traditional PACE programs.

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