

IGiS Version 11.0 for Desktop
Functionality Matrix



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Introduction

Scanpoint Geomatics Limited has developed an indigenous software, termed as **IGiS (Integrated GIS and Image Processing Software)**, jointly with Indian Space Research Organization (ISRO). The software application offers a rich set of features comprising of GIS, Image Processing (IP) and advanced modules. It can be used for data preparation, analysis, modelling, and symbolization and production of digital outputs in the form of soft copy and hard copy maps, charts and reports. IGiS platform is OGC compliant and supports all OGC web services such as WMS, WFS, WCS, CSW, WFS-T, GML, KML, etc. It supports various industry standards vector and raster data formats such as DWG, DXF, DGN and shape files. IGiS supports all type of predefined and Custom Projection systems with their corresponding EPSG codes also.

The licensing level of IGiS desktop version is divided into three categories like basic, Standard, and Advanced which is perpetual in nature. It is a 64-bit, Unicode Desktop GIS with an intuitive user interface. Each category has the same integrated applications, GUI, and development platform but having deference in the no. of functionalities provided to the users. This document consists functionality of the professional version of IGiS Desktop Application.

General Tools for Mapping

Map Interaction

Map Navigation

Features	Professional
Pan, Zoom, Rotation and Flip	✓
Rotate View	✓
Support of Real Time Panning	✓
Find by location (Longitude, Latitude)	✓
Zoom to the Full Extent	✓
Zoom to the Extent of a Theme	✓
Zoom to the Visible Scale of a Layer	✓

Zoom to a Defined Map Scale	✓
Create Spatial Bookmarks	✓
Access Hyperlinks	✓
Use Dynamic Map Tips	✓
Use Hawk Window/Overview Window/Magnification Window	✓
Swipe Interactively a Selected Layer in the View Area	✓
Save and Manage Locations for Use with Multiple Maps (My Places)	✓
Manage and Organize Bookmarks	✓
Pan and Zoom the Map with the Mouse Wheel	✓
Pan and Zoom to Selected Object	✓
Switch Any Tool to a Pan/Zoom Tool Using Hot Keys	✓
Create Hyperlink to External Application, Macro, or URL	✓
Macro Manager, Macro Attachment, Create New Macro	✓
Python Editor, Convert .py to .pyc	✓
Rename Control	✓
Use Overview Window	✓
Use Viewer Windows for Displaying Different Parts of a Map	✓
Add Multiple Views for Separate Projection	✓
Create, Rename, Delete and Link Views	✓
Capture Image	✓
Support of UNICODE data	✓
Ribbon Manager	✓
Create, Rename, Delete and Link Views	✓
Database Comparison	✓
Support of Multiple Document Interface (MDI)	✓

Query Analysis

Features	Professional
Identify Features in the Map	✓
Interactively Measure Distances and Areas	✓
Find Features in the Map	✓
Field Statistics/Show Related Data with Field Properties	✓
View and Toggle Selected Layer in Table of Contents	✓
Select Data by Location	✓
Select Data by Attribute using Query builder	✓
Save and retrieve query	✓
Interactively Select/Unselect Features	✓
Unselect All, Switch the Selection, or Select All Features	✓
Access Attribute Table and Layer Properties from Identify Dialog Box	✓

Tables

Features	Professional
Flash, Zoom to, Pan to, Select, and Identify Individual Features in a Map Based on a Record in the Attribute Table	✓
Interactively Highlight Selected Records/Features/Objects	✓
Zoom to selected and Unselect Highlighted Records/Features	✓
Interactively Add and Remove Records from a Selection	✓
Copy Selected Records for Pasting into Other Applications	✓
Import table in file formats like .xls, .xlsx, .csv, .mdb, .dbf, .txt, .rtf, .html	✓
Export Table to other software file formats like CSV, XLS, DBF, etc.	✓
Turn Fields Off and On and Change Field Order and Size	✓
Use Field Properties of Joined Tables	✓
Reorder Fields	✓
See Properties of Joins and Relates from Table Properties	✓
Sort a Table by Fields	✓

Drag Multiple Tables into the Table Window as Tabs	✓
Create a Graph or Report using Report Wizard	✓
Find and Replace Attribute Values	✓
Open Attachment Manager for Any Record (when Attachments Are Enabled on the Layer)	✓

Map Display

General Mapping

Features	Professional
Visualize the Map Page or a Specific Set of Data	✓
Perform On-the-Fly Projection of All Data	✓
Full Cartographic Visualization	✓
Interactively Set Percent Transparency for Selected Layer All Data Layers	✓
Layer Transparency	✓
Drag and drop facility	✓
Layer on/off (with check box)	✓
Set a Minimum and Maximum Scale to Display Data	✓
Create Custom Relative Scales	✓
Clip the Map Display to a Feature or Graphic/Masking	✓
Create Graticule, Measured Grids, and Reference Grids in Layout View	✓
Create Extent Rectangles for Other Data (Reference/Hawk Window and Overview Maps)	✓
Create Variable Depth Layer Masking	✓
Convert Graphics (Point, Line, Polygon, Text) to Features (Export in file format)	✓
Geo-pdf creation	✓
Capability to consume 2D/ 3D base maps layers in OGC standard map services	✓
Quick Pan Mode for Continuous Navigation of Base map and Accelerated Raster Layers	✓

DD to DMS conversion	✓
Calculate Easting Northing	✓
Moon Phase	✓
Project Preferences: Grid/Display/Color/DEM/Python	✓
Explode DGN Layers, Explode DVD Layers, Apply DGN Legend	✓

Tabular Data

Features	Professional
Create On-the-Fly Dynamic Joins between Different Databases	✓
Join Dialog Box Supports Join Validation prior to Execution	✓
Create and Use Many-to-One and One-to-Many Relationships	✓
Create Statistics	✓
Summarize Data	✓
Interactively Change the Visibility of Fields	✓
Create Charts and Reports, Export in pdf, rtf, csv, excel	✓
Build Detailed Reports Using Report Wizard	✓
Sort by Attributes	✓
Connect to and Use Remote Database Tables	✓
Display Tabular X,Y Point Data from a File or Table on a Map	✓
View Attachments for a Feature Class	✓

Vector Data Display

Features	Professional
Create Map Tips	✓
Interactively Exclude Specific Features from the Display	✓
Control Which Features to Display Using a SQL Query	✓
Control Which Data Fields Are Accessible from the Map	✓

Thematic Vector Data Classifications

Features	Professional
Single Symbol	✓
Quantities	✓
Unique Value	✓
Match to Predefined Style	✓
Graduated Colors or Symbols	✓
Proportional Symbols	✓
Dot Density Mapping	✓
Bi-variate and Multi-variate	✓
Interactive Charts (Bar, Pie)	✓

Symbology

Features	Professional
Use Interactive Symbol Composer	✓
Use Halos and advanced Background Symbols	✓
Define Symbols for Fill, Lines, Outlines, and Points	✓
Integrated administrative boundary and Military symbols	✓
Interactive Line symbols like solid line, dotted line, dash line, arrow, double headed arrow etc.	✓
Morse code Symbols	✓

Elevation Surface Display

Features	Professional
Contour Line Display With Elevation Information	✓
Import and Display of Contour Line from DGN File Along With Height Information	✓
Creation and Display a Painted Relief Map	✓
Digital Elevation Model (DEM) Hill shade with Sun Position Control	✓
DEM Shaded Relief Using Hill shade and Elevation	✓
Terrain Contour with Index Contours	✓
Terrain Face, Aspect, Elevation, Slope	✓

