# RhinoTerrain 1.0 Released

RhinoTerrain

RhinoTerrain SARL Today announced the release of RhinoTerrain 1.0 for Rhinoceros 4.0, a plug-in for generation and analysis of accurate 3D terrain models for use in Architecture, Survey, Civil Engineering and Landscaping practices plus support for output to 3d printers. Features include:

- **Fast Terrain Creation** - Support for input using points, lines and curves with HardBreaklines and SoftBreakline options. RhinoTerrain will work with very large data sets at speed, supporting several million input points.
- **True terrain visualization** - OrthoPhoto mapping with geographical referencing for true terrain visualization or 3d printing.
- **Contour Curve Generation** - Supporting automatic contour height annotation, making full use of multicore processors for larger terrains.
- **Slope and height gradient analysis** - User defined color gradient options, producing beautiful images.
- **Terrain Import** - USGS DEM (Digital Elevation Model) and ArcView ShapeFile importer

Digital terrain modeling plugin for rhino 4.0
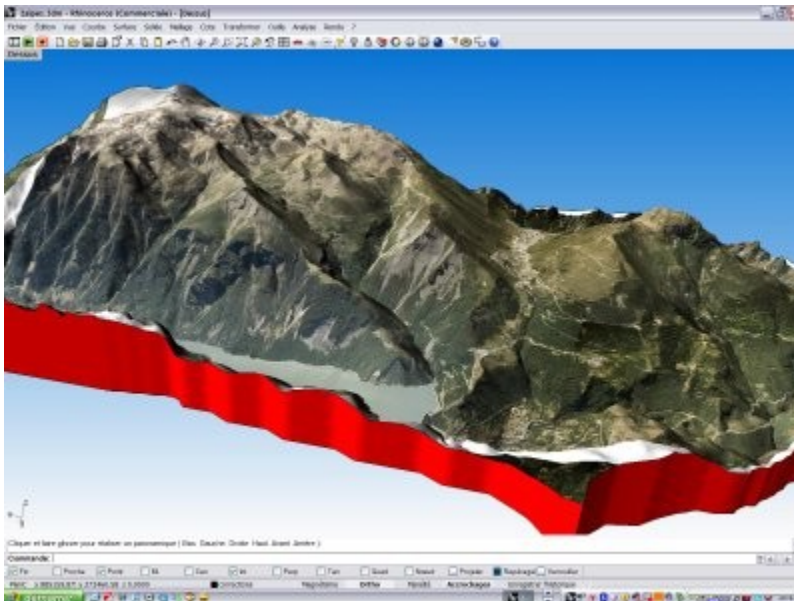
1. Input Data
2. High speed Delaunay Engine
3. Boundary Alpha Shape detection
4. Hard and Soft Breaklines
5. High precision contour curves
6. Geographical features detection
7. Orthophoto mapping

Input Data

1. Input can be points , pointclouds , curves, meshes
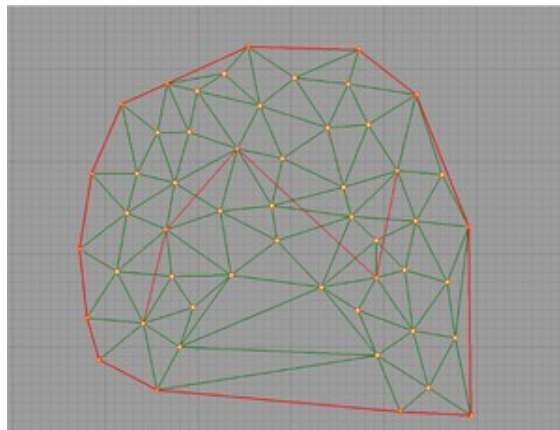2. The ouput is a standard Rhino mesh, the mesh can be unwelded by HardBreakLines
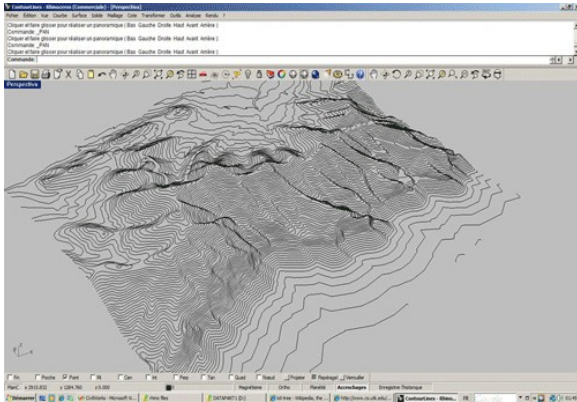
High Speed Delaunay Engine

