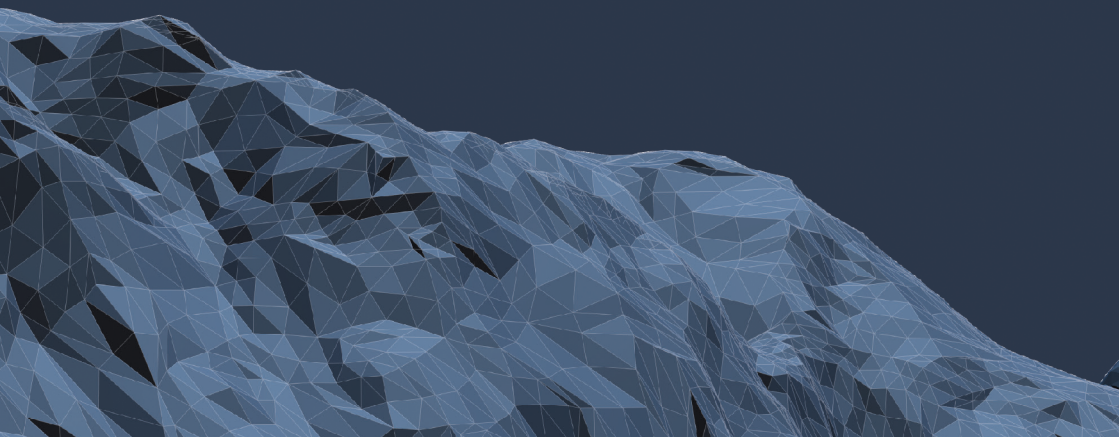


TRIAN3DBUILDER

Database Generation System



Trian3DBuilder
Product Information
Version 8.0

Contents

System Requirements	4
Terrain Types	4
General	4
Generation of various types of terrain	4
Handling and Editing	5
Ease of use	5
WYSIWYG-Editing	5
Road WYSIWYG-Editing	5
Comprehensive Vector Editing	5
Misc GUI Features	6
Data Management	7
Levels of Detail	7
Vector generation templates	7
Modifiers for vector generation templates	8
Modules	10
Geotypic	10
Roads	10
Roads Plus	11
Airport	11
Maritime	11
Sensor	12
Software Development Kit	12
Lua Scripting	12
Scope of supply	12
Generation	13
Object Placement	13
Object Generation	13
Building Generation	13
Geometry integration	13
Comprehensive database optimization	13
Verification of databases in internal 3D viewer	14
Further Features	14
Terrain Exporters	15
OpenFlight / MetaFlight Exporter	15
FBX Exporter	15
glTF modern 3D format for game engines	15
CDB Exporter	15
Datasmith Exporter	16
VBS®3 Exporter	17
Steel Beasts Professional® Exporter	17
OpenDRIVE Exporter	17
More Exporters	17
Dependent Exporters	17
Supported Formats	18
Elevation	18
Import	18
Export	18
Landcover	19
Satellite	19
Vector data	19
Import	19
Export	20
Textures	21

Import	21
Export	21
Objects	22
Import	22
Export	22
Geo Imagery	23
Import	23
Export	24

System Requirements

- Standard PC with Microsoft Windows 11
- Works on 64-bit systems
- 1.5 GB free space on the hard disk
- Keyboard
- 3-key mouse with wheel
- Minimal requirements:
 - x86 CPU with 8GB RAM
 - 3D graphics card e.g. NVIDIA Geforce
- Recommended:
 - Intel Core I-Processor with 8 Cores or equivalent AMD Athlon
 - 16 GB RAM
 - 3D graphics card NVIDIA Geforce (e.g. RTX 3060 etc.) with 12GB RAM

Terrain Types

General

- Supports terrains of arbitrary size optimized for real-time rendering.
- Supports a multitude of industry-standard formats.
- Native OpenSceneGraph support.
- About 40 target projections (Geographic, UTM, Geocentric, ..).
 - Additional projections from the .prj file can be loaded.