DEM Elevation, DTED Elevation	✓
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Raster Data Display

Features	Professional
Display Multiband Images by Assigning Color Values to the Bands	✓
Band Selection Tool for Settings	✓
Display Each Unique Value with a Discrete Color	✓
Display Image Values Using a Color Map	✓
Display Multiband Raster Data Using Color Values	✓
Contrast and Brightness Tool	✓
On-the-Fly Projection Transformation	✓
On-the-Fly Enhancement as per the Choice of User	✓
Apply Live Enhancement on the Raster	✓
Apply Live Filtering on the Raster	✓
Apply Live Resampling on the Raster	✓
Set Transparent Color	✓
Display Raster Values while Navigating the Map with Map Tips	✓
Histogram plots of Raster/Satellite Image	✓
Display Raster/Imagery in Gray Scale	✓
Display Raster/Imagery in Invert Color	✓
Display Raster/Imagery in Pseudo Color	✓
Display Row/Column, Coordinates and RGB values of each band using Cursor Location/Value tool of Raster/Imagery	✓
Display Raster Resolution in Image Properties GUI	✓

Raster Display: Gradual Color Ramp Data-Stretching Algorithms

Features	Professional
Deviations	✓
Histogram Equalize	✓
Linear (0-255)	✓
Linear Percentage	✓

Gaussian	✓
Logarithmic	✓
Invert	✓
Level Slice	✓
Minimum-Maximum	✓
Custom	✓
None	✓

Raster Display Statistics

Features	Professional
Based on the Entire Raster Dataset	✓
Based on the Display Extent	✓
Based on a Custom Extent	✓

Raster Display Resample Methods

Features	Professional
Nearest Neighbor	✓
Bilinear Interpolation	✓
Cubic Convolution	✓
Majority	✓
Apply Live Resampling Method	✓
BSpline	✓
Lanczos	✓
Box	✓
Hermit	✓
Hamming	✓
Sink	✓
Black Man	✓
Bessal	✓
Gaussian	✓

Quadratic	✓
Mitchell	✓
Catron	✓

Raster Display Classification Methods

Features	Professional
Manual Interval	✓
Equal Interval	✓
Defined Interval	✓
Quantile Interval	✓
Natural Breaks (Jenks)	✓
Geometrical Interval	✓
Deviation	✓

Raster Tools

Features	Professional
Pixel Inspector	✓
Display of Scatter Plot of Multiband Raster/Imagery	✓
Image Threshold (categorize the pixels in input image based on the threshold value)	✓
Display of Image Data/Pixel Data Values of entire Raster/Imagery	✓
Swipe Layer Tool	✓
Flicker	✓
Pointer Swipe Tool	✓

Time Animation and Temporal Data

Features	Professional
Create Time Series, Layer Transition, or Map Navigation Animation	✓
Tracking Analyst along With Automatic Time Slider	✓

Page Layout and Printing

Map Elements

Features	Professional
Title	✓
Text	✓
Neat lines	✓
Legends , Legend and Map Templates	✓
North Arrows	✓
Scale Bar	✓
Scale Text	✓
Draw Date	✓
Add and Subtract 25 % Zoom	✓
Draw Rich Edit	✓
Add Image	✓
Draw Table shape	✓
Snap Line	✓
Show Margin/Hide Margin	✓
Pictures	✓
OLE Objects	✓
Measured Reference Grid	✓
Graticules	✓
Symbol Creation	✓
Map Frame Toolbox	✓
Draw Toolbox	✓
Shape Toolbox having tools like Combine, Dismantle, Convert polygon, Insert Point, delete point, Draw Line, Break Line, etc.	✓
Format and Align toolbox	✓
Normal Map, Edit back Map	✓
Grid Properties, Map Components and Editing	✓
Map Format tools	✓
Make/Unmake subgraphs	✓
Edit Points, Tab Order, Allow main object	✓

Align Formatting (Shear, Bend, Free Mirror, Space Across, Space Down, Reverse Order, Nudge Left, Nudge Right, etc.)	✓
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Export Formats

Features	Professional
Map Export/Print with customize scale, Page size, dpi	✓
Enhanced Metafile (EMF)	✓
Windows Bitmap (BMP)	✓
Tagged Image File Format (TIFF)	✓
Portable Document Format (PDF)	✓
Joint Photographic Experts Group (JPEG)	✓
Portable Network Graphics (PNG)	✓

Print with the Following Print Drivers

Features	Professional
Windows	✓
Process Print Jobs on the Local Machine for Faster Printing	✓

Publishing and Sharing Maps

Creating High-Performance Dynamic Maps

Features	Professional
Create an Optimized Map Service Document (.map)	✓

Sharing Maps, Layers, and Data

Features	Professional
Flat File Format like .shp, .mif, .gml, kml, .dgn, dwg,etc	✓
Sharing of Map, Layers and Data using IGiS Server	✓

Map Text

Labels

Features	Professional
Creating Dynamic On-the-Fly Labels	✓
Automatic Conflict Detection and Label Placement (remove duplicate label)	✓
Label Placement Rules for Setting Priority between Layers	✓
Placement Rules for Setting Importance of Labels vs. Features	✓
Labels Rotate from an Attribute Field	✓
Multiple Dynamic Labeling Schemes Built for Each Map Layer	✓
Control Which Features in a Layer Display Labels	✓
Advanced Text Formatting Tags for Dynamic Label Symbology	✓
Label To Point	✓
Annotation Backup/ Restore	✓
Label Properties Backup/ Restore	✓

Annotation

Features	Professional
Use Interactive Label Tools	✓

Annotation Editing

Features	Professional
Interactively Move, Rotate, and Scale Annotation	✓
Add Horizontal or Angled Annotation	✓
Dynamically Pull Annotation Values from Layers in the Map	✓
Interactively manage annotation that could not be placed during initial annotation creation	✓
Initial Annotation Creation	✓
Edit each word in an annotation string independently	✓
Interactively Stack and Unstack Annotation	✓

Interactively Modify the Curvature and Orientation of a Line	✓
Edit the Symbology of a Single Annotation Feature or a Group of Annotation Features Simultaneously	✓
Add Horizontal or Angled Annotation	✓

Advanced Cartography

Cartographic Editing Tools

Features	Professional
Store Multiple Representations of GIS Features for Use in a Variety of Map Products	✓
Change the Shape or Symbology for a Single Feature without Changing the GIS Data It Represents	✓
Define Feature Visibility and Transparency for Each Feature	✓
Mask Individual Features or Parts of Features without Masking All Features in a Layer	✓
Dynamically Place Point Symbols along Lines or Polygons	✓

Address Matching

Geocoding Tools

Features	Professional
Built-in Data less Military Grid Reference System (MGRS) Locator	✓

Advanced Tools

Features	Professional
Geocoding	✓
Reverse Geocoding	✓
Schematic Diagram	✓

Database Management

Features	Professional
Database Migration	✓

IGiS to Mongo	✓
Mongo to IGiS	✓
Database Comparison	✓
Creates/imports Oracle dump file	✓
Add Feature Code/ import	✓
Feature code information	✓

Linear Referencing System

Features	Professional
Create event Table	✓
Edit event Table Structure	✓
Delete event Table	✓
Copy event Table	✓
Add/edit Event Data	✓
Dynamic Segmentation	✓

Charts

Graphs and Charts

Features	Professional
Time Series	✓
Bubble	✓
Box Plot	✓
Tree Map	✓
Chord Diagram	✓
Scatter Plot	✓
Data Clock	✓
Scatter Plot Matrix	✓
Area Graph	✓
Line Graph	✓
Bar Graph	✓
Surface Profile	✓

