

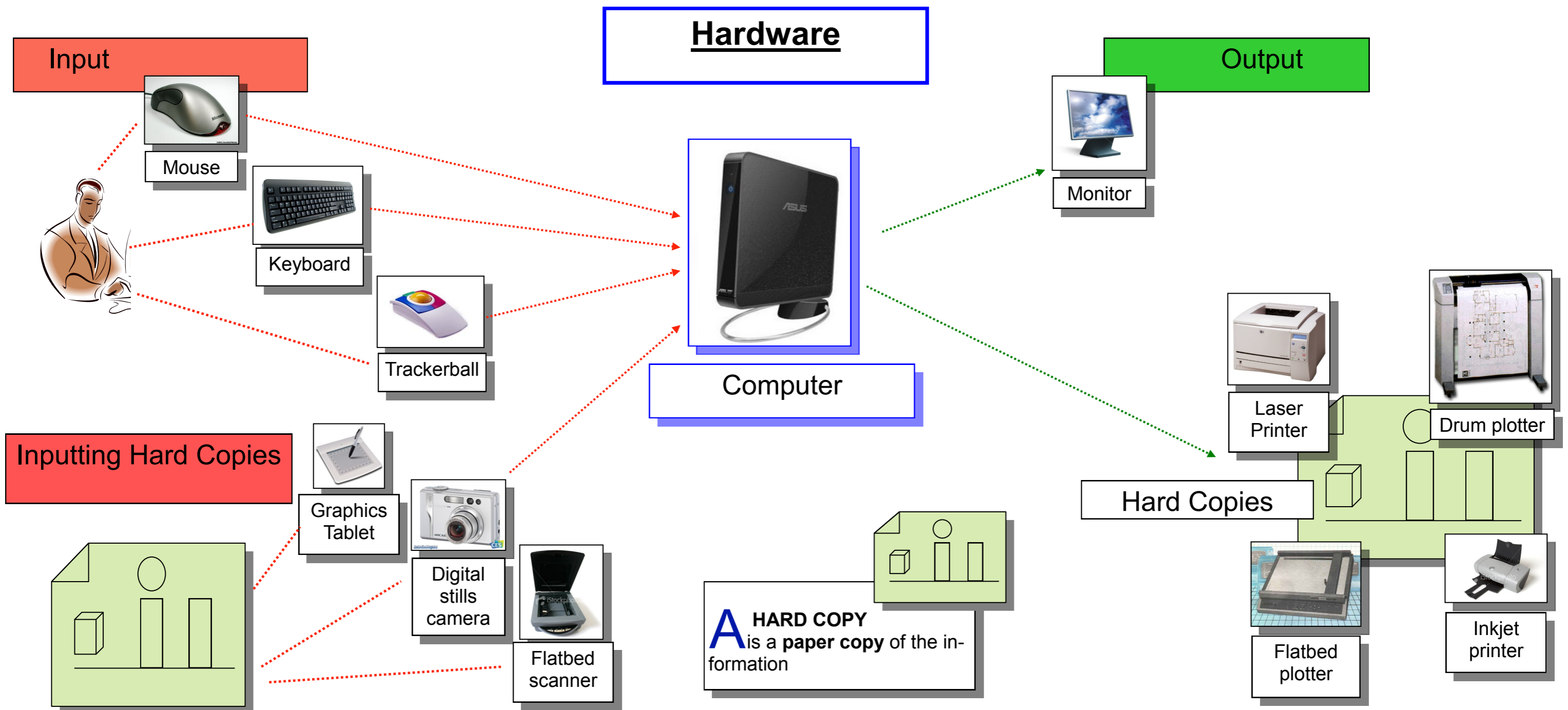
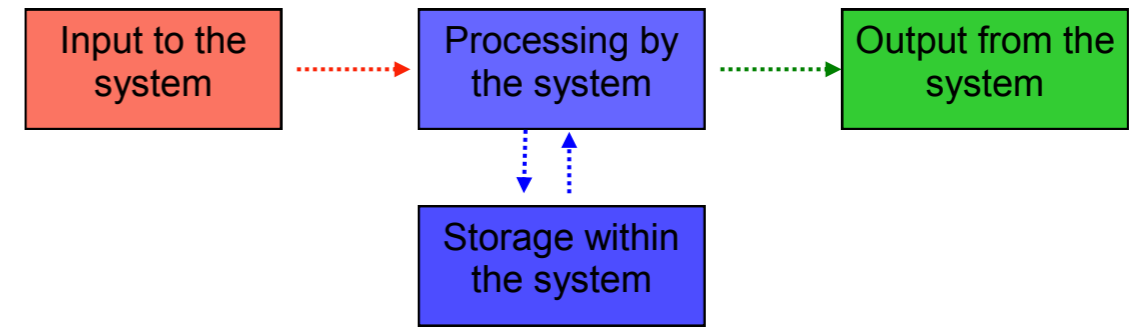
CAG — Computer Aided Graphics

The development of computers in recent years has dramatically changed the ways in which graphics are produced – for example **desktop publishing (DTP)** has transformed the way in which books and magazines are produced and published.

