

3D CAD | WHERE NOW?

3D CAD is only one of many tools used by an engineer, designer or architect. There is a range of functions that come after the CAD stage – these include manufacturing and marketing, also known as **production** and **promotion**.

SKETCHED IDEAS

Sketched ideas are still the basis of designing products, buildings and graphics. The more detail there is in the initial sketches, the easier it is for a CAD engineer to create a 3D model. Some of these freehand drawings may be scanned into the computer and the sketch used to generate a 3D model.



3D CAD MODELLING

3D CAD modelling is a time-saving process. The 3D model can be used for several functions once it is made.

Accuracy is the key to success.

Every CAD package has a large selection of features that can make producing your model easier.

Files should be saved regularly, with sensible file names. Keep all files together in one directory. Backing up your files to cloud storage, USB memory or external HDD is good practice.



MANUFACTURING

Computer-aided manufacture (CAM) allows 2D or 3D graphics to control computer-numerically controlled (CNC) machines to produce physical objects. Some 3D CAD software simulates (tests) the manufacture process prior to machining. CAD/CAM has had major social implications; many factories have replaced workers with automated CNC machines and this has caused unemployment.



PRODUCTION DRAWINGS

Most 3D CAD software can create technical drawings of the 3D model. This allows the designer or engineer to produce orthographic, pictorial, sectional, detailed and exploded views. It is a time-saving feature, removing the need to produce the engineering drawings on traditional drawing boards or 2D CAD software.



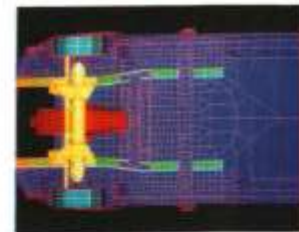
3D PROTOTYPE PRINTING

Models are exported as standard tessellation language (STL) files and imported into 3D model machines. The model is then digitally 'sliced' into thin horizontal layers. These layers can be printed. 3D printed prototypes help the designer to evaluate aesthetics and functions.



SIMULATION

Simulation allows testing of products, training of people or predicting real-world events. 3D simulations have preloaded physical data about materials, temperature and environments. Simulation using CAD reduces the costs of producing products and is a safer method for training staff.



3D ILLUSTRATION

Illustration (or visualisation) software improves the visual impact of a 3D model. Some illustration software allows the user to animate the model. Most CAD software has illustration capabilities included but stand-alone applications are available.



"DESIGN IS **INEVITABLE**: THE **ALTERNATIVE** TO
GOOD DESIGN IS BAD DESIGN. NOT **NO DESIGN** AT ALL."

Douglas Martin, author

CAD | WHERE IT BEGAN



Computer-aided design (CAD) uses computer technology to enable designers, engineers and graphic artists to model ideas in 2D and 3D. This electronic method has many advantages over the more traditional approaches to drawing.

The history of CAD software can be traced back to 1963 and the invention of 'SketchPad' by Ivan Sutherland. This technology was very limited and only allowed engineers to 'draw' onto a square screen using an electronic stylus.

By the turn of the millennium, most companies had almost completely moved to CAD for the creation of **production** and **promotional** graphics.

Now designers can use CAD to **illustrate**, **simulate**, **animate** and even **manufacture** items from home or the workplace.

During the Graphic Communication course you will experience how to use CAD software in your coursework. You will need to understand how to use CAD software for the N5 exam.

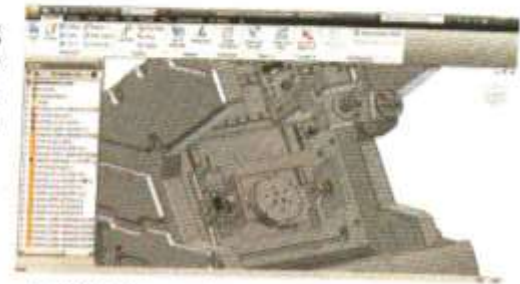
SOFTWARE | TOOLS FOR THE JOB

3D CAD MODELLING SOFTWARE

3D CAD modelling is a relatively new way of drawing products or buildings on a computer. It enables the designer to view objects from any angle, illustrate models to look photo-realistic or send them directly to manufacturing equipment to produce a finished item.

This has increased the productivity of designers, engineers and architects: models can be quickly produced, altered and sent to clients round the world within minutes. Multiple people can work on one design simultaneously and it can even be illustrated as the graphics are produced.

This technology has led to a growing demand for employees to have a solid understanding of CAD.



3D CAD often requires more powerful computers, but the level of detail and ease of understanding make it worthwhile.

SO MANY CHOICES: WHAT PLATFORM?

There are many different CAD applications on the market. Software companies are in competition to develop their programs so that they offer more features, are easier to use and can create increasingly complex models. Your school will have a suitable software package for you to complete any unit, Added Value or Assignment work.

There are many free programs (freeware) available to download that will allow you to meet the standards of the coursework. You could download and install software at home that will help you develop your skills.

You should try to experience a wide range of software platforms if you want to pursue a career that involves CAD modelling. Most software will allow you to **export** and **import** file types to share graphics.

CAD commands and features are used in all CAD software and form the basis of 3D modelling.



"DON'T **EXPECT** A CREATIVE **IDEA**
TO **POP OUT** OF YOUR COMPUTER." George Lois