Data Support and Interoperability

Raster Data Support

Direct Read of Raster Data

Features	Professional
ARC Digitized Raster Graphics (ADRG)	✓
Band Interleaved by Line (Esri BIL), Band Interleaved by Pixel (Esri BIP), or Band Sequential (Esri BSQ)	✓
Bathymetric Attributed Grid (BAG)	✓
Binary Terrain (BT)	✓
Bitmap, Device Independent Bitmap (DIB) Format, or Microsoft Windows Bitmap	✓
Committee on Earth Observing Sensors (CEOS) SAR	✓
Digital Terrain Elevation Data (DTED) Levels 0, 1, and 2	✓
Enhanced Compression Wavelet (ECW)	✓
Envisat Image Product (ESAT)	✓
EOSAT FAST (FST)	✓
ENVI Header Format	✓
ER Mapper's ECW	✓
ERDAS 7.5 GIS, 7.5 LAN, and RAW	✓
Geospatial Data Abstraction Library (GDAL) Virtual Format (VRT)	✓
GeoEye Satellite	✓
Hierarchical Data Format (HDF) –4, Including Sub-datasets	✓
HGT	✓
High Resolution Elevation	✓
IKONOS Satellite	✓
Image Service (from Server)	✓
Image Service (from IGiS for Server)	✓
Intergraph Raster Files: CIT™ Binary Data; COT™ Grayscale Data	✓
KOMPSAT-2	✓
Landsat Satellites (1–9)	✓
LISS 3, LISS 4, AWiFs, EROS	✓

Map Service (From Server)	✓
Multiresolution Seamless Image Database (MrSID) Generations 2 and 3)	✓
OrbView-3 Satellite	✓
PCI .aux Labeled Raw Format (PAux)	✓
PCI Geomatics PCIDSK (PIX)	✓
QuickBird Satellite	✓
RADARSAT-2	✓
RISAT-1 SAR	✓
KALPANA-1	✓
INSAT-3A	✓
INSAT-3D	✓
PROBA- V	✓
Rapid Eye Satellite	✓
Raster Catalog	✓
Shuttle Radar Topography Mission (SRTM)	✓
Spatial Data Transfer (SDTS)	✓
Spot Satellite	✓
Tables	✓
Tagged Image File Format (TIFF)	✓
United States Geological Survey (USGS) ASCII Digital Elevation Model2	✓
World View Satellites	✓
NetCDF	✓
GRID Data	✓

Direct Read and Write of Raster Data

Features	Professional
ERDAS IMAGINE	✓
ESRI Grid and Grid Stack	✓
Graphic Interchange Format	✓
Joint Photographic Experts Group	✓
JPEG 2000 (JP2)	✓

Portable Network Graphics	✓
Tagged Image File Format (GeoTIFF tags are supported.)	✓

Geodatabase Raster Management

Features	Professional
Create and Edit Raster Attribute Tables for All Supported Single Band Raster Formats	✓
H4 to H5 HDF converter	✓
Compress Raster with LZ77, JPEG, or JPEG 2000, LERC Compression Algorithms	✓
Create Raster Mosaics	✓

Document and Data Support

Map and Symbology Files

Direct Read of Vector and Raster Data

Features	Professional
Personal Geodatabase for Microsoft® Access™	✓
Shapefile	✓
Vector catalog	✓
ArctInfo Coverages	✓
PC ARC/INFO® Coverages	✓
OGC GML Simple Features Access	✓
KML	✓
Geojson	✓
GeoRss	✓
GPX	✓
MIF	✓
DWG/ DGN	✓
Xml	✓
.mdb	✓
Multiple data import (.shp,.kml,.geojson)	✓

Multi point/line/polygon	✓
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Export of Vector File

Features	Professional
Shapefile	✓
MapInfo File	✓
GML	✓
DGN	✓
DWG/DXF	✓
KML	✓
GeoPDF	✓
GeoJson	✓
MBTiles	✓
Map_Box Tiles	✓
GeoPackage	✓

Coordinate Systems

Features	Professional
Predefined Geographic Coordinate Systems	✓
Predefined Projected Coordinate Systems	✓
Predefined Vertical Coordinate Systems	✓
Ability to Create and Use Custom Coordinate Systems using 3 and 7 Parameters	✓

CAD File Support

Features	Professional
Autodesk Drawing Exchange Format (DXF)	✓
AutoCAD Drawing File (DWG)	✓
Micro Station Design Files (DGN, etc.)	✓
Display DGN File As Per SOI Symbology	✓
Display DGN Contour Line With Elevation Information	✓
Mapping Specification for CAD—Import from CAD	✓
Mapping Specification for CAD—Export to CAD	✓

Direct Read of CAD Data

Features	Professional
Display CAD Features and Annotation Based on CAD File's Display Properties	✓
Display Block Attributes and Tags as CAD Annotation Features	✓
Display Entire CAD Drawing or Individual CAD Features by Geometric Type and Definition Query	✓
Override CAD Symbology with. Display Tools	✓
Control CAD Layer Visibility	✓
Access CAD Entity Properties and Attributes through a CAD Feature Attribute Table	✓

Editing with CAD Data

Features	Professional
Import CAD Data with its symbology into the level Wise or all	✓
Define Projection to all or level wise	✓
CAD Viewer to open the DWG,DXF and DGN	✓
Editing and Updating the CAD Layers	✓
Export to CAD file format like DWG, DGN, etc.	✓

Coordinate Systems

Features	Professional
Select and Save Coordinate System Definitions with CAD Data	✓
Graphically Align CAD Data with Other GIS Data and Store the Transformation Definition (Georeferencing)	✓

Application Framework

Application Customization

Application Look and Feel

Features	Professional
Dockable/Floating Toolbars	✓
Dockable and Auto Hiding Windows	✓
Multiple View Support in Single Project (Supports MDI)	✓
Complies with Microsoft Windows Display Settings	✓

Customization

Features	Professional
Drag and Drop to Rearrange Tools/Toolbars	✓
Add Geo-processing Tools to Any Menu	✓
Create New Toolbars or Menus without Programming	✓
Extend the Applications with any COM-Compliant Development Environment	✓
Build New GIS Components with .NET Using Microsoft Visual Studio Add-Ins, Templates, and Code Samples	✓
Script Analysis, Conversion, Data Management, and Map Automation with Python	✓

Data Automation

Data Editing

General Editing

Features	Professional
Perform Unlimited Undo/Redo Operations	✓
Make Measurements Using Any Units, Including Custom Units	✓
Multiple Snap Environments Available	✓
Dockable Snapping Toolbar Makes It Quick and Easy to Control Snapping While Editing	✓

Snapping Types

Features	Professional
Edge	✓
End	✓
Intersection	✓

Midpoint	✓
Point	✓
Tangent	✓
Vertex	✓
Fuzzy	✓

Snapping to Topology Elements

Features	Professional
Topology Nodes	✓

Snapping Tolerance

Features	Professional
By Map Units	✓
Interactively	✓

Geometry Construction Options

Features	Professional
Create Theme (Point/Multipoint, Line/Multiline string, Polygon/Multipolygon)	✓
Specify an Exact X,Y Location	✓
Create Geometry from Existing Features in the Map	✓
Create a Curve Tangent to the Last Segment	✓
Flip the Orientation of the Geometry	✓