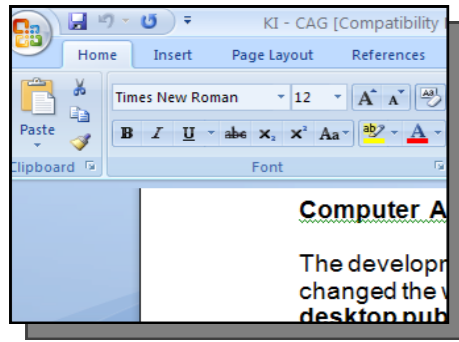
Hardware and software

Computers use a combination of **hardware** and **software** to perform tasks. Hardware is the name given to the physical parts of the system such as keyboard, monitor and printer. Software is the name given to programs which interact with the hardware, enabling the computer to perform its tasks.

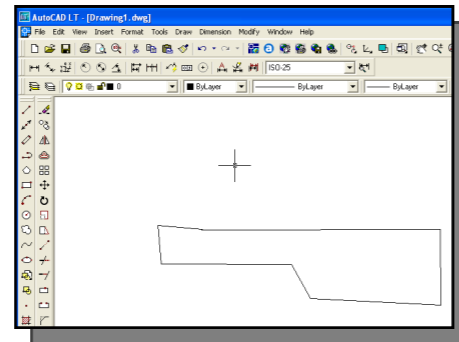
Information is **INPUT** into the computer via various forms of **HARDWARE**, the computer **PROCESSES** this information using **SOFTWARE** and the results are **OUTPUT** using **HARDWARE**.



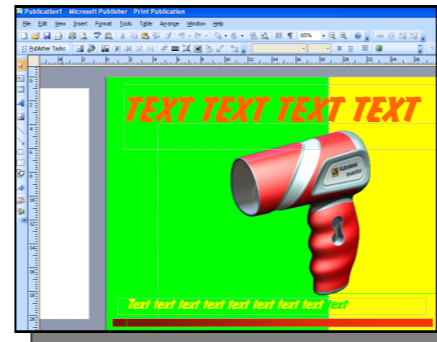
Software



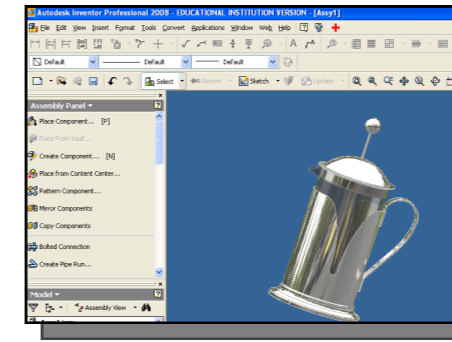
Word processing package e.g. Microsoft Word. This would be used to produce letters which only contain text.



Computer Aided Drawing (CAD) package e.g. Auto-Cad. This would be used to produce detailed technical drawings of some component.



Desk Top Publishing (DTP) package e.g. Microsoft Publisher. This is used to produce a mixture of text and graphics, for example a magazine.



3D Modelling package e.g. Inventor. This is used to produce realistic 3D models of components, allowing changes to be made easily.



Illustration and Presentation package e.g. Inventor Studio. This would be used to colour and render an object or environment.

The impact of technology on industry

Advantages of CAG over manual graphics methods

- **Storage and retrieval**
The drawing can be stored on hard drive, zip disc, CD-R or USB and easily transported and stored. The drawings can be reprinted as many times as required with no loss of quality.
- **Ease of modification**
It is easier to make modifications (changes) to work produced on a computer than it is to drawing board work. There are many tools within a program that allow this—trim, erase, copy, circular pattern, etc. and the result shall be much neater and quicker to produce.
- **Layers**
Building drawings consist of layers, and each element of the building's construction would be on a different layer; for example electrical wiring, plumbing work and heating systems would each have their own layer. This allows them to be developed and worked on independently of each other, and compiled when completed.
- **Repetitive elements (library)**
Some drawings contain a number of parts which occur several times. To save time drawing them each time, they can be drawn once, saved, then retrieved next time they are required. Think of the kitchen you produced for your IP folio.
- **Drawing speed**
After an initial cost in terms of time and money to train an employee to use CAG, the company can easily make the money back in the long run as drawings are produced

much faster than using the traditional methods.

- **Drawing size and flexibility**
Drawings can be enlarged or reduced with no loss of detail. Extremely fine, detailed work can be produced using commands such as **ZOOM**. Positive location tools such as **GRID**, **GRID SNAP** and **ATTACH** enable accuracy to be maintained even in the smallest details.
- **Ease of transfer of files**
As the drawings are produced electronically, they can easily be transferred quickly to anywhere in the world via the internet.

Disadvantages of CAG over manual graphics methods

There are some disadvantages of using a CAG system. They could be:

- The initial cost of a computer system is high, as is the cost of retraining staff that are used to producing drawings by traditional methods.
- It takes time to convert existing paper drawings over to an electronic format, although **scanners** can help with this.
- Loss of material can occur due to computer viruses and power failures.
- Possible theft of materials is more common with a CAD system.