

AIAA
Meshing Visualization and Computational Environments TC
Grid Generation Short Course
Rev 2 – 23 July 05

Purpose: to give engineers and managers who are associated with the CFD process a working understanding of grid generation and its role in the overall CFD process.

Format: 4 hours short course to be given adjacent to an AIAA conference. Lecture via PowerPoint, with copies of slides to participants.

Instructors: two or three members of the MVCE TC.

Schedule: ready for 2006 Fluid Dynamics meeting (June in San Francisco)

Course outline:

- Grid generation basics (30 minutes) - Dannenhoffer
 - Overview of CFD process
 - Rogue's gallery of different grid types
- Geometry definition (30 minutes) - Chawner
 - Direct interfaces to CAD systems
 - File-based geometry definitions
 - Parametric systems
- Block-structured grids (20 minutes) - Jones
 - Brief history
 - Basic strategy
 - Examples
 - Guidelines for use
- Cartesian grids (20 minutes) - Karman
 - Brief history
 - Basic strategy
 - Examples
 - Guidelines for use
- Unstructured grids (20 minutes) - Michal
 - Brief history
 - Basic strategy
 - Examples
 - Guidelines for use
- Hybrid grids (20 minutes) - Steinbrenner
 - Brief history
 - Basic strategy
 - Examples
 - Guidelines for use
- Overset grids (20 minutes) - Noack
 - Brief history

- Basic strategy
- Examples
- Guidelines for use
- Grid adaptation (20 minutes) - Covallo
 - Brief history
 - Basic strategy
 - Examples
 - Guidelines for use
- Future directions (20 minutes) - Dannenhoffer
 - Current unmet needs
 - Expected future needs
 - Promising technologies to watch
 - Summary of strengths and weaknesses of various approaches
 - Why grid generation is not a mature topic
 - Catalog of websites devoted to grid generation
- 10 questions you should ask your grid generator (10 minutes)
- Questions & answers (20 minutes)

Next steps:

- √ Determine if there is MVCE support for such a course
- √ Line up instructors (who take responsibility for various sections)
- Work through AIAA to get official recognition of course
- Put together first draft of presentation material
- Get MVCE approval of course contents
- Finalize course material
- Offer course
- Celebrate!!