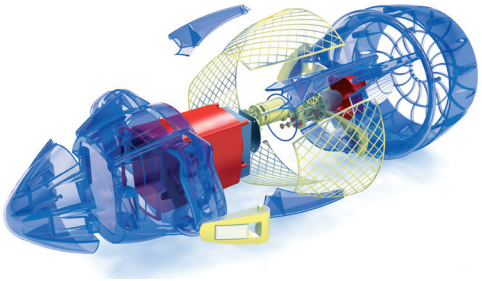
THE DESIGN PROCESS IN A CAD SYSTEM

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

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



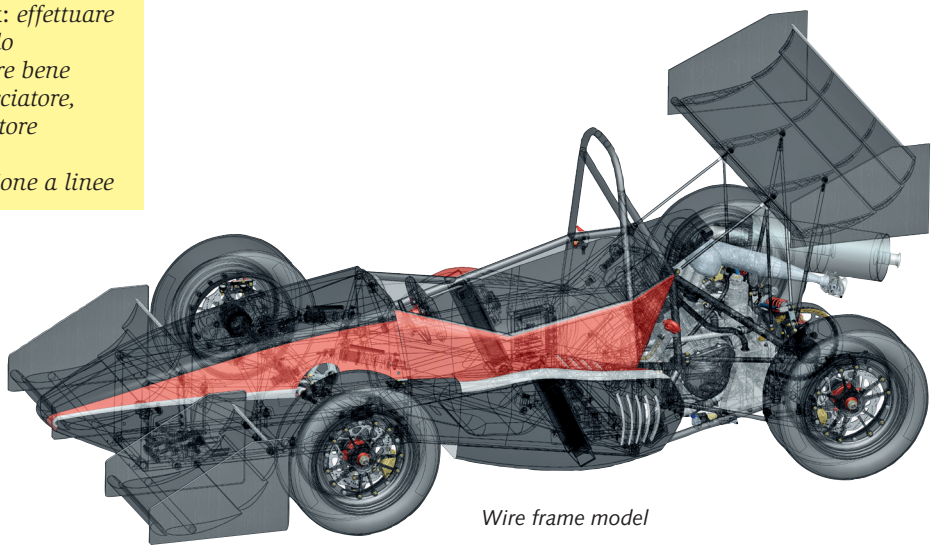
1. .....
During this phase, an accurate view of the object is produced mathematically or analytically, with a 2- or 3- dimensional representation. There are three different ways for representing models: **wire frame**, **surface** and **solid** modelling. In wire frame **all** **edges** are visible and 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

ACTIVITIES

2 Match words to definitions.

a.	wire frame modelling	☐ **1.**	Representing things as they are in real life.
b.	geometric	☐ **2.**	A mathematical technique for representing solid objects both internally and externally.
c.	virtual	☐ **3.**	A small individual feature of something.
d.	solid modelling	☐ **4.**	Based on shapes such as squares, triangles or rectangles.
e.	realistic	☐ **5.**	The amount by which the measurements of a value can vary without causing problems.
f.	variable	☐ **6.**	Made to appear to exist by the use of computer software.
g.	surface modelling	☐ **7.**	The representation of a three-dimensional object in outline form.
h.	tolerance	☐ **8.**	Something which can change.
i.	detail	☐ **9.**	A technology for describing the surface of 3D geometric elements.

3 Answer the following questions.

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

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

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

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

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e. What is the "design review and evaluation" stage aimed at?

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f. What happens during the last stage?

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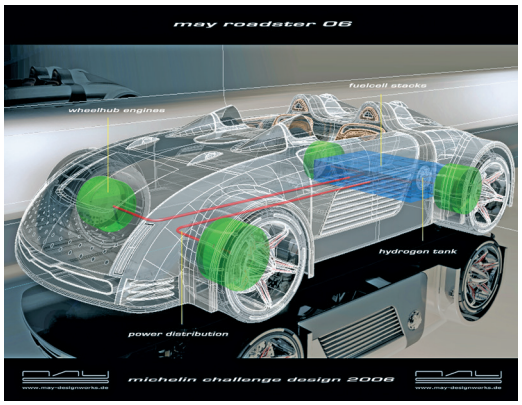
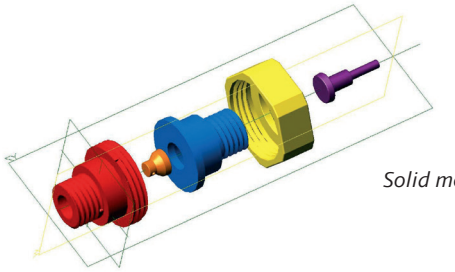
4 PAIR WORK. In turns, report orally about the four stages of the design process.



Wire frame model



Solid modelling

ACTIVITIES