

# The Daily Telegraph

C A D C A M

C L I N I C

## CADCAM FUTURE DIRECTIONS

CADCAM has generally been an evolving technology rather than one subject to major changes of direction. Thus it should be possible to extrapolate medium term future directions from currently discernible trends.

### Hardware

Clearly computers will continue to become faster and contain more memory. The trend toward PC's and workstations away from multi-user mini-computer based CADCAM systems is already well established. However, large networks are proving difficult to manage and this may provoke a return to centralized disc storage for drawing libraries and databases with local workstation discs used only for the short term storage needed to reduce network traffic.

Better user interfaces for entering 2D and especially 3D geometry are required. It is not clear how this will be achieved, although a return to tablet menus may help. Screen menus are ideal for creating a good impression in sales demonstrations and for novice users, but for expert users they can be slow and tedious as the user is obliged to work through several levels of screen menu to reach the required option. Tablet menus provide a means of accessing a much wider range of options in a single action.

Improvements in the speed, quality and reliability of plotters are among the most needed developments in the CADCAM market. A more specialist but more technically interesting development is that of stereo lithography.

Communications between CADCAM systems is an area of substantial untapped potential. In many cases the necessary hardware is already available but few exploit the potential and, whilst there are limitations in the standards used in the transfer of data between different CADCAM systems, better communications:

- between systems within a company can improve co-operation between design departments;
- with customers can provide significant commercial and technical advantages by locking a customer into your methods of working;
- with suppliers can reduce errors, costs and lead times.

# Software

CADCAM software is more critical than the computer hardware, which is really just a means to an end. Perhaps the most important requirement is for better data structures. Too many CAD/CAM file structures were designed to achieve acceptable interactive response speeds or to squeeze as much as possible into a limited amount of memory. This results in simple list structures with which it is difficult to represent complex relationships. A closer integration of CAD/CAM graphics systems and databases is also essential for large scale applications such as parts listing, wiring and piping schematics and rule based component selection.

More application specific software will be introduced as vendors of general purpose CAD/CAM systems seek to establish a viable niche in an over populated market. Users need software more closely matched to their individual requirements so as to enhance the benefits achieved with CAD/CAM. Vendors will offer more application module options and better interfaces for linking to other systems and for adding customised software.

CADCAM will benefit from software being developed in other areas. For example, flight simulation modelling techniques could prove very useful for large complex 3D CAD/CAM static and dynamic displays and expert systems technology may help in the development of rule based design systems.

## Use of CAD/CAM

Often it is the way in which CAD/CAM is used which is the main constraint rather than any limitations of the system hardware or software. Most systems are used almost exclusively for 2D draughting and clearly, therefore, current CAD/CAM technology is not being exploited to the full and users should consider:

- Making more use of 2D, 3D and parametric symbol libraries
- Using more 3D as increased processing speeds make it more viable
- Developing menus and macros for specific user requirements
- Implementing standards for structuring drawing and model files
- Developing links with other company computer systems
- Implementing proper file management systems
- Setting up databases to aid component and tool selection

This information note is published by The Daily Telegraph and was prepared by Roger Billsdon of the Cambridge based CAD/CAM Consultancy and Software House ADE Analysis & Design Engineering Ltd who may be contacted on (0480) 66209