LEARNER GUIDE

The application and effects of ICT

Unit Standard 117928

NQF level 4 Credits 5

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PERSONAL INFORMATION

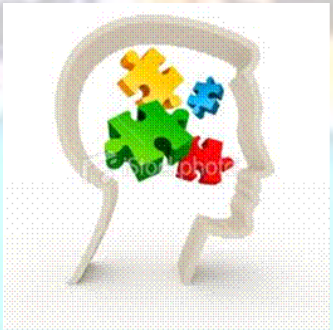
NAME	
CONTACT ADDRESS	
Code	
Telephone (H)	
Telephone (W)	
Cellular	
Learner Number	
Identity Number	

EMPLOYER	
EMPLOYER CONTACT ADDRESS	
Code	
Supervisor Name	
Supervisor Contact Address	
Code	
Telephone (H)	
Telephone (W)	
Cellular	

INTRODUCTION

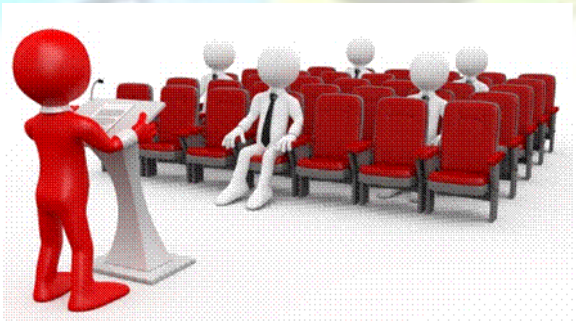
Welcome to the learning programme

Follow along in the guide as the training practitioner takes you through the material. Make notes and sketches that will help you to understand and remember what you have learnt. Take notes and share information with your colleagues. Important and relevant information and skills are transferred by sharing!



This learning programme is divided into sections. Each section is preceded by a description of the required outcomes and assessment criteria as contained in the unit standards specified by the South African Qualifications Authority. These descriptions will define what you have to know and be able to do in order to be awarded the credits attached to this learning programme. These credits are regarded as building blocks towards achieving a National Qualification upon successful assessment and can never be taken away from you!

Programme methodology



The programme methodology includes facilitator presentations, readings, individual activities, group discussions and skill application exercises.

Know what you want to get out of the programme from the beginning and start applying your new skills immediately. Participate as much as possible so that the learning will be interactive and stimulating.

The following principles were applied in designing the course:

- Because the course is designed to maximise interactive learning, you are encouraged and required to participate fully during the group exercises
- As a learner you will be presented with numerous problems and will be required to fully apply your mind to finding solutions to problems before being presented with the course presenter's solutions to the problems
- Through participation and interaction the learners can learn as much from each other as they do from the course presenter
- Although learners attending the course may have varied degrees of experience in the subject matter, the course is designed to ensure that all delegates complete the course with the same level of understanding
- Because reflection forms an important component of adult learning, some learning resources will be followed by a self-assessment which is designed so that the learner will reflect on the material just completed.

This approach to course construction will ensure that learners first apply their minds to finding solutions to problems before the answers are provided, which will then maximise the learning process which is further strengthened by reflecting on the material covered by means of the self-assessments.

Different role players in delivery process

- Learner
- Facilitator
- Assessor
- Moderator

What Learning Material you should have

This learning material has also been designed to provide the learner with a comprehensive reference guide.

It is important that you take responsibility for your own learning process; this includes taking care of your learner material. You should at all times have the following material with you:

Learner Guide	**This learner guide is your valuable possession:**
	This is your textbook and reference material, which provides you with all the information you will require to meet the exit level outcomes. During contact sessions, your facilitator will use this guide and will facilitate the learning process. During contact sessions a variety of activities will assist you to gain knowledge and skills. Follow along in the guide as the training practitioner takes you through the material. Make notes and sketches that will help you to understand and remember what you have learnt. Take and share information with your colleagues. Important and relevant information and skills are transferred by sharing! This learning programme is divided into sections. Each section is preceded by a description of the required outcomes and assessment criteria as contained in the unit standards specified by the South African Qualifications Authority. These descriptions will define what you have to know and be able to do in order to be awarded the credits attached to this learning programme. These credits are regarded as building blocks towards achieving a National Qualification upon successful assessment and can never be taken away from you!

Formative Assessment  **Workbook**	The Formative Assessment Workbook supports the Learner Guide and assists you in applying what you have learnt. The formative assessment workbook contains classroom activities that you have to complete in the classroom, during contact sessions either in groups or individually. You are required to complete all activities in the Formative Assessment Workbook. The facilitator will assist, lead and coach you through the process. These activities ensure that you understand the content of the material and that you get an opportunity to test your understanding.

