People & ICT Systems
INFO 2

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This Time

Last time, we looked at the need to protect data in ICT systems and the subsequent threats if these measures fail.

This time we look at the relationship between people and IT systems.

People & IT

ICT systems are designed for and used by people and are commissioned for a purpose!

When a problem has been identified by a client, a programmer produces a working solution initially for the client, but also possibly for other users.

For example, if a client wants to produce an ordering system for his company then they would contact a programmer who would then solve the problem and create an ICT system that matches the needs of the client. This system would then be used by the clients staff.

Characteristics of Users

Every user of a system is different; they have different needs and need different support.

The different requirements of users depend on:
➔ Experience;
➔ Physical characteristics/Disabilities;
➔ Task to be undertaken;
➔ Age of user;
➔ Environment of use.

Characteristics of Users

Experience:

Users can be experts or inexperienced, therefore they will need different types of support to help them navigate around an ICT system. An expert user should have the ability to customise their software whereas an inexperienced user will need many wizards and tips to help them work.

Physical characteristics

Some users may be able-bodied whilst others have disabilities. Those with disabilities will have to have their systems adapted so that they can use them effectively. For example, some systems will require more appropriate forms of peripheral, like Braille keyboards and a larger screen for the visually impaired. This also applies to software as well as hardware.

Characteristics of Users

Task to be undertaken:

Different systems require different tasks to be undertaken; this will affect the way that the user works. It would not make sense to build a self-service checkout system which has a command-line interface!

Age:

The age of the user will affect the way they solve the problem on the computer. The older a user is the more likely they are to resist change, therefore the way their system looks and operates may need to be similar to the current system. A younger user is more likely to adapt well to change.

Characteristics of Users

Environment of Use:

The environment that the user works in will have an effect on the system that they operate. For example, a user that works on the factory floor may have peripherals that reflect this and rather than using a keyboard they will use a concept keyboard or a mouse. Users working in the catering industry are more likely to use a concept keyboard rather than a standard keyboard; this allows the user to select an object on the keyboard rather than typing in the object.

Human-Computer Interaction

A designer aims to make a good interface so that the user does not get stressed whilst using the system. Examples of good user interface design ensure that a user can carry out their required task with the minimum amount of hassle.

A good **Human-Computer Interface** will:
➔ Be easy to use for all users but specifically inexperienced users;
➔ Be consistent to allow for transferable skills to be performed;
➔ Always do what the user expects;
➔ Have help available for the user;
➔ Have facilities to customise the interface so that experienced users can use them;
➔ Take the users health and safety into consideration;
➔ Reduce the possibility of errors occurring.

Command Line Interface:

Typing in known commands to activate a program with different options. This requires the user to be an expert in the use of programming, as each command must not only be learnt but also understood. An example of this type of interface is MS-DOS.

- ✔ Once commands are learnt can be very quick to use;
- ✔ Very lightweight.
- ✗ Difficult and slow to learn;
- ✗ Incorrectly entered commands could affect the running of the system!;
- ✗ Difficult for visually impaired users;

Menu Driven Interface:

A menu driven interface is a type of interface where the user navigates through menus and sub-menus in order to achieve a specific task. This type of interface is used in mobile phones and iPods.

Many telephone call centres use this kind of interface where the user is given a series of options (menus) and has to speak or press the telephone buttons. This then leads to another menu choice or to an operator.

- ✔ Intuitive to use;
- ✔ Quite lightweight.
- ✗ Dependant on menu options being well chosen;
- ✗ May be slow to find correct choice.

Graphical User Interface:

A graphical user interface allows the user to interface with the computer using windows, icons, menus and pointing devices (WIMP) or other human interface devices. GUIs are used in all modern operating systems.

Systems like this tend to make use of long-term human memory so that once one GUI is learnt the skills can be transferred to other software.

- ✔ Can be used by inexperienced users and expert users;
- ✔ Confidence building for novice users;
- ✔ Often can be customized.
- ✗ Very heavy on memory.

Natural Language Interface:

A natural language interface is one that uses commands given in spoken language or English sentences. Instead of navigating through menus, clicking on icons or typing commands, the NLI allows a user to simply state the desired function.

These are sometimes used in fighter jets to allow the pilot to operate the computer without having to divert his vision to a screen or use his hands. Internet search engines like Google use natural language to search the web.

- ✔ Very intuitive;
- ✔ Extremely flexible and powerful;
- ✔ Can be very fast.
- ✗ Huge amounts of computation required;
- ✗ Still not perfect - easy to fool!

Jobs in IT

In this section of the specification, you are expected to become familiar with the different job roles within the IT industry.

You are also expected to know what qualities and skills are important when working in IT!

Jobs in IT

Computer Programmer:

➔ Writes or analyses computer programs;
➔ Needs problem solving skills;
➔ Needs to be able to be patient when coding;
➔ Needs to be able to communicate well both verbally and written.

Project Manager:

➔ Controls a team of professionals;
➔ Communicates with all levels of an organisation;
➔ Attention to detail needed;
➔ Organisational and planning skills needed.

Jobs in IT

Database Administrator:

➔ Adheres to database principals;
➔ Maintains databases;
➔ Adheres to legal requirements of storage of data.

Network Administrator:

➔ Needs problem solving skills;
➔ Communicates with all levels of an organisation;
➔ Needs interpersonal skills;
➔ Needs to understand structure of organisations.

Qualities needed in IT

Some general qualities required to work in any sector of IT include:

➔ Communication and questioning skills;
➔ Patience to use non-jargon words;
➔ Calm nature;
➔ Good listening skills;
➔ Management skills;
➔ Analytical and problem solving skills;
➔ Good organisational and writing skills;
➔ Approachable and self-confident;
➔ Ability to take the initiative;
➔ Design skills;
➔ Technical competence;
➔ Self-motivation and initiative;
➔ Flexibility.