1. Delaunay Triangulation
2. Constrainded Triangulation
3. Fast triangles processing

1. 1 million point < 2s on a single core cpu 2.33 mhz
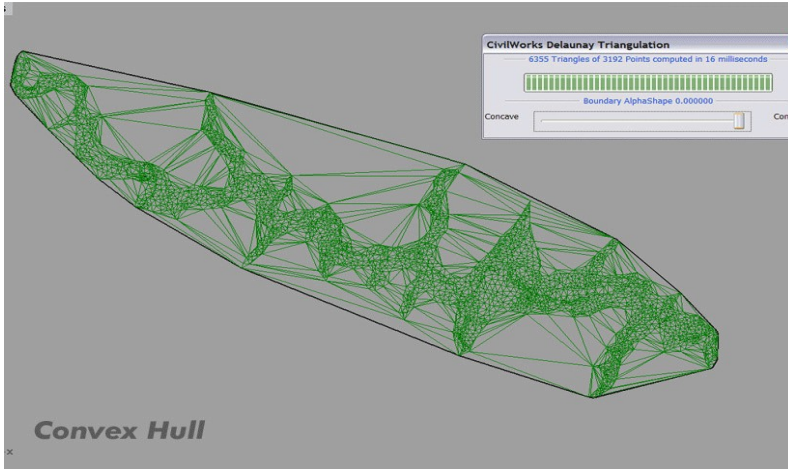2. Near 3x on a quad core cpu (using parallel algo with OPENMP) in next release.
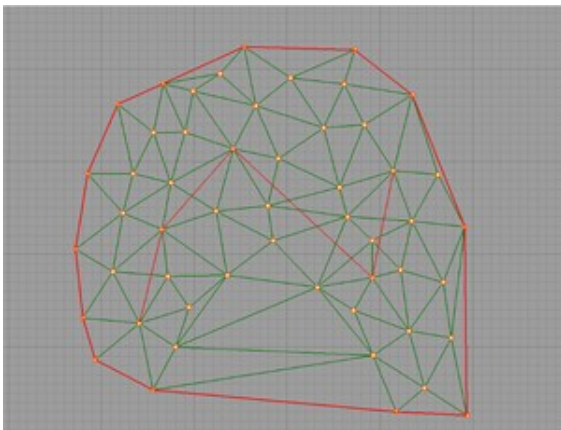
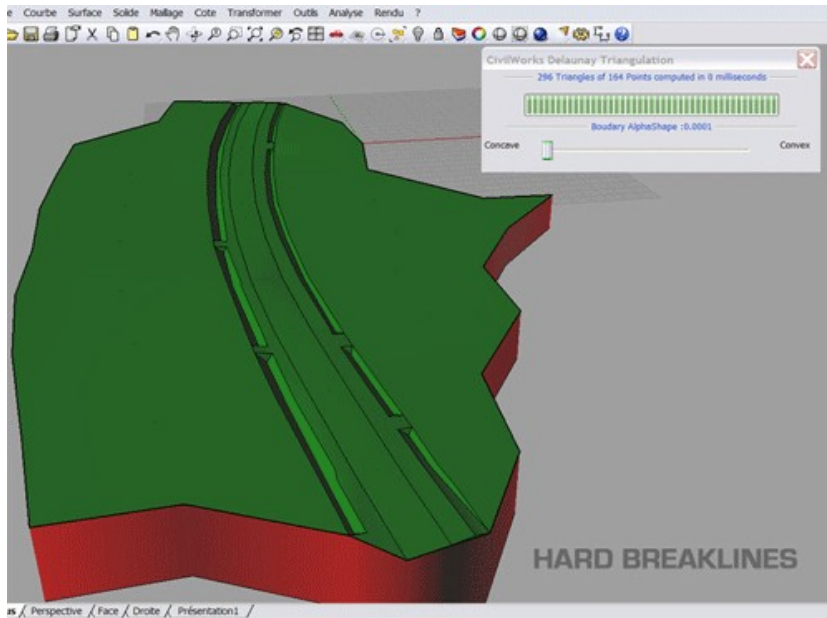**Delaunay Triangulation**