Geometry Creation Tools

Features	Professional
Point and Click On-Screen Digitizing	✓
Autocomplete Construction (Polygon Border, Freehand Curve)	✓
Add a Coordinate in Decimal Degree (DD, DMS, DDM) Format	✓
Construct a True Circular Curve	✓
Construct a Tangent Curve	✓

Construct Rectangles and Circles	✓
Add Coordinates along Existing Coordinates	✓
Region Grow	✓

Feature Manipulation Tasks

Features	Professional
Create Features Using New Geometry	✓
Create New Polygons Using the Geometry of Existing Features (Autocomplete Polygons)	✓
Reshape Existing Features	✓
Cut Polygon Features	✓
Adjacent Polygon	✓
Copy Parallel (Line)	✓
Divergence	✓
Create Mirror Copies of Existing Features	✓
Extend or Trim Existing Features	✓
Snap to Grid	✓
Split Existing Lines at Their Explicit or Implicit Intersection	✓
Add, Delete, Interactively Move, or Modify the Coordinate Values for Vertex Locations of Existing Features	✓
Explode vector and Explode vertices	✓
Group Features	✓

Feature Editing Tools

Features	Professional
Move, Rotate, Delete, Copy, and Paste	✓
Merge Existing Features	✓
Create New Features by Merging Features in the Same or Another Layer (Union)	✓
Create New Features from the Buffer of Existing Features	✓
Create New Polygons by Intersecting Existing Feature Classes	✓
Clip One or More Polygons with Another Polygon	✓

Attribute Editing

Features	Professional
Modify Each Selected Row Individually or as a Group (Attributes Dialog)	✓
Copy Attributes to One or More Rows Simultaneously	✓
Calculate Attribute Values Using Scripts (Field Calculator)	✓
Calculate Attribute Values from a Feature's Geometric Properties (Calculate Geometry)	✓
Calculate distance and Magnetic bearing	✓
Validate Attribute Values Using Rules Defining Valid Values (Domains)	✓
Enter Attributes for New Feature as They Are Created	✓
Edit Attributes in the Attributes or Table Window	✓
Table conditional Formatting	✓

Multipart Features (Point, Line, and Polygon)

Features	Professional
Add and Delete Parts	✓
Zoom to Parts	✓
Add, Delete, and Edit Vertex Locations	✓
Extract Vertices	✓
Create Separate Features from Each Part (Explode)	✓

Map Navigation while Editing

Features	Professional
Zoom to Feature Vertices	✓
Zoom to Feature Parts	✓
Pan and Zoom to Unplaced Annotation or the Feature Associated with the Unplaced Annotation	✓
Continuous Pan/Zoom	✓

Vector Data Transformations

Features	Professional
Polynomial Transformation	✓
Rubber Sheeting Transformation	✓
Affine Transformation	✓
Copy Feature Geometry from One Location/Layer to a New Location/Layer	✓

Generalization

Features	Professional
Simplify the Shape of Line Features (Generalize)	✓

Coordinate Geometry

Features	Professional
Create Fields to Store Coordinate Geometry (COGO) Measurements	✓

Raster Editing and Vectorization

Vectorize All Raster Formats

Features	Professional
1 Bit Raster Data	✓
8 Bit Raster Data (With Bilevel Classification Applied)	✓

IGiS Integration

Features	Professional
Vectorization into any Editable Vector Dataset	✓
Seamless Integration with Vector Data Editing Environment	✓

Vectorization Tracing

Features	Professional
Interactively Trace Raster Lines	✓
Ignore Holes in Raster Linear Features	✓

Automatic Vectorization

Features	Professional
Vectorise Entire Raster	✓
Vectorise Specific Raster Area	✓
Simultaneously Capture Line and Polygon Vectors	✓

Mobile

GPS Support

Features	Professional
Display Real-Time Location Points from a GPS Receiver	✓
Dynamically Center the Map on the Current GPS Point	✓
Store GPS Locations in a Log File	✓
Filter by GPS Input by Time, Distance, or Deflection	✓
Support of COM ports (with RTS and DTR control)	✓
Support of .sgs GPS file format	✓
GPS setting (3D fix, Time interval, Minimum Distance, Minimum DOP)	✓
Add Point, Line, Polygon	✓
Auto Pan GPS location	✓
GPS Information	✓

IGiS Mobile Support

Features	Professional
Create Mobile Map	✓

Multiuser Geodatabase Editing

General Editing

Features	Professional
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Isolate Editing Projects in Separate Versions (Create Version) Enabling a Variety of Workflows	✓
Delete Versions	✓
Simultaneously View and Edit Versioned GIS Data	✓

Administration Geo-processing

Versioning Geo-processing

Features	Professional
Alter Version	✓
Change Version	✓
Create Version	✓
Delete Version	✓
Post Version	✓
Reconcile Version	✓
Create Base, Create Branch , Push, Merge, Compare , Delete Local	✓

Short Transaction Editing

Features	Professional
Edit Non-versioned Simple Features	✓
Create Features and Enter Attributes for That Feature within a Single Database Transaction	✓

Spatial Referencing Image Data (Geo-referencing)

Tools

Features	Professional
Shift, Flip, Rotate, or Fit Image to Display	✓
Interactively Specify From and To Control Points	✓
Save and Load Control Points with Error and Accuracy Information	✓

Transformation Methods

Features	Professional
First-, Second-, and Third-Order Polynomial	✓

Save Spatial Reference Information

Features	Professional
Create a New Dataset (Rectify)	✓
Save Reference Information with the Image	✓

Data Management and Validation

Attribute Validation

Subtypes Geo-processing

Features	Professional
Add Subtype	✓
Remove Subtype	✓
Set Default Subtype	✓
Set Subtype Field	✓

Domains Geo-processing

Features	Professional
Add Coded Value to Domain	✓
Assign Domain to Field	✓
Create Domain	✓
Delete Coded Value from Domain	✓
Delete Domain	✓
Domain to Table	✓
Remove Domain from Field	✓
Set Value for Range Domain	✓
Table to Domain	✓

Create and Edit Relationships for Features

Features	Professional
One-to-One	✓
One-to-Many	✓
Many-to-Many	✓
Store Attributes for Relationships	✓
Enable Attachments for a Feature Class (Multimedia Support)	✓
Create and Edit Attachments for a Feature Class	✓

Topology Editing

Features	Professional
Construct and Edit Topologies Created from Layers in the Map	✓
Reshape Shared Edges between Features	✓
Modify the Coordinates of Shared Edges or Nodes	✓
Split Shared Edges at a Specific Point, Distance, or Percentage along the Edge	✓
Move Edges and Nodes to a Specific Location	✓
Shift Edges and Nodes Based on an Offset from Their Current Location	✓
Merge Connected Edges	✓
Create/Split Polygons from Lines or Create Lines from Polygons	✓
Split Lines Where They Intersect	✓
Validate a Specific Area or the Entire Topology	✓
Inspect Errors by Zooming, Panning, or Selecting the Features	✓

Topology Rule Violation Fix Operations

Features	Professional
Delete Features	✓
Subtract Features	✓
Create Features	✓
Merge Features	✓
Snap Features	✓
Extend Lines	✓
Trim Lines	✓

Split Lines	✓
Explode Features	✓
Simplify Features	✓

Networks

Utility (Geometric) Network Analysis

Features	Professional
Find Connected Network Features	✓
Find Disconnected Network Features	✓

Metadata

General

Features	Professional
Automatically or Manually Generate Metadata for All Items	✓
Import/Export Metadata	✓

