DIME is a programming environment for creating unstructured triangular meshes and doing calculations on the mesh. DIME was developed by the Concurrent Computation Project of the California Institute of Technology. There are three parts:

- **Curvetool** is for interactively creating a two-dimensional domain from straight lines and cubic splines.
- **Meshtool** is for making a coarse mesh covering a domain
- A parallel application reads the domain and coarse mesh. The application program may associate data with the nodes and elements of the mesh and program the way this data is processed. The mesh may be adaptively refined and load-balanced, either interactively of from the application.

The same DIME application code runs sequentially or in parallel:

- DIME runs on a **UNIX workstation** which supports either X-windows or Sunview windowing systems.
- DIME also runs on **MIMD parallel computers** which support the Express parallel programming environment, which is available from ParaSoft Inc., Pasadena, CA, (818) 792 9941.

DIME is available by **anonymous ftp** from delilah.ccsf.caltech.edu, internet 131.215.145.137

When ftp lets you in type `cd dime`. There are three files in the directory:

- `dime.README`
- `dime.src.tar.Z` -- source code for DIME and example application codes.
- `dime.doc.tar.Z` -- 60 page PostScript documentation for DIME

The example application codes are:

- A simple adaptive contourer.
- Solving the Laplace equation on an arbitrary domain.
- Convection of a Gaussian lump around a circle.
- Playing with refinement using a vector font.
- Stress analysis of an arbitrary shape.

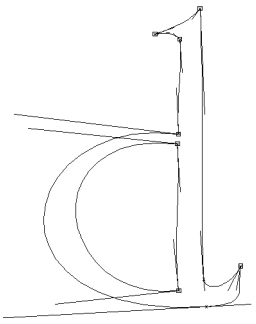
DIME has been used for:

- **Transonic flow simulation**; R. D. Williams, Concurrency, Practice and Experience, **1** (1989) 51.
- **Membrane theory**; C. F. Baillie, D. A. Johnston and R. D. Williams, Comput. Phys. Commun. (to be published).
- **Boundary Element calculations**; C. Assad, B. Rasnow and R. D. Williams, Proc. 5th Distrib. Mem. Computing Conf., Charleston SC, April 1989.
- **Finite Element Variational Methods**; R. Glowinski and R. D. Williams, in Numerical Methods in Laminar and Turbulent Flow, eds. C. Taylor, P. Gresho, R. L. Sani and J. Hauser, Pineridge Press, Swansea, UK, 1989, p 3.

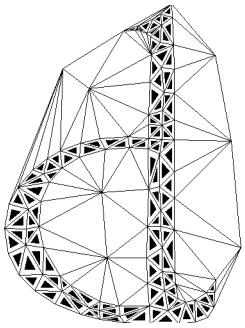
Bugs, problems and questions may be answered by sending email to dime@delilah.caltech.edu.

DIME

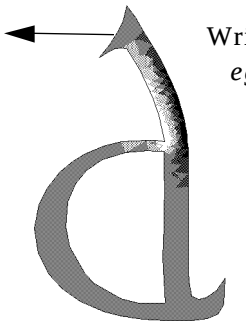
Distributed Irregular Mesh Environment



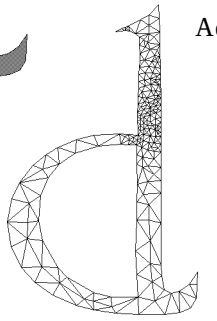
Curvetool makes a domain



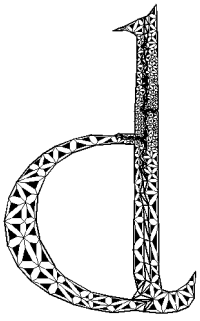
Meshtool meshes a domain



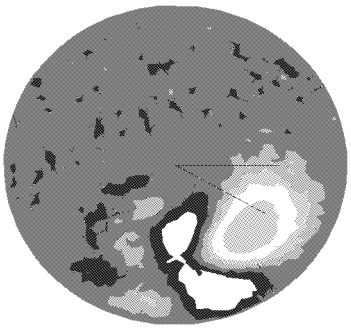
Write your own application
eg. stress analysis



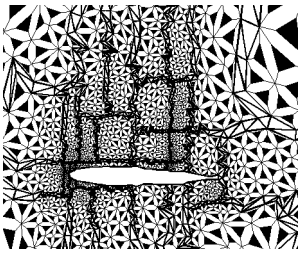
Adaptive refinement



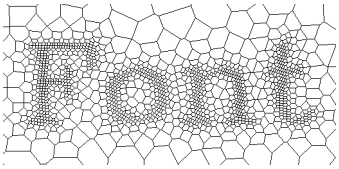
Load Balancing



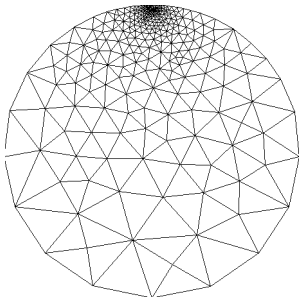
Convection

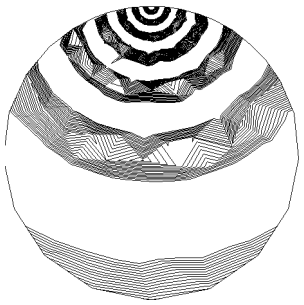


Transonic Flow



Play





Contouring