Generation of various types of terrain

- Geospecific terrains:
 - Create terrains based on satellite data and aerial images.
- Geotypical terrains (Geotypic Module):
 - Replacement of terrain classes with typical photo-realistic textures.
 - Structure preserving blending between terrain classes.
 - Heterogeneous tiling in every terrain class.
 - Object placement matching underlying texture.
 - Climate zones – define several regions with various land class definitions.
 - Set up a fully featured, densely populated terrain in minutes.
- Generic terrains (Geotypic Module)
 - Create Geotypic textures with height and slope dependent texturing.
- All terrain types can be combined.

Handling and Editing

Ease of use

- Standardized, configurable user interface.
- Fast access to libraries.
- Immediate visualization of all data with WYSIWYG editing.
- Simultaneous views for 2D and 3D.
- Support for multiple monitors.
- Integration of external texture and geometry editors.
- Optional auto-save function.
- Project Wizard to quickly produce terrains:
 - Importing street data (OpenDRIVE, HERE HD), nautical data (7Cs), data from OpenStreetMap,...

WYSIWYG-Editing

- Generate and edit points, lines ,and areas in 3D and 2D.
- Immediate feedback showing models, line and area objects.
- Work synchronously in 2D and 3D.
- Edit vector attributes with immediate visual feedback.

Road WYSIWYG-Editing

- Adjust lane count and lane width along the route with direct visual feedback.
- Edit crossing outline and offset.
- Edit width polynomials (separators) for lane width and height polynomials
- Perfectly match underlying satellite imagery.
- Edit AI splines.

Comprehensive Vector Editing

- Import, create ,and edit vector data with supported types:
 - Points
 - Lines
 - Bezier lines
 - Clothoid/ Arc lines
 - Areas
 - Bezier areas
- Vector groups to organize and split files for multiple user support.
- Reorder vectors via drag-and-drop.
- Extensive transformation tools.

- Visibility and activation states for all data.
- Various tools for optimization of vector data:
 - Verify vectors - find and fix corrupted vectors
 - Find angles - find vectors with certain (e.g. acute) angles
 - Intersections - find and fix vector intersections (buildings on roads, etc.)
 - Merge points dependent on distance or angle.
 - Refine vector with a vertice at certain distances.
 - Connect lines - combine lines with the same endpoints and attributes.
 - Create an outline - create areas from lines with certain width.
 - Populate the area with random footprints (e.g. for building extrusion).
 - Make area rectangular
 - Select vector features by size
 - Orientate points to a line (e.g. rotate signs in relation to road)
 - Add offset - convert vector by adding offset (pos/rot/scale)
 - Fill building footprint - best matching to place geometry in footprint
 - Bevel lines/areas - round out vectors by adding vertices
 - Smooth tangent height
- Convert point lists to line.
- Insert points on lines/area outlines.
- Split lines/areas.
- Conversion between lines/areas and Bezier lines/areas.
- Conversion between lines and areas.
- Revert point order of lines/areas.
- Extend and connect lines.
- Automatically place bridges on intersecting lines.
- Assign generation attributes using libraries.
- Automatic FACC assignment to vectors.
- ESRI-Shape export of vector data.
- Assign imported vector attributes e.g. taken from shapefile attributes.
- Hide/unhide selected vectors.
- Assign local attributes to vectors.

Misc GUI Features

- Height editing:
 - Create and edit elevation data in 2D and 3D.
 - Brush for 2D or 3D with adjustable size and misc. functionalities e.g. height up/down, smooth, specific height, load shape bitmap.
- Undo / Redo:
 - Undo and redo all user changes.
 - Adjust several undo steps.
- Auto save option
- Height edit window
- Polynomial edit window

Data Management

- Management of re-usable data in libraries.
 - Texture, geometry and vector attributes.
- Definition of data sets e.g. for various seasons or regions.
- Definition of groups with several elements.
- Definition of land cover features.
 - Texture, alpha mask and object placement.
- Generation attributes for vector data.
 - Stack of combined modifiers.
 - Add /edit attributes for textures and object entries.