Data Manipulation and Analysis

Coverage Geoprocessing

Analysis

Features	Professional
Clip	✓
Select	✓
Split	✓
Erase	✓
Identity	✓
Intersect	✓
Union	✓
Update	✓
Buffer	✓
Thiessen	✓
Summarize Within	✓
Aggregate Points	✓

Summarize Nearby	✓
Move Point on Line	✓
Polygon Numbering	✓
Merge Multiple Theme	✓
Find Existing Location	✓
Derive New Location	✓
Find Similar Location	✓
Append	✓
Find Duplicate Object	✓
Delete Duplicate Geometry	✓
Multiple Theme Backup/Restore	✓
Find Nearest Point	✓
Geotagged photo to theme	✓

Composite Features

Features	Professional
Polyline to Polygon	✓
Polygon to Line	✓
Polygon to point	✓
Multiline to Line	✓
Multi polygon to Polygon	✓
Point to Path	✓

Generalization

Features	Professional
Aggregate Polygons	✓
Simplify Building	✓
Dissolve	✓
Eliminate	✓
Simplify Line or Polygon	✓

Table Management

Features	Professional
Drop Index	✓
Index Item	✓
Add Item	✓
Drop Item	✓
Join Info Tables	✓
Add X,Y Coordinates	✓
Update IDs	✓

Projections

Features	Professional
Define Projection	✓
Project	✓
Transform	✓

Topology

Features	Professional
Build	✓
Clean	✓
Line Topology	✓
Find Polygon Errors	✓

General

Features	Professional
Tolerance	✓

Geo-processing Environment

Features	Professional
Use Python Window to Run Geo-processing Tools	✓

Create and Share New Geo-processing Tools Using Models or Scripts	✓
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Supported Scripting Environments

Features	Professional
C++	✓
JavaScript	✓
Python 2.6	✓
VBScript	✓
Visual Studio .NET	✓

General Data Management

Features	Professional
Append	✓
Copy	✓
Delete	✓
Delete Identical	✓
Find Identical	✓
Merge	✓
Merge Branch	✓
Rename	✓
Select Data	✓
Calculate Value	✓
Sort	✓

Table Management

Features	Professional
Copy Rows	✓
Create Table	✓
Delete Rows	✓
Get Count	✓
Analyze	✓
Pivot Table	✓

Editing

Features	Professional
Erase Point	✓
Extend Line	✓

Flip Line	✓
Generalize	✓
Snap	✓
Trim Line	✓

Field Management

Features	Professional
Add Field	✓
Assign Default to Field	✓
Calculate End Time	✓
Calculate Field	✓
Convert Time Field	✓
Delete Field	✓
Set Update Field	✓
Update Field	✓

Feature Management

Features	Professional
Add X,Y Coordinates	✓
Check Geometry	✓
Copy Features	✓
Delete Features	✓
Multipart to Single Part	✓
Repair Geometry / Invalid to valid	✓
Points to Line	✓
XY to Point	✓
XY to Line	✓
XY to Polygon	✓
Extract XY location from pdf, text, doc, xls, ppt, etc.	✓
Feature Vertices to Points	✓
Polygon to Line	✓
Split Line at Point	✓
Split Line at Vertices	✓

Slice Object	✓
Unsplit Line	✓

Generalization

Features	Professional
Dissolve	✓
Simplify Line (Cartography)	✓
Smooth Line (Cartography)	✓
Aggregate Polygons (Cartography)	✓
Eliminate	✓
Merge Divided Roads (Cartography)	✓
Simplify Building (Cartography)	✓
Simplify Polygon (Cartography)	✓

Projections and Transformations

Features	Professional
Convert Coordinate Notation	✓
Create Custom Geographic Transformation	✓
Create Spatial Reference	✓
Define Projection (Single Input), multi projection coordinate	✓
Reproject Raster/Image by selecting projection form library	✓
Reproject Raster/Image using reference image	✓

Vector Data Projection

Features	Professional
Re-project	✓
Define projection in theme/feature (if does not exist)	✓
Reproject vector by selecting projection form library	✓
Reproject Vector using reference image	✓
Reproject Vector using reference theme	✓
Decimal Degrees to Degree Minute Second unit conversion	✓

Raster Management

Features	Professional
Add Color Map /Edit PCT	✓
Build Pyramids	✓
Build Pyramids and Statistics	✓
Build Raster Attribute Table	✓
Calculate Statistics	✓
Clip	✓
Layer Stacking/Composite Bands	✓
Copy Raster	✓
Copy Raster Catalog Items	✓
Create Pan-Sharpened Raster Dataset	✓
Create Raster Catalog	✓
Create Raster Dataset	✓
Delete Color Map	✓
Delete Raster Attribute Table	✓
Delete Raster Catalog Items	✓
Export Raster Catalog Paths	✓
Export Raster World File	✓
Extract Sub-dataset	✓
Repair Raster Catalog Paths	✓
Get Cell Value	✓
Get Raster Properties	✓
Mosaic (with Optional Color Balancing)	✓
Mosaic to New Raster	✓
Raster Catalog to Raster Dataset (Mosaicking)	✓
Resample	✓
Split Raster	✓
Tone Balancing of Multiple Selected Image	✓

Raster Mosaics

Features	Professional
Add Rasters to Mosaic Dataset	✓
Color Balance Mosaic Dataset	✓

Create Mosaic Dataset	✓
Create Referenced Mosaic Dataset	✓
Define Mosaic Dataset No Data	✓
Import Mosaic Dataset Geometry	✓
Remove Rasters from Mosaic Dataset	✓

Raster Conversion

Features	Professional
ASCII to Raster	✓
DEM to Raster	✓
Feature to Raster	✓
Float to Raster	✓
Raster to ASCII	✓
Raster to Float	✓
Raster to Other Format (Multiple)	✓
Raster to Point	✓
Raster to Polygon	✓
Raster to Polyline	✓
Point to Raster	✓
Polygon to Raster	✓
Polyline to Raster	✓

Raster Transformation/Projection

Features	Professional
Flip	✓
Mirror	✓
Project Raster	✓
Rescale	✓
Rotate	✓

Conversion

Features	Professional
Excel to Table	✓
Feature Class to Feature Class	✓
Feature Class to Shape file (Multiple)	✓

Import CAD Annotation	✓
Import Coverage Annotation	✓
Import from CAD	✓
Table to dBASE	✓
Table to Database	✓
Table to Table	✓
Add CAD Fields	✓
Create CAD XData	✓
Export to CAD	✓
Import from E00	✓
KML to Layer	✓
Layer to KML (Multiple)	✓
Map to KML	✓

Layers and Table Views

Features	Professional
Apply Symbology from Layer (Legend Template)	✓
Make Feature Layer	✓
Make Mosaic Layer	✓
Make Query Table	✓
Make Raster Catalog Layer	✓
Make Raster Layer	✓
Select Layer by Attribute	✓
Select Layer by Location /Overlay Analysis	✓

Core Analysis

Features	Professional
Buffer	✓
Clip	✓
Intersect	✓
Multiple Ring Buffer	✓
Select	✓
Spatial Join	✓
Summary Statistics	✓
Table Select	✓
Union	✓
Create Thiessen Polygons	✓
Erase	✓
Identity	✓

Split	✓
Symmetrical Difference	✓
Update	✓

Spatial Statistics Tools—Mapping Clusters

Features	Professional
Hot Spot Analysis	✓
Heat Map Generation	✓

Spatial Statistics Tools—Utilities

Features	Professional
Calculate Length	✓
Calculate Perimeter	✓
Calculate Areas	✓

Project Management

Features	Professional
Create Project	✓
Open project	✓
Close Project	✓
Create View	✓
Delete Project	✓
Rename Project	✓
Save Project	✓
Backup/Restore Project	✓
Project Migration	✓
Project Properties	✓
Server Setting	✓
Administration Tools	✓
Import from LDAP server	✓

