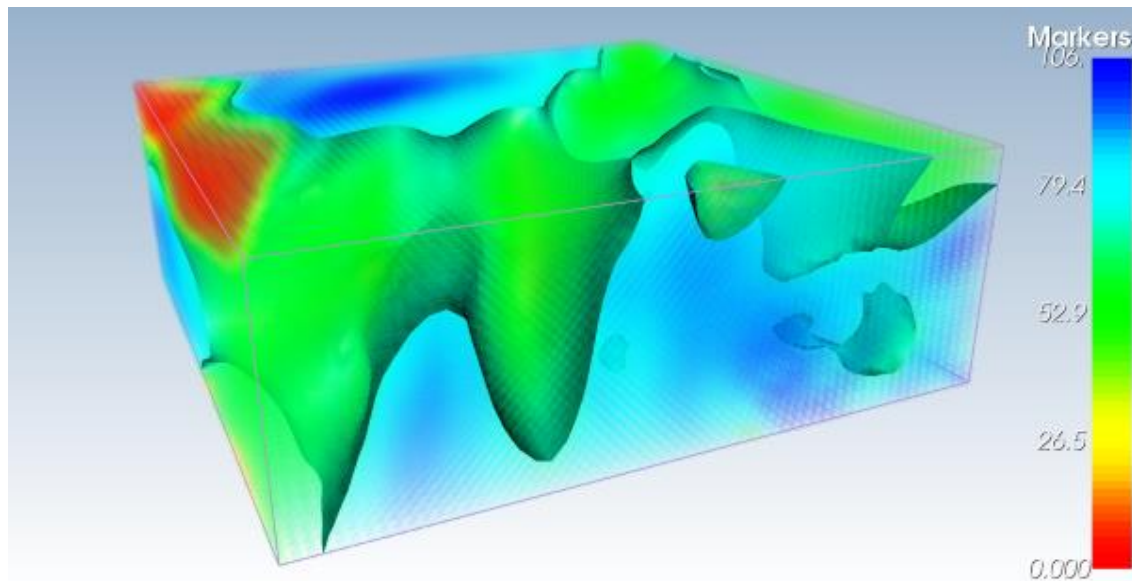


The single biggest problem in communication is the illusion that it has taken place.

George Bernard Shaw

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The [website](#) contains eight free software packages for download and [My blog](#) contains information on version additions and instructions.

The latest software in development is currently also available free of charge:
[GEM4D](#): Geotechnical Manager in 4 Dimensions, a 3D "drag-and-drop" DXF-visualiser that provides functionality required by

New stuff: 2014 Quarter 3

The main focus the past quarter was on GEM4D, with improvements to the iso-surface capabilities, more colour mapping options, the addition of different mesh splitting modes, and different export options. See [My blog](#) for details.

Tutorial: Show your value in colour

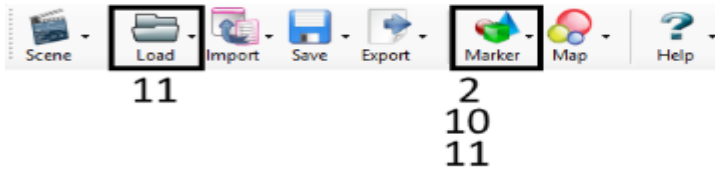
To produce outputs such as the top image, download the sample file from [here](#) and follow the instructions below. The image below the instructions shows the selection locations.

Geotechnical Engineers.