Levels of Detail (LOD)

- LODs for each tile:
 - Definition of high detail insets possible.
 - Various attributes can be assigned for each terrain tile.
 - * LOD count with switch-distances, mesh resolution, texture resolution.
 - * Geotypic object placement.
 - Fast switching and assignment of local settings to tiles.
- LODs for Objects:
 - Size-dependent LOD switching of object groups.
- Multiple grids:
 - Define multiple grids and export each as a database.
 - Overlapping grids can be integrated.

Vector generation templates

- Create /assign / edit vector generation templates and user vectors.
- Simple generation functions are represented as a Modifier.
- Combine different Modifiers to create complex generation rules.
- Define multiple rules for a vector via the Modifier stack to achieve complex settings.

Modifiers for vector generation templates

• Basic Modifiers

- Modifier 'AreaObjectPlacer' allows you to manipulate and transform an area to your liking
- Modifier 'Outline' generates contours from vector data, e.g. for build geometry or RenderInTexture.
- Modifier 'Billboard' generates Billboard and allows customization.
- Modifier 'Border' generates border contours, e.g. for RenderInTexture and mesh manipulation.
- Modifier 'Comment' Leave a comment.
- Modifier 'Contour Object placer' Generate models of your choosing, along a contour
- Modifier 'DummySetupProject' Create an empty.
- Modifier 'Extrude' for the generation of fences and hedges for example.
- Modifier 'Object Extrude' to process model templates and extrude them along a path.
- Modifier 'Formatstack' Allows you to assign geometries to individual formats.
- Modifier 'Geometry' to build plane objects from outlines.
- Modifier 'Height Type' defines the height calculation.
- Modifier 'Insert' for cutting objects and regions into the ground mesh.
 - * Supports also inserts with inner islands.
 - * Insert objects can be rendered to texture in low-res LODs.
- Modifier 'Layer' for setting planar objects upon terrain.
- Modifier 'Level Of Detail' to automatically activate or deactivate Modifier stacks with respect to the viewing distance.
- Modifier 'lightpoint' Create a lightpoint.
- Modifier 'LOD select' Assign geometries to individual LOD layers.
- Modifier 'Mapping' to define the direction and tiling of the texture.
- Modifier 'Multi Texture' supports the stacking of textures.
- Modifier 'Node Name' Assign a name to geometry, you may find all geometries with the same Node Name, in the same directory, when searched for.
- Modifier 'Object Layer Name' Assign a name to the layer of the object.
- Modifier 'Object Eraser' Any neighboring object touching this one, may not be shown in the generation.
- Modifier 'Outline' creates an outline out of a texture of your choosing.
- Modifier 'Point Link' to logically link features, e.g. crossing points or signals to roads.
- Modifier 'RenderInTexture' for painting vector data into the terrain's texture. Seamless transitions by blending border regions.
- Modifier 'Shading' Customize shading.
- Modifier 'Surface attribute' Add attributes to the surface.

• Building Modifiers

- Modifier 'Object Extrude' to process model templates and extrude them along a path.
- Modifier 'Sign' for taxiway and text signs.
- Modifier 'Building' to generate extruded 3D buildings from outlines with:
 - * Various levels,
 - * Miscellaneous roof types (flat, hip, gable, shed, dome, onion).
- Modifier 'Building Interiors':
 - * Generate generic building interiors due to various generation templates (apartment, office...).
 - * Generation of various LODs.
 - * Façade elements (windows, stucco elements, oriels, etc.).
- Modifier 'Shading' to define normal shade mode (flat, smooth).

• Object Placement Modifiers

- Modifier 'Point Object Placer' to assign geometry to point vectors.
- Modifier 'Point Offset' to place models with an offset relatively close to the point position.
 - * Variable geometry assignment, size and rotation.
 - * Variable geometry assignment, size and rotation.
- Modifier 'Geotypic Object Placer' can use geotypic object placement definitions.
- Modifier 'Object Eraser' to suppress objects with lower priority.
- Modifier 'Collision' for flexible collision calculations between objects.
- Modifier 'Object Connector' e.g. for power lines.
- Modifier 'Vector Template' to place vector data (including generation rules), such as lettering or arrows, on roads.
- Modifier 'Billboard' places a billboard geometry on a vector with an object placer Modifier.