Table Joins

Features	Professional
Add Join	✓

Remove Join	✓
Hard Join and Soft Join	✓

Data Indexing

Features	Professional
Add Attribute Index	✓
Add Spatial Index	✓
Remove Attribute Index	✓
Remove Spatial Index	✓

Other Tools

Features	Professional
Almanac	✓
IGiS Tool Box	✓
Create Demand	✓
Image Footprints	✓
Model Maker	✓

Image Processing Modules

Image Processing General Tools

Features	Professional
Add Image	✓
Remove Image	✓
Add WMS	✓
Save Image of View As (Snap Shot)	✓
Brightness and Contrast Adjustment Slider	✓
Generate Histogram of the selected Image	✓
Draw Scatter Plot of an image using bands	✓
Draw 3D Scatter Plots	✓

Numeric Dump to Display the intensity value of selected pixel along with Surrounding seven pixel	✓
Display Image In Gray Scale	✓
Threshold- categorize the pixels in input image based on the threshold value	✓
Copy to Clipboard	✓
Invert Image Display	✓
Inquire box to Enable the Region of Interest	✓
Query Cursor – Enable Query Cursor to the Center of the display Area	✓
X-Profile	✓
Y-Profile	✓
Line profile	✓
Spectral Profile	✓
Multi Spectral Profile	✓
Support of 16 Resampling Method	✓
Pseudo Color – Edit PCT, Save PCT, Reset PCT and Restore PCT	✓
Image Properties	✓
Rater Attribute Info Table	✓
On the Fly Image Enhancement and Image Filtering tools	✓
No enhancement	✓
Band Selection Tool	✓
Image Classification Information	✓
Image Data to See the DN value of Entire Image	✓

Data Preparation

Features	Professional
Create Blank Image	✓
Reproject	✓
Clear Projection	✓
Image Statistics	✓
Subset Image	✓
Subset Image using Vector Polygon	✓
Split Image	✓
Mosaicking (Pixel and Georeferenced based)	✓
Draw Outline	✓

Image Collage	✓
Layer Stacking	✓
Fill Area Using Vector Polygon	✓
Stack Analysis (conditional computation and stack statistics)	✓

Data Corrections

Features	Professional
Atmospheric Correction – Haze Reduction, Haze Reduction ISRO	✓
Atmospheric Correction RESOURCESAT2 AWIFS	✓
Radiometric Correction- Brightness Inverse, Restripe, Replace Bad line	✓
Geometric Correction – Polynomial, Rubber sheeting, Affine	✓

Data Analysis

Features	Professional
Look up Table Update	✓
Image Masking by Mask Image	✓
Image Masking by Mask Image – Inner Masking and Outer Masking	✓
Enhance	✓

Image Enhancement

Features	Professional
Linear	✓
Gaussian	✓
Logarithmic	✓
Density slice	✓
Square Root	✓
Histogram Equalize	✓
Histogram Matching	✓
Tone Balancing	✓

Image Dodging	✓
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Image Filtering

Features	Professional
Convolution	✓
Texture – Occurrence and Co-Occurrence	✓
Adaptive – Lee, Frost, Gamma, Kuan, Local Sigma, Box, Enhance Lee, Enhance Frost, GMAP	✓
Crisp	✓
Laplacian	✓
Statistical	✓
FFT – Forward FFT and Inverse FFT	✓
FFT Filter	✓
Fourier Editor	✓
Directional Edge	✓
Focal Analysis	✓

Image Transformation

Features	Professional
Indices(Landscape/Geology/Vegetation/Water/Snow cover detection), fAPAR	✓
Vegetation Post processing Tool	✓
Natural color Image Generation	✓
Principal Component Analysis (PCA)	✓
Inverse PCA	✓
De-Correlation Stretch	✓
Resolution Merge/Pan-sharpening	✓
Image Reclassify, Image Scale and Rescale. Merge Class , Summary report , Summary report by Polygon	✓
Wavelet Fusion	✓
PCA Image Fusion	✓
High Pass Image Fusion	✓
RGB to HIS	✓
HIS to RGB	✓

Image Classification

Features	Professional
Unsupervised Classification	✓
Supervised Classification	✓
Threshold	✓
Generate Statistics of ROI/ Create Signature File	✓
Post Classification Smoothing	✓
Contingency Matrix	✓
Signature Separability	✓
PCT Edit	✓
Scatter Plot	✓
Class Information	✓
Fuzzy Classification	✓
Fuzzy Convolution	✓
Segmentation	✓
Random point creation	✓
Signature editor	✓
Recode classified image (By point , line , Polygon)	✓
Object based image segmentation	✓
Random Forest (RF) Classification	✓
SVM Classification	✓

Change Detection

Features	Professional
Change Detection based on DN Values	✓
Advance Change Detection module along with Site Monitoring Capability	✓
Advance Change Detection Module with Image Mis-registration Handling capability	✓
Advance Change Detection using More than 15 Methods/Algorithm	✓
Automated change detection based on classification of provided images. There are three modes of operation. Fully Automatic - Uses Unsupervised classification Manual - Uses Supervised classification Using classified image as a reference	✓
Cut and Fill Analysis	✓
Change Detection Report Generation	✓

Change Visual Tools – Swipe, Swipe Flickering and Swipe Square Pointer	✓
Object Identification - Create Object Library and Find Object	✓
Object Based Segmentation - performs the segmentation based on the selected object to be identified using the spatial reference and color value.	✓
Post Processing – Feature Based Change, Create Change Mask and Extract Change Using Mask	✓
Site Monitoring	✓
Automatic Feature Extraction	✓

Conversion

Features	Professional
Raster To Vector	✓
Vector To Raster	✓
PCT to RGB	✓
ASCII to Image	✓
Image To ASCII	✓

Other Important Tools

Features	Professional
Linear Algebraic Combination - performs the operation on the bands of input image using the expression specified	✓
Conditional Calculator	✓
RGB Clustering	✓
Band Arithmetic - performs the operation on bands of two different images as per specified expression	✓
Upgrade/Degrade the resolution of input image by an integer factor in the X and Y directions	✓
Skeletonise tool to Create Skeleton of Image	✓
Normalized Radiometric - used to enhance the image by normalizing it using the Radiometric method	✓
Bit Conversion to change the radiometric resolution of the Image	✓
Normalize by saturation radiance method i.e. to enhance the image by normalizing it using the saturation radiance	✓

Change resolution	✓
Proximity Analysis	✓
Create Demand	✓
Land surface Temperature (LST)	✓

Batch Processing

Features	Professional
Gaussian Enhancement	✓
Subset using vector Polygon	✓
Vegetation Indices	✓
Landscape Indices	✓
Supervised and Unsupervised Classification	✓
Printing	✓

Advanced Modules

Network Analysis

Features	Professional
Define Network Rules	✓
Add Turn Impedance	✓
Delete Turn Impedance Table	✓
Create/Edit Turn Impedance Table	✓
Show/Edit Turn Impedance Table	✓
Add Network Location	✓
Add Network Location from Theme	✓
Edit Network Locations	✓
Move Network Locations	✓
Remove Network Locations	✓
Remove All Network Locations	✓
Change Location Sequence	✓
Find Shortest Path	✓
Find Optimum Path	✓
Location Analysis	✓
Multi Location Analysis	✓