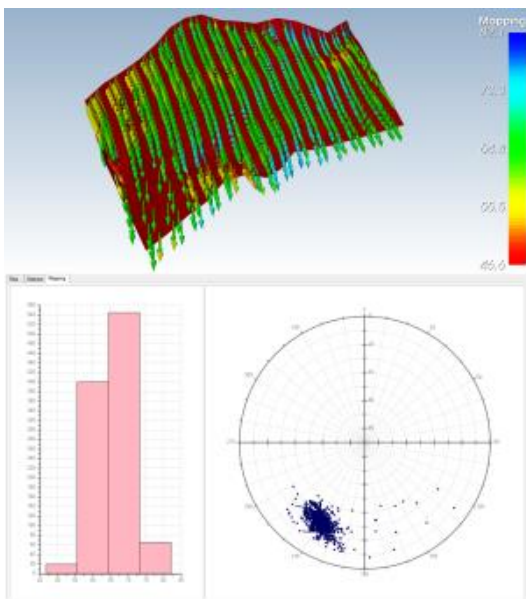
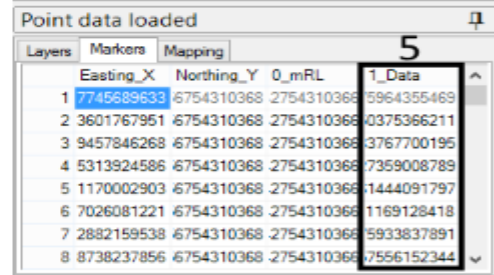
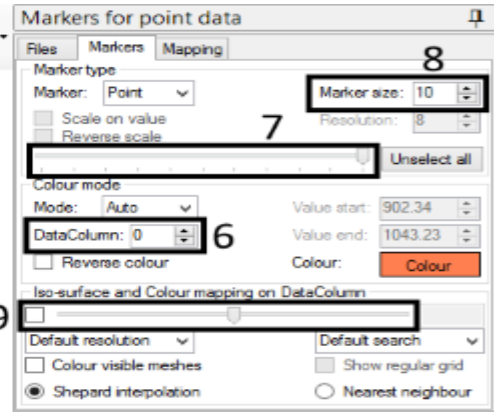
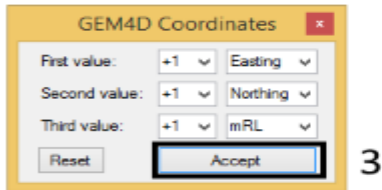
[Trajec3D](#): A full 3D rigid body dynamics rock fall analysis program that accommodates fall bodies of any shape and size with dynamic movement in real time - see an older video [here](#).

[PhotoCoreLog](#): Image preparation and recoding of core logging measurements from photographs in a data grid that can be exported to Excel.

1. Unzip the "**Marker data file.csv**" file in a known folder.
2. Open GEM4D and load the file with "**Markers => Add markers from text file**".
3. "**Accept**" the default "**GEM4D Coordinates**" option in the pop-up box.
4. With the left mouse button, rotate the block of loaded values in the scene to observe from the side.
5. By default, the data is shown as points and colour coded on elevation (**0_mRL**). In the left bottom data grid, use the slider bar if "**1_Data**" is not visible.
6. The way data is displayed can be changed with the Markers selections above the data grid. Change the number in the "**Colour mode => DataColumn**" text box to "**1**" to colour on the "**1_Data**" column.
7. Drag the slider in the "**Marker type**" to the left to make the points transparent. Stop at the second last increment to make the points nearly invisible.
8. Change the marker size to "**50**" in the "**Marker type => Marker size**" text box.
9. Press the check box next to the slider under "**Iso-surface and Colour mapping on DataColumn**". This will create an iso-surface of the value in the text box to the right of the slider. Move the slider to dynamically change the value and update the iso-surface.
10. Save any iso-surface with "**Markers => Save iso-surface as DXF-file**".
11. Save the bounding box of the markers with "**Markers => Save bounds as DXF-file**", then load with "**Load => Add AutoCAD DXF-file**" to create the outline.



The numbers in the image correspond with the provided instructions



What is the orientation of my mesh?