• Attribute Modifiers

- Modifier 'Vector Attribute' to add/edit vector attributes.
- Modifier 'SurfaceAttribute' to define surface attributes.
- Modifier 'Node Name' to set a name to special nodes or switches.
- Modifier 'Object Layer Name' to define object layers, e.g. MetaFlight Export.
- Modifier 'Sensor Attributes' to assign specific materials to objects for sensor calculation.
- Modifier 'Delaunay' to define how vectors are handled for Delaunay triangulation.
- Modifier 'Fringe Geometry' to add a fringe for transitions e.g. from land to water.

• Format specific Modifiers

- Modifier 'VBS2 Surface' to define special VBS surface attributes used for scattering.

- Modifier 'VBS2 Object' to define objects with various attributes, like weight and hit points.

- **Road Modifiers**

- Modifier 'ProfilerHD' to define profiles for complex roads.
- Modifier 'ProfilerLaneHD' to define lanes for profiler roads.
- Modifier 'Profiler' to define profiles for complex roads.
- Modifier 'Crossing' to build crossings and transitions for several road constellations.
- Modifier 'Tunnel' to define tunnel shapes.
- Modifier 'Bridge' to define bridge shape and poles.
- Modifier 'Signal' to export signal settings to OpenDRIVE.
- Modifier 'OpenDRIVE Object' to add objects to the OpenDRIVE Export.
- Modifier 'RoadSign' to place signs of informative nature.
- Modifier 'Marking' to supplement the automatically generated road marks.

Modules

Geotypic

- Various terrain types:
 - Generic, geotypical
 - See section [Terrain types](#) for further information.

Roads

- **Roads**
 - Generation of roads and rivers from profiles.
 - Various lanes.
 - Road markings.
 - Sign and signals.
 - Bridges, tunnels, over/underpasses
- **Crossings**
 - Fully automated generation of crossings.
 - Arbitrary number of roads and alignments.
 - Roundabouts.
 - Transition between various lanes.
- **Generation of tunnels and bridges**
 - Crossings and transitions supported.

Roads Plus

- All features of the Roads Module.
- Roads according to road construction rules.
 - From arcs/clothoids.
 - Smooth height progression through polynomials.
 - Cross-fall in curves.
- Import
 - Direct OpenStreetMap and OpenDRIVE Data Import.
 - Convert Shape data to profiled roads.
 - HERE HD Live Maps via Project Wizard.
 - HERE RDF databases via Project Wizard.
 - Automatic assignment of road templates to real-world data.
 - * Use xml settings to control template generation due to country rules etc.
- OpenDRIVE export

Airport

- Import
 - Free database of over 35,000 airports worldwide.
 - Runways with different types of markings and lighting.
 - Taxiways with markings/lights and signs.
 - Apron
- Editing
 - Possibility to edit and create runways.
 - Conversion into editable vector data.
 - Generation attributes configurable using a .xml file.
- Generation
 - Approach lighting:
 - * ALSF_I, ALSF_II, CALVERT, CALVERT_ILS,
 - * SSALR, SSALF, SALS, - MALSR, MALSF, MALS,
 - * ODALS, RAIL
 - Edge lights - LIRL, MIRL, HIRL
 - Runway light indicator - PAPI, VASI
 - Runway marking code - Visual, non-precision and precision approach markings.
 - Taxiway signs
 - Placement of airport objects, e.g. tower, windsock.

Maritime

- Import ENC Data: S57, S63, 7CB, 7CC, 7CX,...
- Seabed Triangulated from Depth Contours/Lines and Soundings.

- Coastline with Quay Walls, Shoreline Constructions and Piers.
- Buoys/Beacons with Topmarks:
 - Automatic placement from a comprehensive library.
 - Lights with Blink Code, Color, Direction, Range, Intensity, etc.

