SMART Point Clouds
The best for your LiDAR data and 3D imaging!

Automatic Target-less Registration

Gexcel involved in RAMSES Project – 3D Survey of Venice City — Courtesy of Insula Spa

Gexcel
Geomatics & Excellence

JRC 3D Reconstructor
Software for LiDAR Data

LEXR
Software for Laser Scans

POINT3
Software for Point Clouds

SUITE
Software for LiDAR Data

FARO
Leica Geosystems RIEGL STONEX Teledyne Optech Topcon Zoller+Fröhlich
Software

PixR³ and PixR³ AIR
Extract the 3D from images!
An easy and affordable software to get colored 3D point clouds from images.
- Automatic data processing and camera calibration
- Unlimited number of images
- Colored 3D point clouds and meshes generation
- Perfect integration with with JRC 3D Reconstructor®
PixR³ AIR is specifically designed for UAVs dataset.

Scan to Vector Suites
BIM Suite. The speed and accuracy of the automatic target-less scans registration combined with structure, cylinder and planar extraction in one single platform along with Revit integration.
INDUSTRIAL PLANTS Suite. The speed and accuracy of the automatic target-less scans registration combined with structure/cylinder extraction along with PDMS, CADWorx (and a host of other platforms) integration.

FULL (Educational offer available)
The leading and worldwide well known top level Gexcel software to easily integrate multi-platform and multi-resolution 3D models and manage large cartographic coordinates (UTM, ...), Lidar data, Hi-Res RGB images, GNSS topographic 3D surveyed points and 3D mesh models. LineUp® Pro (for automatic target-less registration) included.

CONSTRUCTION
Designed for construction, infrastructures and civil engineering surveying projects. The perfect answer to the needs of surveyors working in civil engineering.
- Cross sections and front buildings, orthographic views easy extraction
- Displacement and verticality maps, as-built as designed analysis, areas and volumes evaluation
- Easy transfer the results to CAD for easy deliverables production

MINING/TUNNELLING
The outstanding solution for mines and tunnels surveying projects using Lidar sensors and UAVs.
- DTM generation and editing with an easy workflow
- Contour lines, crests&toes, cut&fill volumes, profiles and plan views
- UAV GeoTIFF mapping

HERITAGE/ARCHITECTURAL
The worldwide outstanding software for cultural heritage and architectural projects. Designed to easily create 3D colored models using Hi-Res RGB images acquired both from the cameras mounted on the laser and from independent external cameras.
- Create mesh models from point clouds or import meshes from third-party software
- Calibrate and map full resolution RGB images on mesh models
- Extract Hi-Res orthophotos for a perfect colored representation

PointR³
The perfect software to merge point clouds from any Lidar source (mobile, terrestrial laser scanner, UAV, airborne) without limit on the file dimensions.
- Easily manage no limits point clouds, in different formats
- Generate HD measurable depth images (Solid Images) and easily extract 3D drawings using the gexcel CAD plug-in
- Extract orthophotos, videos and CAD drawings

JRC 3D Reconstructor®
THE WORLDWIDE WELL KNOWN SOFTWARE FOR LIDAR DATA PROCESSING!
- Powerful tools for point clouds registration and geo-referencing:
  > LineUp®
  > LineUp® Pro (for automatic target-less registration)
  > LineUp® Notes (iPad free APP)
- User friendly interface

© Gexcel Srl. All the names used in this sheets are registered trademarks. All rights reserved.
Data Processing Workflow

JRC 3D Reconstructor® Registration Tools

- LineUp®
  - Point clouds importing and filtering
  - Automatic target detection
  - Geo-referencing
  - Scans alignment per groups
  - Cloud to cloud best fitting alignment
  - Bundle adjustment

- LineUp® PRO
  - Automatic target-less registration
  - Interactive validation process
  - Automation and user control balancing

JRC 3D Reconstructor® Registration Tools

- No Limits Point Clouds Manager
  - Import of JRC 3D Reconstructor® projects, Lidar data and 3D meshes
  - Handling and visualization of massive point cloud models

JRC 3D Reconstructor® Registration Tools

- PointR³
  - Import of JRC 3D Reconstructor® projects, Lidar data and 3D meshes
  - Handling and visualization of massive point cloud models

JRC 3D Reconstructor® Registration Tools

- Delivered for CAD
  - Read Solid Images in CAD
  - Digitize Solid Images in 3D

DATA PROCESSING

- JRC 3D Reconstructor®
  - Managing and merging of different data
  - Data filtering and editing
  - 3D meshing and Hi-Res texturing
  - DTM creation
  - Hi-Res images calibration (also spherical)

- No Limits Point Clouds Manager
  - Elevations, plans, cross sections (*.dxf polylines)
  - Models comparison for planarity, verticality and change detections maps
  - Texturized 3D meshes (several formats available)
  - True orthophotos ready for CAD
  - Mining/Tunnelling tools (cut&fill volumes, crests&toes, tunnel cross sections, etc.)
  - Unwrapping of cylindrical and spherical surfaces

- Delivered for CAD
  - HD elevations and plans as Solid Images (high resolution depth image measurable in 3D)
  - Solid Images exportable in JRC 3D Reconstructor® (or third-party software) as a point cloud
  - Large change detection maps
  - Fly-through videos of large models

© Gexcel Srl. All the names used in this sheets are registered trademarks. All rights reserved.
### Technical Notes

<table>
<thead>
<tr>
<th>LiDAR data importing</th>
<th>CONSTRUCTION</th>
<th>MINING</th>
<th>TUNNELLING</th>
<th>HERITAGE</th>
<th>ARCHITECTURAL</th>
<th>FORENSIC</th>
<th>FULL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct importing of FARO and TOPCON colored scans</td>
<td>ANY</td>
<td>ANY</td>
<td>ANY</td>
<td>ANY</td>
<td>ANY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineUp® - Point clouds importing and filtering</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineUp® - Automatic target detection and geo-referencing</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineUp® - Scans registration per groups</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineUp® - Cloud to cloud best fitting registration</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineUp® - Bundle adjustment</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LineUp® - Automatic target-less registration</td>
<td>Add-on</td>
<td>Add-on</td>
<td>Add-on</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meshing type 1. Uniform and multi-resolution mesh</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meshing type 2. Mesh from current view</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meshing type 3. Topographic mesh - DTM</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D mesh for indoor, statues, tanks, underground tunnels</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual Scan and points clustering tools</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verification tool for planarity and change detection maps</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point clouds color editing</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any external camera calibration and HR texture mapping</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal camera calibration tools</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spherical images calibration</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAV GeoTIFF mapping</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross sections</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthophoto, cylindrical and spherical images extraction</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthophotos using high resolution textured models</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear distances, areas and volumes, link to CAD</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tunnelling tools (cross section along tunnel axes)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut &amp; fill volumes</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crests &amp; toes for mining</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mesh border edges detection</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fly-through videos of 3D models</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### System Requirements

- **OS:** Windows (XP SP2, Vista, 7, 8, 10)
- **Version:** 64 bit
- **CPU:** multi-core processor (8 Cores at least)
- **Graphics card:**
  - NVIDIA GeForce GTX 2GB ram (for large use of points)
  - NVIDIA Quadro (for large use of mesh and texture)
- **RAM:** 16 GB

### Marketing Notes

- **Languages:** Chinese | English | Italian | Japanese | Spanish
- **Licensing:** USB dongle key
- **Trial version:** 30-days evaluation | All functions available | Saving locked | Available on [www.gexcel.it/en/download](http://www.gexcel.it/en/download)
- **Educational offer:** available for JRC 3D Reconstructor® Full