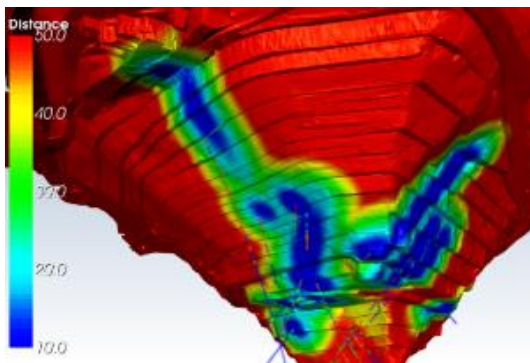
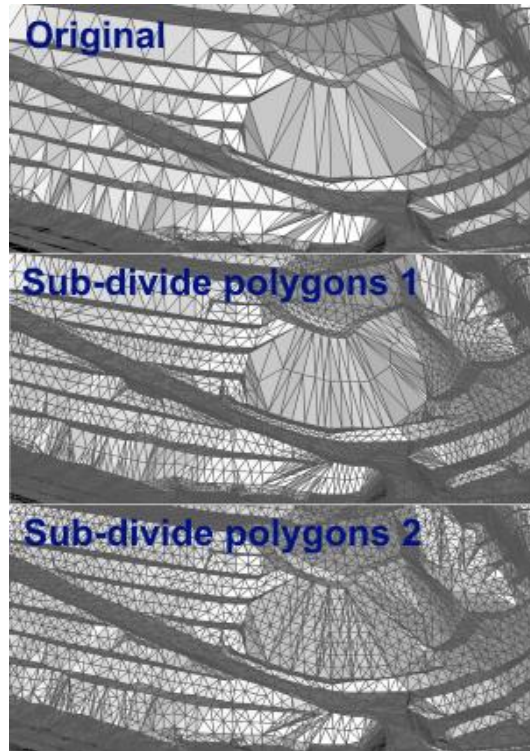
Being able to stereonet the polygon orientations of a mesh is surprisingly useful. For example, you have the triangulation of a fault and want to know which area it will cover on a stereonet.

1. Either load only the triangulation of interest, or hide all the other mesh layers (see [video](#)).
2. Save out every visible polygon orientation with "**Export => Poly orientations as CSV-file**".
3. Load the saved CSV-file as mapping data with "**Map => Add mapping from text file**".
4. By default the mapping points are shown as points and colour coded on elevation. Change the marker type under the Mapping-tab with "**Orientation shape => Shape**", and the colouring by changing the number in "**Colour mode => DataColumn**".
5. The polar plot (equal angle stereonet) at the bottom of the scene is automatically updated when loading the CSV-file.
6. When a clipping (section) is created, only the clipping values will be exported.

Benefits of splitting up

Sub-dividing polygons are important to produce a quality outcome when colourmapping meshes. A coarse mesh will not show detail differences in values, as the polygon points that sample the available data are too far apart. GEM4D has two ways of subdividing polygons under the "**Toolbox**" of the right-hand toolbar:

1. "**Subdivide polygons 1**": Subdivide every polygon into four polygons with every iteration. This method retains the integrity of a closed mesh.
2. "**Subdivide polygons 2**": Divide polygons until the largest side length of every polygon is below the set value. This method is more practical, but does not retain the integrity of a closed mesh.



Separation anxiety

We often colour triangulations on values, but do not have easy ways to show the confidence in the values. One major contributor to the confidence is the distance of the mesh to the closest data point.

1. Either load only the triangulation of interest, or hide all the other mesh layers (see [video](#)).
2. Subdivide the polygons with the right-hand toolbar "**Toolbox** => **Subdivide polygons 2**" and select an appropriate polygon dimension.
3. Load the data file with "**Marker** => **Add markers from text file**".
4. By default, the mapping points are shown as points and colour coded on elevation, but this is not important for the current discussion. Drag the slider in the "**Marker type**" all the way to the left to make the points fully transparent.
5. Colour the triangulation on distance to nearest data point with "**Marker** => **Colour mesh on confidence**".

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