Sensor

- Raster map with Material classification.
- ClassIDs with arbitrary physical attributes.
- Each pixel can mix several materials.
- IR, LIDAR, Night Vision

Software Development Kit (SDK)

- API to extend Trian3DBuilder with Plug-Ins.
 - Import/Export Plug-in: for image formats, geometry formats, geographical raster formats and vector formats.
 - Generation Plug-ins: to broaden the generation capacity, e.g. render to texture or texture filtering.
 - ExportTerrain Plug-in: addition of new export formats.
 - GUI Plug-in: extend the software with your menu items and dialogs.
 - Modifier Plug-in: extend custom Modifiers.

Lua Scripting

- API to extend Trian3DBuilder with Plug-Ins.
 - Import data from various sources and create projects
 - Adjust and create vector data
 - Create modifiers and adjust modifier values based on attributes
 - Library access and manipulation
 - Access to vector tree with Groups, List, Geode, attributes

Scope of supply

- Detailed manual.
- Comprehensive libraries with textures, objects and vector attributes.
- Detailed introduction with 'getting started' document and advanced tutorials.
- Various example projects.

Generation

Object Placement

- Various methods of geometry integration (internal reference, external reference, copy, inherit, relative).
- Rotation, scale and object closeness with variance.
- Collision testing.
- Classify your objects with name and size.

Object Generation

- Create rivers, lakes and further hydroponic systems for your terrain.
 - Rivers can flow downwards and have taper settings.
- Powerlines and Forests
 - Place different types of power poles and power lines; power pole models are delivered with Trian3DBuilder.
 - Create canopy forest geometry with texture on the roof.
 - Clutter individual tree objects with definable variance.
- Create hedges and fences.

Building Generation

- Buildings from outlines with misc. roof types.
- Roof overhangs and extruded façades.
- Simple GUI to flexibly define façades.
- Add various façade elements and oriels.
- Automatically create building interiors from various templates (apartment, office, etc.).

Geometry integration

- Cut objects, lines or areas into the terrain mesh.
- Height adaptation (specific height, dependent on relief, river behavior (continuous decline), average height, ClipOnSurface).
- Border for a smooth transition to the environment.
- Cut isle contours.

Comprehensive database optimization

- Tiling and LOD switching of database.
- Novel polygon saving edge algorithm.
- Optimized scene graph.
- Geometry simplification using TIN-algorithm.

- Export of indexed geometry or tri-strips if requested.
- Texture sharing between objects.
- Compressed texture support (dds).
- Definition of different texture and mesh resolutions for tiles.
- Size dependant LOD switching of objects.
- Paging supported.
- Enhanced paging support for individual LODs and object groups.

Verification of databases in internal 3D viewer

- High-performance visualization.
- Tree view of scenegraph.
- Adjustment of render parameters: camera clipping, fog, lighting.
- Various cameras for individual navigation.
- Save camera positions.
- Statistics of frame rate, number of triangles,...

Further Features

- Parallel export with individual format and generation settings.
- Cutting in external databases as high-resolution insets.
- Optimized performance through multi-core/multi-CPU support.
- Filters for terrain textures (snow, shadow from relief).
- Define your own file path and naming output.
- Tag objects, name objects and groups and define individual SceneGraph structures.

Terrain Exporters

OpenFlight / MetaFlight Exporter

- Export to various versions of the industry standard format OpenFlight.
- Supports all different object types.
- Supports Metaflight:
 - Hierarchy types ADDITIVE and SUBSTITUTIVE.
 - Supports Virtual texture.
 - Supports Object Layer.
 - Supports multiple sub-databases.
 - Write individual file structure.
 - Create .mft files.

FBX Exporter

- Export to Autodesk FBX format.
- Supports ASCII and binary export.
- Import script to convert in Unity® scene.
- Optimized SceneGraph.
- Support PBR Materials and external model references.

glTF and 3D Tiles Export

- glTF modern 3D format for game engines
- 3D Tiles - tiles streaming format for Cesium etc.