Different types of activities you can expect

To accommodate your learning preferences, a variety of different types of activities are included in the formative and summative assessments. They will assist you to achieve the outcomes (correct results) and should guide you through the learning process, making learning a positive and pleasant experience.

The table below provides you with more information related to the types of activities.

Types of Activities	Description	Purpose
Knowledge Activities 	You are required to complete these activities on your own.	These activities normally test your understanding and ability to apply the information.
Skills Application Activities 	You need to complete these activities in the workplace	These activities require you to apply the knowledge and skills gained in the workplace

Types of Activities	Description	Purpose
Natural Occurring Evidence 	You need to collect information and samples of documents from the workplace.	These activities ensure you get the opportunity to learn from experts in the industry. Collecting examples demonstrates how to implement knowledge and skills in a practical way

Learner Administration

Attendance Register

You are required to sign the Attendance Register every day you attend training sessions facilitated by a facilitator.

Programme Evaluation Form

On completion you will be supplied with a "Learning programme Evaluation Form". You are required to evaluate your experience in attending the programme.

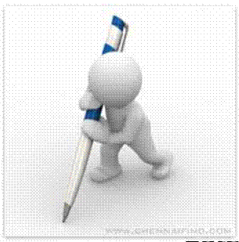
Please complete the form at the end of the programme, as this will assist us in improving our service and programme material. Your assistance is highly appreciated.

Assessments

The only way to establish whether a learner is competent and has accomplished the specific outcomes is through the assessment process. Assessment involves collecting and interpreting evidence about the learners' ability to perform a task.

To qualify and receive credits towards your qualification, a registered Assessor will conduct an evaluation and assessment of your portfolio of evidence and competency.

This programme has been aligned to registered unit standards. You will be assessed against the outcomes as stipulated in the unit standard by completing assessments and by compiling a portfolio of evidence that provides proof of your ability to apply the learning to your work situation.

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How will Assessments commence?

Formative Assessments

The assessment process is easy to follow. You will be guided by the Facilitator. Your responsibility is to complete all the activities in the Formative Assessment Workbook and submit it to your facilitator.

Summative Assessments

You will be required to complete a series of summative assessments. The Summative Assessment Guide will assist you in identifying the evidence required for final assessment purposes. You will be required to complete these activities on your own time, using real life projects in your workplace or business environment in preparing evidence for your Portfolio of Evidence. Your Facilitator will provide more details in this regard.

To qualify and receive credits towards your qualification, a registered Assessor will conduct an evaluation and assessment of your portfolio of evidence and competency.

Learner Support

The responsibility of learning rests with you, so be proactive and ask questions and seek assistance and help from your facilitator, if required.

Please remember that this Skills Programme is based on outcomes based education principles which implies the following:

- You are responsible for your own learning – make sure you manage your study, research and workplace time effectively.
- Learning activities are learner driven – make sure you use the Learner Guide and Formative Assessment Workbook in the manner intended, and are familiar with the workplace requirements.
- The Facilitator is there to reasonably assist you during contact, practical and workplace time for this programme – make sure that you have his/her contact details.
- You are responsible for the safekeeping of your completed Formative Assessment Workbook and Workplace Guide
- If you need assistance please contact your facilitator who will gladly assist you.
- If you have any special needs please inform the facilitator

Learner Expectations

Please prepare the following information. You will then be asked to introduce yourself to the instructor as well as your fellow learners

Your name:
The organisation you represent:
Your position in organisation:
What do you hope to achieve by attending this course / what are your course expectations?

UNIT STANDARD 117928

SAQA US ID	UNIT STANDARD TITLE		
117928	Describe the application and effect of Information and Communication Technologies (ICT) on society		
SGB NAME	**NSB**	**PROVIDER NAME**	
SGB Computer Sciences and Information Systems	NSB 10-Physical, Mathematical, Computer and Life Sciences		
ABET BAND	**UNIT STANDARD TYPE**	**NQF LEVEL**	**CREDITS**
Undefined	Regular	Level 4	5
REGISTRATION STATUS	**REGISTRATION START DATE**	**REGISTRATION END DATE**	**SAQA DECISION NUMBER**
Registered	2004-12-02	2007-12-02	SAQA 1257/04

Purpose of unit standard

This unit standard is intended for people who need a working understanding of the trends in Information and Communication Technologies (ICT) either as a user of computers or as basic knowledge for a career in the ICT industry

People credited with this unit standard are able to:

- Understand Information and Communication Technology (ICT).
- Describe the applications of ICT in modern society
- Identify trends that could have an impact on future society

The performance of all elements is to a standard that allows for further learning in this area

Learning assumed to be in place

The credit value of this unit standard is calculated assuming a person has the prior knowledge and skills to:

- Read, write, communicate and comprehend at least at GET level
- Understand the concepts of Information and Communication Technology (ICT)

Unit Standard Range

N/A

Specific Outcomes and Assessment Criteria

Specific outcome 1: Describe Information and Communication Technology (ICT).

