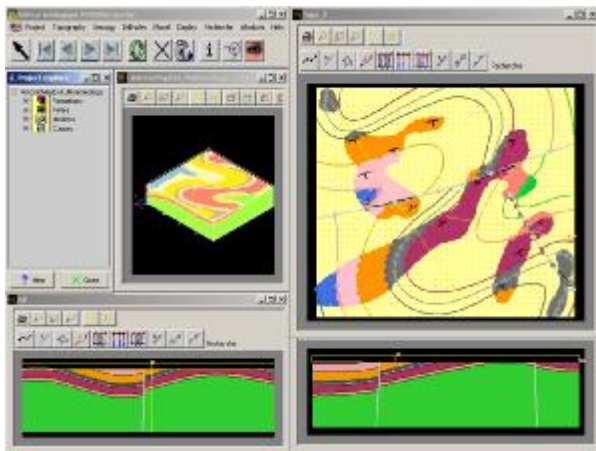


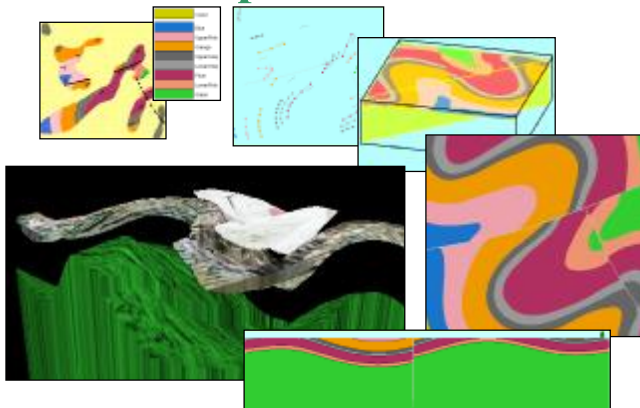
Intrepid: 3D GeoModeller

- the *smart* Geological Editor



1. Uses primary geological observations, together with a template of allowed stratigraphic relationships, to *build* the geological model.
2. Has geologically-intelligent editing to refine the model.
3. New data are easily added, and a revised model rapidly rebuilt to incorporate those new data.
4. Can use geophysical datasets, such as magnetics and / or gravity, to refine the model by potential field inversion.

From map ... to 3D Model



3D GeoModeller's Interpolator

A geologist undertaking a field mapping project does the following two tasks: (a) sample the geology (i.e. make geological observations), then (b) *interpolates* the geology – to make an interpretative map or section.

The 3D GeoModeller software emulates the geologist's task. Geological observations (samples) are recorded, and then the software performs a sophisticated 3D interpolation. The interpolated surfaces are guaranteed to honour the recorded geological contacts and orientation data (dips/strikes) ... and provide a prediction of geological shapes and surfaces throughout the 3D project area.

3D GeoModeller's interpolation is based on the theory of potentials. This figure illustrates how the computed potentials honour the observed data, but then form the basis for predicting the geological horizons away from the observations.



The potentials ... used to predict ... beneath cover!

To build a 3D GeoModeller Project

- Initial housekeeping tasks ... Create a Project File, define East, North and Z extents, define a topography level (or load a DTM).
- Examine the project geology ... and define the stratigraphic column for the project, and the onlapping, erosional and intrusive (cross-cutting) relationships. Create the geological objects to be used, such as geological formations and faults; arrange the formations into stratigraphic order from oldest to youngest.
- Enter data from field mapping, geological maps, drilling and other sources. Required data are geological contacts and orientation (dip / strike) data.
- Compute the 3D model.
- Generate a wide range of outputs from the computed model ...
 - traditional 2D views, such as maps and sections.
 - 3D shapes (defined via triangulated surfaces). From these generate web-ready VRML files suitable for interactive 3D display ... or ... Export in industry standard file-formats to Gocad, FracSIS.

Erosional Surfaces, Intrusions

Geological horizons often have cross-cutting relationships – and this is managed by computing a separate potential for each separate series of strata. From these multiple interpolated horizons a unique geological solution is simply resolved on the basis of the defined order of the stratigraphic pile, and whether particular units are 'on-lapping' or 'erosional'.



For more information ...

Desmond FitzGerald
Intrepid Geophysics
 Unit 2, 1 Male Street
 Brighton (Melbourne) Victoria 3186 AUSTRALIA
 Tel +61 3 9593 1077 Email: info@intrepid-geophysics.com
 Fax +61 3 9592 4142 Web: www.intrepid-geophysics.com