CDB Exporter

- Export a scene into the OGC CDB format.
- Export a defined number of layers (see supported CDB layers below).
- Support terrain elevation and textures, vectors, models and sensor textures and materials.
- Support the export of interior Models.
- Support vector network features.

Supported CDB layers:

Feature	Import	Export
001_Elevation	x	x
002_MinMaxElevation		x
003_MaxCulture		x
004_Imagery	x	x
005_RM_Texture	x	x
006_RMDescriptor	x	x
100_GSFeature	x	x
101_GTFeature	x	x
102_GeoPolitical		x
200_VectorMaterial	x	x
201_RoadNetwork	x	x
202_RailroadNetwork	x	x
203_PowerLineNetwork	x	x
204_HydrographyNetwork	x	x
300_GSModelGeometry	x	x
301_GSModelTexture	x	
303_GSModelDescriptor	x	x
304_GSModelMaterial	x	x
309_GSModelCMT	x	x
310_T2DModelGeometry		x
500_GTModelGeometry	x	x
501_GTModelTexture	x	x
503_GTModelDescriptor	x	x
504_GTModelMaterial	x	x
505_GTModelCMT	x	x
305_GSModelInteriorGeometry		x
306_GSModelInteriorTexture		x
307_GSModelInteriorDescriptor		x
308_GSModelInteriorMaterial		x
506_GTModelInteriorGeometry		x
507_GTModelInteriorTexture		x
508_GTModelInteriorDescriptor		x
509_GTModelInteriorMaterial		x
510_GTModelInteriorCMT		x

Datasmith Exporter

- Exporter for the Unreal Engine format.
- Supports UE 4.24 to latest.
- Use dataprep recipes to customize geometry during import for your special needs.

VBS®3 Exporter

- Simply create VBS terrain with Trian3DBuilder's usual simple workflow.
- Export to VBS 1.6 – 3.9.
- Support of geospecific and generic/geotypic texturing.
- Full support of all Modifiers for texturing, object placement and generation.
- Manipulate elevation with Modifier 'Insert', 'Border' and the height brush.
- Export all supported 3d model formats to VBS .p3d format.
- Import and place Bohemia VBS .p3d models.
- Definition of all VBS surface types with one or more clutter layers.
- Generation of VBS roads and VBS river.
- Use all supported generation geographical data (sat image, shape files,..) in VBS Tools.

Steel Beasts Professional® Exporter

- Support generic/geotypic texturing and easy assignment of Steel Beast Textures types.
- Full support of all Modifiers for texturing, object placement and generation.
- Support of different road types.

OpenDRIVE Exporter (included in Roads Plus Module)

- Open file format for the logical description of road networks.
- AI vehicles drive smoothly by following clothoid/arc-constructed AI splines.
- Export road, crossing, signal and object information.

More Exporters

- Wavefront OBJ (.obj)
- Collada (.dae)
- Stereolithography (.stl)
- DirectX (.x)
- Autodesk 3ds (.3ds)

Dependent Exporters

- Add dependent exporters to a full export format to get secondary generation data:
 - OpenDRIVE
 - Text Dump Data
 - Shape Export

Supported Formats

Elevation

Import

- Arc/Info ASCII Grid{*.asc}
- Arc/Info Binary Grid{*.adf}
- Arc/Info Export Format{*.e00}
- Bathymetry Attributed Grid{*.bag}
- VTP Binary Terrain{*.bt}
- DTED Level 0{*.dt0}
- DTED Level 1{*.dt1}
- DTED Level 2{*.dt2}
- SRTM{*.hgt}
- USGS ASCII DEM{*.dem}
- ERDAS IMG DEM{*.img}
- Geotiff Elevation{*.tif}
- Geotiff Elevation{*.tiff}
- ASCII Gridded XYZ{*.xyz}
- GeoSoft Grid eXchange{*.gxf}
- HF2/HFZ heightfield raster{*.hf2}
- Japanese DEM{*.mem}
- Terragen(TM) Terrain File{*.ter}
- SDTS Raster{*.ddf}
- ESRI hdr{*.hdr}
- ENVI hdr{*.hdr}
- Erdas Imagine Raw{*.raw}
- Erdas Imagine Raw{*.bl}
- NTF Grid/Contour{*.ntf}
- Netpbm{*.pgm}
- Netpbm{*.ppm}