Find Shortest Path Using Weighting	✓
Find Shortest Path Using Distance Only	✓
Find Shortest Path Using Distance Plus Weight	✓
Find Shortest Path Using Distance Multiplied by Weight	✓
Find Shortest Path Using Direction	✓
Find Shortest Path Using Direction like One Way, Two-way, etc.	✓
Find Shortest Path based on Location priority	✓
Find Multiple path/route to all Location	✓
Save Path Direction in a text file	✓
Save Output path Into Theme	✓

Terrain Analysis

Features	Professional
DEM to Contour	✓
DEM from Point/Line (Linear, IDW and Kriging Methods)	✓
Slope	✓
Aspect	✓
Hill shade	✓
HRSR Map	✓
Topographic Normalize	✓
Painted Relief	✓
Color Coded Map	✓
Cut and Fill Analysis	✓
Level Slice	✓
Elevation Profile	✓
Line of Sight	✓
View Shed Analysis	✓
DEM Area/Volume	✓
Void Removal	✓
Area/Volume from Theme Selection	✓
Hypsometry	✓
Semi Variance	✓

Surface Specification Point	✓
Anaglyph	✓
Surface Specification Points	✓
Volume Between Surface	✓
Best Path – Finds the best path between two point on the top of DEM	✓
Route Inter-visibility – Finds the area visible along a path	✓
Area Visibility – Identifies area based on input details (angle and distance)	✓
Find Flat Area	✓

Neural Network

Features	Professional
Unsupervised Classification	✓
Supervised Classification	✓

Raster GIS Analysis.

Features	Professional
Spatial Analysis	✓
Distance Tools	✓
Hydrology Tool	✓
Math Tool	✓
Conditional Tool	✓
Extraction	✓
Local	✓
Generalization	✓
Multivariate	✓
Neighborhood	✓
Weighted Overlay, Analytic Hierarchy Process (AHP)	✓
Zonal Tools	✓
Record by Vector	✓
Locate DEM Position	✓
Tracking Analyst	✓
Tracking Depiction	✓
Calculate Density (Line Density, Point Density)	✓

Radial Basis Functions (RBF)	✓
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Network Utility

Features	Professional
Find Network Junctions	✓
Split Network	✓
Split Network by Junction	✓
Connect Junction with Network	✓
Find Shortest Location	✓

Hyper- Spectral Tools

Features	Professional
IARR (Internal Average Relative Reflectance)	✓
Log Residual	✓
Auto Log residuals	✓
Normalize	✓
AUTO Relative Reflectance	✓
Rescale	✓
Spectrum Average	✓
Signal Noise	✓
Mean Per Pixel	✓

SAR Module

Import Tool

Features	Professional
Auxiliary Information to the all table info of CEOS and Tiff format	✓
RISAT-1 data	
Import SLC Data, TerraSAR-X, SENTINEL-1	✓

Calibration

Features	Professional
Generation of Back Scattering image – Beta, Sigma and Gamma Naught images	✓
Calibration of RISAT- 1 Data	✓
Calibration of RISAT EOS- 04 Data	✓
Correction for Hilly Terrain for RISAT	✓
Calibration of ALOS data	✓
Calibration of RADARSAT-2	✓
Calibration of SENTINEL-1	✓
Calibration of TerraSAR-X	✓

Conversion

Features	Professional
Complex to Amplitude	✓
Complex to Intensity	✓
Amplitude to Intensity	✓
Intensity to Amplitude	✓
Amplitude to dB	✓
dB to Linear	✓
Geo-reference RISAT Image	✓
Arithmetic Operation	✓
Rotation and Flip	✓
Change Resolution of the image	✓
Converts Slant Range to Ground Range	✓
Phase Image	✓

Hybrid Polarimetric Analysis

Features	Professional
Stoke Vector for Hybrid Polarimetric	✓
Full Polarimetric to Hybrid Polarimetric	✓
Phase Calibration of Stoke Vector	✓

Hybrid Polarimetric Parameters	✓
Hybrid Image Decomposition	✓

Speckle Filter

Features	Professional
Adaptive	✓
Statistical	✓
Convolution	✓
Filter Evaluation using SSI and SMPI	✓
Canny Edge-Detection	✓

Data Analysis

Features	Professional
Image statistics and Class Information	✓
Rule Based Segmentation	✓
Box Car Classifier	✓
K-Means Clustering	✓
EM Clustering	✓
Texture Analysis	✓
Edge Detector	✓
Shapefile Overlay	✓
Quad Polarimetric Parameter	✓
Radar Vegetation Index (Dual Pol and Compact Pol)	✓
Wavelet Fusion	✓
Change Detection	✓
CFAR	✓
Radon Wake Detection	✓
Sea State Correction	✓
Burst Mosaic	✓
Flood Inundation Module	✓

Meteorological GIS

Features	Professional
Import KALPANA-1, INSAT-3A and INSAT-3D data	✓
Import T-Phi Data	✓
T-Phi Gram Generation using Station Sounder data	✓
T-Phi Gram Generation using Satellite Sounder Data	✓
View/Edit Station	✓
View/Edit Sounder Data	✓
Sectorization Module	✓
Get Sector Image	✓
Satellite Image Prediction using SATR, DFT STAR and Hybrid Method	✓
Apply Look Up Table	✓
Wind Vector Generation using Lat-long information provided with WVW, IRW, VSW and MRW file of INSAT-3D Image data	✓

Mining

Features	Professional
Multilayer Profile display	✓
Thiessen	✓
Surface Volume	✓
Linear Interpolation	✓
Graticule	✓
Cylinder Creation	✓

Photogrammetry

Features	Professional
Spectral Subset	✓
Pre-processing	✓
Mark GCP	✓
Create/ Merge GCP File	✓
Bundle Block Adjustment (with RPC and camera model)	✓
Create 3D Model	✓
DEM Generation	✓
DEM Correction	✓
Ortho-rectification	✓

DSM to DTM	✓
Multi-Level B Spline	✓
Gap using Spline	✓
Gap with Stepwise Resampling	✓
Fill the Gap while DEM generation	✓
Positional Accuracy Assessment	✓
DEM Mosaic	✓

SWAT

Features	Professional
New Project	✓
Watershed Delineation	✓
HRU Analysis	✓
HRU Threshold	✓
SWAT Editor	✓

Geo Statistical Analysis

Features	Professional
Trend Analysis	✓
Normal QQ Plot	✓
General QQ Plot	✓
Histogram	✓
Semi-variogram	✓
Covariance, Cross-covariance	✓
Voronoi Map / polygon / diagram	✓

Geo Spatial Analysis

Features	Professional
Cluster and Outlier	✓

Solar potential

Features	Professional
Sky View Factor	✓

Potential Incoming Solar Radiation	✓
Potential Annual Insolation	✓

AI/ML based Object Detection (Geo-Drishti)

LiDAR

Features	Professional
Training the dataset	✓
AI / ML based Prediction	✓

EXTENSION

Basic Features of Extensions -

- Support different LAS , LAZ and XYZ formats
- Support classification as per ASPRS (The American Society for Photogrammetry and Remote Sensing)
- Classification of Lidar data based on User defined, Height value from attribute table and Height Z value.
- Generation of DEM & DSMs or TIN with the formation of Hill shade
- Incorporate additional break line or surface feature with LiDAR
- Query and display based on certain filter criteria. Filter properties include area of interest, classification code, classification flag, and LiDAR return value.
- Facilities to extracting overlap or Duplicate points.
- Support output generation in both Raster and vector file formats. For ex- tiff, .shp, ASCII.
- Support for Well Known Text (WKT) definitions for Coordinate Reference Systems.
- Facility to generate boundary polygon based on Use points, Bounding box, LAX information etc.
- Creating new LAS files with RGB, Gray Ramp, False color values using existing LAS file.
- Facilities to split and merge point cloud data.

