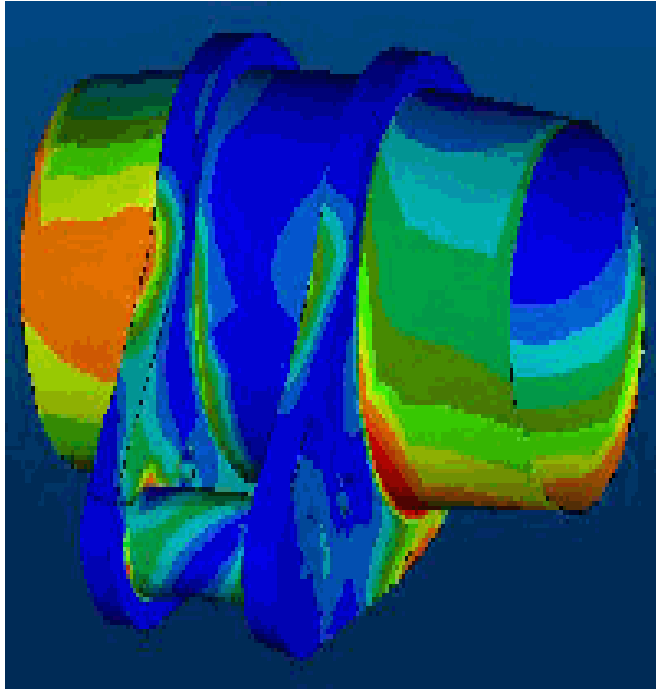


Computer-Aided Design **CAD** can be defined as the use of computer systems to perform certain functions in the design process.

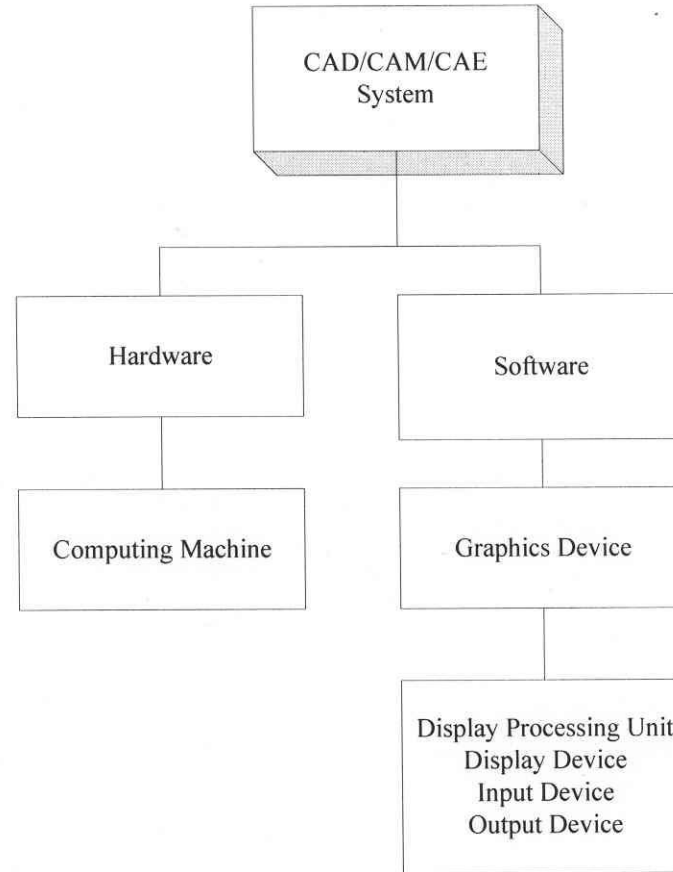
- Two types of activities: synthesis and analysis
- Synthesis is largely qualitative and hard to capture on computer
- Analysis can be greatly enhanced with computers
- Once analysis is complete, design evaluation- rapid prototyping
- Software packages for design optimization

Components of CAD/CAM/CAE Systems



- Major component is hardware and software allowing shape manipulation
- Hardware includes graphic devices and their peripherals for input and output operations
- Software includes packages that manipulate or analyze shapes according to user interaction

Components of CAD/CAM/CAE Systems



Hardware Components

- Graphic device is composed of a display processing unit, a display device, and one or more input devices
- Input devices:
 - Mouse
 - Space ball
 - Data tablet with a puck or stylus
 - Keyboard
- Output Devices:
 - Plotters
 - Color laser printers



Software Components

- CAD software allows the designer to create and manipulate a shape interactively and store it
- CAM software plans, manages and controls the operations of a manufacturing site
- CAE software analyzes design geometry, allowing designer to study product behavior

Windows-Based CAD Systems

- User interface is similar to Windows
- Employs component technology, in which best key software elements are selected from among available software
- Use object-oriented technology, which modularizes the program
- Capable of either parametric or variational modeling
- Internet support

Advantages of CAD/CAM systems

- Greater flexibility.
 - Reduced lead times.
 - Reduced inventories.
 - Increased Productivity.
 - Improved customer service.
 - Improved quality.
 - Improved communications with suppliers.
- Better product design.
 - Greater manufacturing control.
 - Supported integration.
 - Reduced costs.
 - Increased utilization.
 - Reduction of machine tools.
 - Less floor space.