Constrainded Triangulation

Boundary Alpha Shape

- **Can Find the most intricate boundary shape of a model**
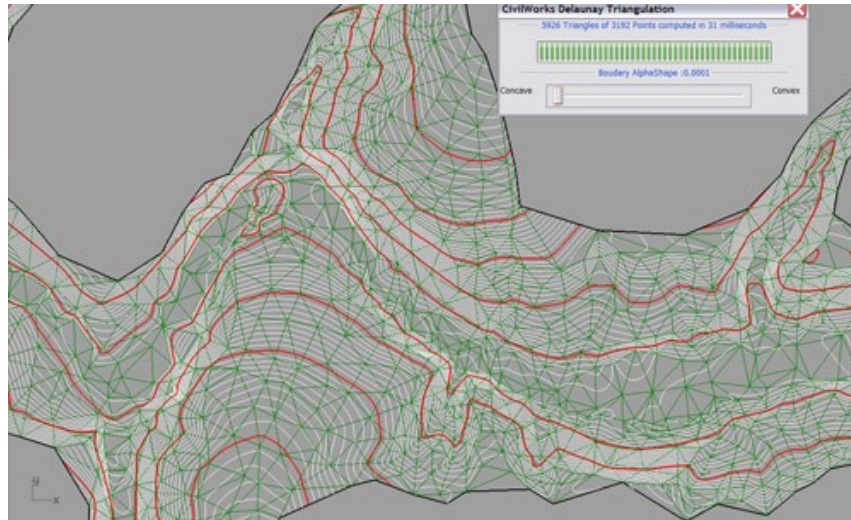   1. Convex hull
    2. Most Concave

Convex Hull

Hard and Soft Breaklines

- **Ideal for capturing the exact shape of a model**
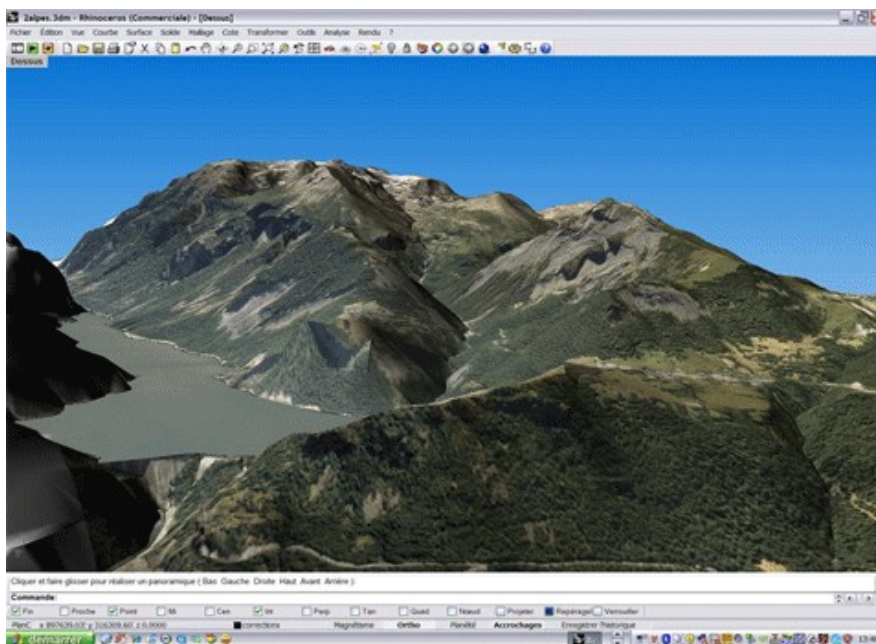

HARD BREAKLINES

Contour Curves

- **Primary and secondary Curve interval**
- **Curve smoothness**
- **Output as Polylines**

Geographical Feature Detection

- **Use HardBreaklines loops to unweld the mesh**
- **Explode the mesh in closed feature**

OrthoPhoto Mapping

- **The geo-referenced bounding box of the orthophoto is used to map with accuracy each pixel of the photo to the 3d mesh**
- **High resolution TIFF photos can be used. Real time 3D Navigation is possible.**
- **The Stereo Viewing capabilities of Rhino can also be used.**