Export

- Arc/Info ASCII Grid{*.asc}
- VTP Binary Terrain{*.bt}
- DTED Level 0{*.dt0}
- DTED Level 1{*.dt1}
- DTED Level 2{*.dt2}
- SRTM{*.hgt}
- USGS ASCII DEM{*.dem}

- Geotiff Elevation[* .tif]
- Geotiff Elevation[* .tiff]
- ASCII Gridded XYZ[* .xyz]
- HF2/HFZ heightfield raster[* .hf2]
- Terragen(TM) Terrain File[* .ter]
- ESRI hdr[* .hdr]
- ENVI hdr[* .hdr]
- NTF Grid/Contour[* .ntf]
- Netpbm[* .pgm]

Landcover

- Geotiff (.tif, .tiff)
- Portable Network Graphics (.png)
- JPEG (.jpg)
- JPEG 2000 (.jp2)
- ENVI BIL, BIP, BSQ (.bil, .bip, .bsq)
- ECW (.ecw)
- Erdas Imagine Raw (.img)
- NITF (.ntf)
- ADRG Digitized Raster Graphics (.thf)
- BSB Nautical Chart (.bsb)

Satellite

- Geotiff (.tif, .tiff)
- Portable Network Graphics (.png)
- JPEG (.jpg)
- JPEG 2000 (.jp2)
- ENVI BIL, BIP, BSQ (.bil, .bip, .bsq)
- ECW (.ecw)
- Erdas Imagine Raw (.img)
- NITF (.ntf)
- ADRG Digitized Raster Graphics (.thf)
- BSB Nautical Chart (.bsb)
- Web Map Service (.xml)

Vector data

Import

- Arc/Info ASCII[* .e00]

- Arc/Info BINARY{*.e00}
- SDTS{*.catd.ddf}
- ESRI Shapefiles{*.shp}
- ESRI Shapefiles{*.dbf}
- MapInfo{*.mif}
- AutoCAD DXF{*.dxf}
- MapInfo{*.tab}
- Atlas BNA{*.bna}
- GeoJSON{*.geojson}
- Microstation DGN{*.dgn}
- S-57 cell file{*.000}
- GPS Exchange Format{*.gpx}
- GMT ASCII Vectors{*.gmt}
- GPSTrackMaker{*.gtm}
- GPSTrackMaker{*.gtz}
- X-Plane/Flightgear aeronautical data{*.dat}
- GeoConcept text{*.gxt}
- VRT - Virtual Datasource{*.vrt}
- UK National Transfer Format{*.ntf}
- U.S. Census TIGER/Line{*.rt1}
- U.S. Census TIGER/Line{*.rta}
- SevenCs SENC file {*.7cb}
- SevenCs SENC catalogue file{*.7cc}
- S-57 cell file{*.000}
- S-57 catalog file{*.031}
- SevenCs directENC package{*.7cx}
- Keyhole Markup Language{*.kml}
- Keyhole Markup Language Compressed{*.kmz}
- Mapillary JSON{*.json}
- OpenStreetMap XML{*.osm}
- OpenDrive XML{*.xodr}

Export

- ESRI Shapefiles{*.shp}
- Atlas BNA{*.bna}
- AutoCAD DXF{*.dxf}
- GeoJSON{*.geojson}
- GMT ASCII Vectors{*.gmt}
- MapInfo{*.tab}
- Microstation DGN{*.dgn}

- GPSTrackMaker{*.gtm}
- GPSTrackMaker{*.gtz}
- GPS Exchange Format{*.gpx}
- Keyhole Markup Language{*.kml}
- Keyhole Markup Language Compressed{*.kmz}
- OpenDrive XML{*.xodr}
- IPG Carmaker Road5 {*.rd5}

