

Grid Generation tools: Open source and support group?

Roy A. Walters
6051 Hunt Road
Victoria, BC
Tel: 250 652 8995
EMAIL: rawalters@shaw.ca
and
NIWA, Christchurch, New Zealand

abstract

Over a number of years, a grid generation program was developed by Henry, Walters, and Dolling. It later split into two programs: A linux based program called Trigrig, and a Windows Visual Studio based program called GridGen. The former used C as the graphics interface, and the latter used Visual Fortran Quickwin graphics library.

A problem in grid generation is creating a good quality grid along the boundaries as well as in the interior. Moreover, injecting nodes based on local criteria such as area leads to poor grading. A global scheme was used in Trigrig where the area was assembled into subareas (clusters) whose centroids became vertices of the elements. However, the grid along the boundary was usually deformed since these nodes were injected last.

A new grid generation method is now based on a node injection scheme with one or two passes of a frontal marching algorithm to develop a quality grid at the boundaries, and generation of variable size clusters in the interior. This method has the advantage of producing a quality triangulation globally and enables smooth grading of element areas.

This code has been given out freely in the past, but there has been little feedback to help development for other users. I would like to see if there is an interest in making this an open source community program where improvements can be entered into a revised code.