LAS Tools

Features	Professional
Las Merge	✓
Las Boundary	✓
Las2DEM	✓
Las2Shape	✓
Las Ground	✓
Las Overlap	✓
Las Classify	✓

Las Duplicate	✓
Blast to ISO	✓
Las Canopy	✓
Las Clip	✓
Las Grid	✓
Las Height	✓
Las Tile	✓

Working with 3D

Introduction

IGiS 3D is based on 64-bit multithreaded architecture. It has both Desktop and enterprise version. Further, the tools can be customized and integrated with web application by using standard web services, SDK etc. IGiS Pruthvi is an end-to-end 3D extension for creating, processing, viewing and analyzing, massive (Global scale) 3D geospatial content of all geometries and applications such as OGC 3D tiles, Photogrammetry, 3D Buildings, BIM/CAD and Point Clouds. All the features will be available in both the desktop and the web application.

Some major features:

- Support large amounts of heterogeneous distributed 3D geographic data.
- Support of Terabytes 3D Geospatial data
- Advance visualization and analytics
- Support of Desktop, Web and Mobile platform
- Server-based workflow & Offline mode
- 3D development framework with SDK for customization
- Ready-to-use 100's of UI widgets into your custom apps
- GPU acceleration
- Compatibility with WebGL, virtual reality (VR), augmented reality (AR) and other technologies to bring more reality and convenience three-dimensional experience.
- Outdoor / Indoor integration
- Air-space/surface/underground visualization
- Capability to switch over between 2D/2.5D and 3D by the click of button. One can view 2D & 2.5D/3D view simultaneously and can compare the geography. During moving and panning the map in one view (2D or 2D/3D), it automatically change the respective view of other view (2D or 2D/3D). The IGiS 3D has facilities to build different GIS based application usage in realistic manner in a quick method.
- Supports for 3d models / CityGML up to LOD 4 level.
- Supports for importing textures of 2D/3D assets and thematic mapping of 3D tile.

- Capability to export 2D/3D object layers as scene layer files. Further, users can upload it on any 3D platform.
- Supports for consuming / streaming 2D/3D OGC standard services (publishing) in OGC formats.

General tools for 3D

Layout View

Features	Professional
View data on 3D Globe	✓
View Data in 3D,2D and 2.5D	✓
Facility to add, import and manage several types of layer as well as basemap	✓
Setting transparency for specific layer	✓
Interactive tool to make 3D quires such as measurement tool	✓
3D navigation (Zoom in zoom out to the full extent of all your data)	✓
Creating and consuming a set of 3D bookmark for the 3D view	✓
Provides set of 3D analysis tool and show case tool for Visualizing andAnalyzing GIS data in a 3D view	✓
Facility to create Multilayer Screen for comparing	✓

Data Support

Features	Professional
Data support	✓
Supported 3D & 2D data with placement of data as per snapping rule (@ Global Scale)	✓
Imagery	✓
High-resolution satellite, drone, and aerial imagery	✓
Terrain	✓
Global-scale terrain in any projection	✓
BIM & CAD	✓
Visualize massive design models at the highest detail	✓
3D Building	✓
Cities with millions of textured buildings	✓
Photogrammetry	✓
Massive photogrammetry or LiDAR-derived meshes	✓

Point Clouds	✓
Billions of points (LiDAR) with millimetre precision	✓
Vector data	✓
GeoJSON, KML, Shape etc...Facilities to import / generation of 3D from 2D as per field value	✓
OGC	✓
WMS, WFS, WCS, CSW, WPS etc...	✓

3D Layout
Project Management

Features	Professional
Create Project	✓
Save Project	✓
Refresh	✓

Data Management

Features	Professional
Base map	✓
Layer Management	✓
Import/ Add	✓
Capture View	✓
Map Printing/ Share Map in 3D	✓

Import/Add

Features	Professional
Terrain Tiler : Import / export (In OGC format	✓
3D building tiler : Importing and generation of tile which can be used by any user as tile service	✓
WMS : addition of vector maps/ Map services	✓
GL TF : facility to add 3D symbol as per industry standards	✓
KML	✓
CZML, CityGML	✓
GeoJson	✓
Imagery Tiler: Importing any raster images - satellite /toposheets.Generation of tile service	✓

Model Tiler : generation of tile services for standard industry format 3Dsymbol with or without texture	✓
Point cloud Tiler; generation of point cloud data of LIDAR or elevation.Import / export(used by any user) option is also provided	✓
Elevation Tiler: Import / export (OGC format) of elevation data for use in3D. TIN, geotiff, DEM, DTED etc. can be imported.	✓

3D Setting

Features	Professional
Rendering Effect Setting; (i)Atmospheric Rendering (ii)LightningRendering	✓
In Depth Monitoring Camera position setting	✓
Key Board Control (control the direction by pressing A S D W Q E andUp, Down, Left, Right keys on the Key board)	✓
Manage Terrain	✓

2D/3D View

Features	Professional
3D/2D and 2.5 D Visualization	✓

Video Recorder

Features	Professional
Video Recording	✓
Video Setting	✓

3D Analysis

Features	Professional
Measuring Tools; (i)length (ii)ground (iii)Profile (iv)Area/Floor Area (v)Angle (vi)Height (vii) Triangulate (viii)Coordinate	✓
Analysis ; (i) Sunshine Analysis (ii) Visual Field (iii) Variance Analysis (iv) Terrain Excavation (v) Transparent Surface (vi)	✓

Slope/Aspect (vii) Model Cut (viii) Model Flattening (ix) Model Cutting	
Location	✓
Bookmarks	✓
Tags	✓
Swipe	✓
Plot (create geometries and symbology in 2D and 3D)	✓
Map Compare	✓
Flight Roaming	✓
Contour	✓
Weather Effect	✓
Line of Sight	✓
Dynamic River	✓
Skyline	✓
My Location	✓
Sub Mergence Analysis	✓
Global Building	✓
Face Surfing	✓
Clip Region	✓
Particle System	✓
Fog	✓
Snow Cover	✓
Wind	✓
Plot Video	✓
Keyboard Roaming	✓
Underground for Rectangle and Polygon	✓
Buffer for Point, Line and Polygon	✓
Camera History	✓
Timeline	✓
Image Enhancement	✓

Plugins

Features	Professional
Attribute Analysis/ Attribute Query Analysis	✓
Buffer Analysis	✓
Tile Selection	✓
Diffusion	✓
Legend Creator	✓

Target Scan	✓
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Building Parts Editing

Features	Professional
Supports Interactively authoring/doctoring of building facade of an image or an existing textured model. The rules can be set as well as it provide attribute information if required in report form.	✓

3D Showcase

Features	Professional
IGiS 3D provides out of box 3D application use-cases for 3D based analysis as a separate scene. Any user can able to view it. Further, it provides supports for user to develop new showcases. Some of the showcase are: Metro train Rocket Launch Migration Map Big data analytics Roads Power line Building parts etc.	✓

SDK Support

Features	Professional
IGiS 3D provides SDK for further customization /development of new tools and GUI as per user requirement. It supports all industry standard programming languages.	✓