
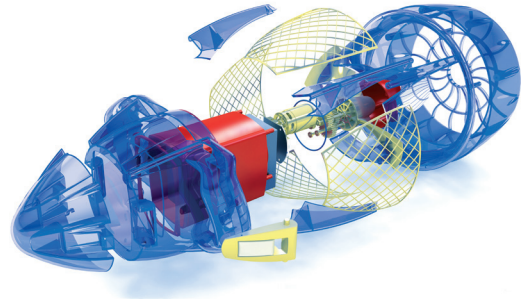


# The design process in a CAD system

**1**  Read the following text and choose the right name for each stage of the design process.

- a. Design analysis and optimisation
- b. Documentation and drafting
- c. Geometric modelling
- d. Design review and evaluation



**1.** .....

During this phase, an accurate view of the object is produced mathematically or analytically, with a 2- or 3- dimensional representation. There are three different ways for representing models: **wire frame**, **surface** and **solid** modelling. In wire frame **all edges** are visible and represented as **lines** whereas **only** the visible surfaces of an object are represented in surface modelling. Solid modelling is the most complicated and **realistic** method for product representation.

**2.** .....

This phase deals with the engineering analysis of the design and is indispensable before product manufacturing. Calculations and simulations are **carried out** to determine the effects on the designed model of loads, temperature and other variables.

**3.** .....

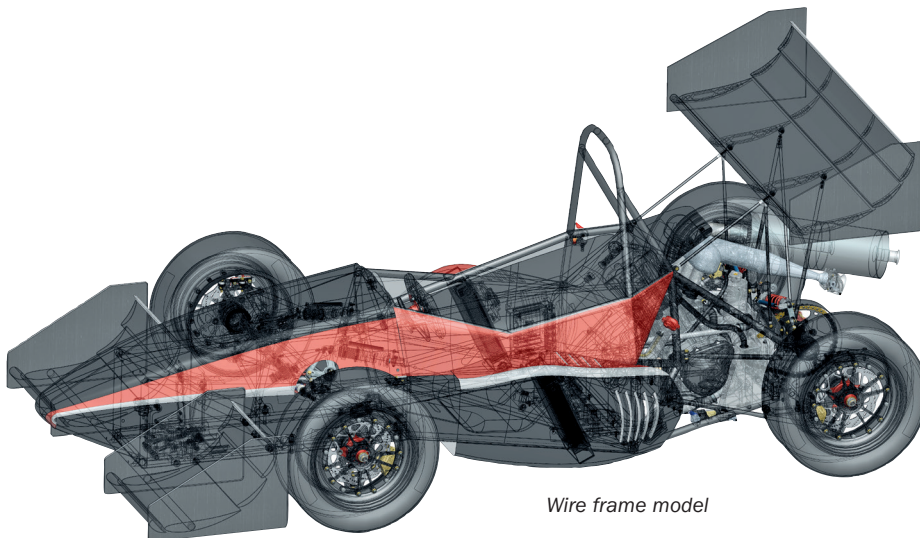
This stage is aimed at evaluating how the various components of a model **fit** together, for good assembly or use of the parts. Special software programmes with animation enable experts to test moving members carefully and check their proper functioning. During this third phase, parts are precisely dimensioned and tolerance is defined.

**4.** .....

At this stage, drawings are scaled and automatically printed by **plotters**, for documentation and reference. Various views of the model can be produced: sectional representations, detail or working drawings.

**to carry out:**  
effettuare  
**edge:** spigolo  
**to fit:** andare bene

**plotter:** tracciatore,  
diagrammatore  
**wire frame:**  
visualizzazione a linee



Wire frame model

## 2 Match words and definitions.

- |                         |                          |  |
|-------------------------|--------------------------|--|
| 1. Wire frame modelling | <input type="checkbox"/> | a. Representing things as they are in real life.   |
| 2. Geometric            | <input type="checkbox"/> | b. A mathematical technique for representing solid objects both internally and externally. |
| 3. Virtual              | <input type="checkbox"/> | c. A small individual feature of something.  |
| 4. Solid modelling      | <input type="checkbox"/> | d. Based on shapes such as squares, triangles or rectangles.                               |
| 5. Realistic            | <input type="checkbox"/> | e. The amount by which the measurements of a value can vary without causing problems.      |
| 6. Variable             | <input type="checkbox"/> | f. Made to appear to exist by the use of computer software.                                |
| 7. Surface modelling    | <input type="checkbox"/> | g. The representation of a three-dimensional object in outline form.                       |
| 8. Tolerance            | <input type="checkbox"/> | h. Something which can change.   |
| 9. Detail               | <input type="checkbox"/> | i. A technology for describing the surface of 3D geometric elements.                       |

## 3 Answer the questions.

1. How many stages does the CAD design process consist of? What are they called?

.....

2. What is geometric modelling? What is it for?

.....

3. How many types of geometric modelling are there? What do they differ in?

.....

4. In relation to product manufacturing, what is the most important design stage? Why?

.....

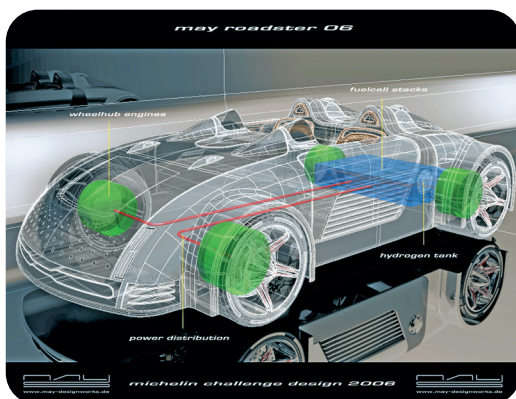
5. What is the “design review and evaluation” stage aimed at?

.....

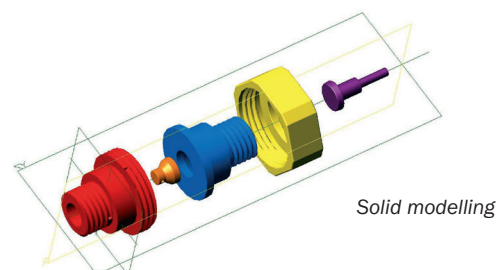
6. What happens during the last stage?

.....

## 4 Write the four stages of the design process.



Wire frame model



Solid modelling