Textures

Import

- Windows Bitmap{*.bmp}
- DirectX{*.dds}
- GIF{*.gif}
- Portable Network Graphics{*.png}
- JPEG{*.jpg}
- SGI RGB{*.rgb}
- SGI RGBA{*.rgba}
- SGI{*.sgi}
- SGI INT{*.int}
- SGI INTA{*.inta}
- SGI BW{*.bw}
- Targa{*.tga}
- TIFF{*.tif}
- TIFF{*.tiff}

Export

- Windows Bitmap{*.bmp}
- DirectX{*.dds}
- JPEG{*.jpg}
- Portable Network Graphics{*.png}
- SGI RGB{*.rgb}
- SGI RGBA{*.rgba}
- Targa{*.tga}
- TIFF{*.tif}
- TIFF{*.tiff}

Objects

Import

- glTF ascii loader{*.gltf}
- glb binary loader{*.glb};
- Google Earth compressed Model KMZ{*.kmz}
- Google Earth Model KML{*.kml}
- SpeedTree{*.srt}
- SpeedTree{*.prefab}
- PointCloudData{*.pcd}
- AC3D{*.ac}
- OpenFlight{*.flt}
- COLLADA{*.dae}
- OSG ASCII{*.osg}
- OSG Archive{*.osga}
- OSG Binary{*.osgb}
- OSG Text{*.osgt}
- OSG XML{*.osgx}
- OSG Binary IVE{*.ive}
- Autodesk 3D Studio{*.3ds}
- Lightwave Object{*.lwo}
- Autodesk DXF{*.dxf}
- Autodesk FBX{*.fbx}
- Carbon Graphics Geo{*.geo}
- Wavefront OBJ{*.obj}
- Terrex TerraPage{*.txp}
- DirectX{*.x}
- ESRI Shape{*.shp}
- CityGml{*.xml}
- Stereolithography{*.stl}
- Stereolithography{*.sta}
- CityGML{*.gml}
- LAS point cloud{*.las}
- Bohemia P3D{*.p3d}

Export

- Autodesk FBX{*.fbx}
- glTF ascii writer{*.gltf}
- glb binary writer{*.glb}
- 3DTiles {*.json}

- SpeedTree{*.srt}
- SpeedTree{*.prefab}
- Autodesk 3D Studio{*.3ds}
- AC3D{*.ac}
- COLLADA{*.dae}
- Autodesk DXF{*.dxf}
- OSG Binary IVE{*.ive}
- OpenFlight{*.flt}
- OSG ASCII{*.osg}
- OSG Archive{*.osga}
- OSG Binary{*.osgb}
- OSG Text{*.osgt}
- OSG XML{*.osgx}
- Wavefront OBJ{*.obj}
- DirectX{*.x}
- Stereolithography{*.stl}
- Bohemia P3D{*.p3d}

Geo Imagery

Import

- GeoTIFF{*.tif}
- GeoTIFF{*.tiff}
- Portable Network Graphics{*.png}
- JPEG{*.jpg}
- JPEG 2000{*.jpg2}
- JPEG 2000{*.jp2}
- ENVI BIL{*.bil}
- ENVI BIP{*.bip}
- ENVI BSQ{*.bsq}
- ECW{*.ecw}
- MrSID{*.sid}
- Erdas Imagine Raw{*.img}
- NITF{*.ntf}
- ADRG Digitized Raster Graphics{*.thf}
- BSB Nautical Chart{*.bsb}
- Web Map Services{*.xml}

Export

- GeoTIFF(*.tif)
- GeoTIFF(*.tiff)
- Portable Network Graphics(*.png)
- JPEG 2000(*.jpg2)
- JPEG 2000(*.jp2)
- Trian3D Project(*.tbp)
- Genesis Project (*.gproj)
- CDB Common Database

Copyright © 2024TrianGraphics GmbH. All rights reserved.

The present documentation is not permitted to be reproduced, copied, forwarded or translated in another language in full or in extracts without the written permission of TrianGraphics GmbH.

The product brands used in this documentation are protected brands of their respective owners or companies.

Trian3D and TrianGraphics are protected brands of TrianGraphics GmbH in Germany.