Assessment criteria

- Information and Communication Technology (ICT) is defined in terms of its application and role in modern society
- Equipment used in modern society ICT is described in terms of its purpose and use: Any four of: Computer, Laptop Computer, Personal Digital Assistant (PDA), Modems, Cell phones, Printers, Facsimile, Photocopiers, Telecommunications, the Internet, Bluetooth

Specific outcome 2: Describe the use and effect of ICT on modern society

Assessment criteria

- A comparison of the use of computers versus people. Highlight the advantages and disadvantages of each
- Describe the effect of ICT on modern society. Any three of: information age, information availability (time and place), information overload, jobless growth, competencies, globalization, mobility
- Examples of computer applications are described giving the advantages and disadvantages of computerized applications- Any three of: In the Home, Banking, Insurance, Manufacturing, Hospitality and Tourism, Retail, Healthcare, Education, Teleworking, Libraries, Mining, Government.

Specific outcome 3: Explain the effect of ICT on the Physical environment

Assessment criteria

- Explain what is the physical or natural environment: Air, water, land
- What is the negative effect ICT is having on the physical environment: Disposal of solid waste (cartridges), disposal of ink, destruction of trees, radiation, global warming
- Explain how ICT`s can positively effect the physical environment: Paperless, reduced commuting, access in remote areas

Specific outcome 4: Explain the effect of ICT on the social environment

Assessment criteria

- Explain what is the social environment
- Explain the benefits of ICT`s on society: Telecommuting, highly paid employment, convenience, more recreation, lower costs
- Explain the negative effect of ICT`s on society: Unemployment, crime, health, breakdown of morals and cultures, anti-social behaviour

Specific outcome 5: Explain the effect of the legal environment on ICT`s

Assessment criteria

- Explain what is legislation
- Explain the benefits of having legislation
- Explain the legal issues that arise out of the ICT industry: Intellectual property, cyber crime, infringement of privacy, service level agreements, purchase and sale agreement
- Identify the legislation that impacts on ICT: Copyright Act, ECTA, access to Information act, law of contract

Critical Cross-field Outcomes (CCFO)

- Identify and solve problems in which responses display that decisions using critical and creative thinking have been made by understanding security aspects of using computers in modern society
- Organise and manage oneself and one`s activities responsibly and effectively by effectively using a variety of safeguards to maintain security of a computer environment
- Collect, analyse, organize, and critically evaluate information by remaining alert to new viruses that could effect the computer
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion when engaging with the subject

- Use science and technology effectively and critically, showing responsibility towards the environment and health of others by acting responsibly when using a computer

DESCRIBE ICT

Outcome

Describe Information and Communication Technology (ICT).

Assessment criteria

- Information and Communication Technology (ICT) is defined in terms of its application and role in modern society
- Equipment used in modern society ICT is described in terms of its purpose and use.
- Any four of: Computer, Laptop Computer, Personal Digital Assistant (PDA), Modems, Cell phones, Printers, Facsimile, Photocopiers, Telecommunications, the Internet, Bluetooth

Introduction to IT

All businesses and most people need information on a daily basis. A business has to know:

- Which products are available to sell to customers
- What the prices of the products are
- Where the customers are
- How and where the goods have to be delivered
- Whether the customer has paid the account
- Where to buy raw materials in order to manufacture more products to sell

This is just some of the information that a business needs every day.

People like us also need information:

- What time the bus will arrive to take us to work
- How much we have to pay for transport
- The physical address and telephone numbers of our place of work, friends and family
- How much salary we will be paid at the end of the month
- How much we have to pay for electricity and water, food, clothes, etc

These are only a couple of things we need to know.

We all know that we live in the information age. In fact, we have access to so much information that we at times suffer from information overload. If a big business had to process all the information it needs, it would take many people and many hours and by the time the information reaches the manager, it will be at least a week old, which means that it will be outdated.

This is where IT is invaluable. An information technology (IT) system processes, stores, and/or transfers information. This information includes words and numbers, for example financial statements, payslips, etc. The information can also include sound and / or video such as a sales presentation or a catalogue of products.

The IT system will use

- Computers

- A telecommunications network
- Other programmable devices to process and distribute information.

Different Types Of Computers

A computer will manipulate according to your instructions and they come in a variety of different shapes and sizes.

The computers we see and use most often are called personal computers. Most of the computers that are advertised are personal computers. There are other types of computers as well.

Mainframe

A mainframe is a large, powerful computer that can serve a large number of users at the same time. Banks use mainframe computers where all the information about their clients is stored. SARS also use a mainframe computer to store the information for all the tax payers.

It follows then that when you work in a bank or for another organisation, you do not sit in front of the mainframe to work. A user will connect to a mainframe through another smaller computer, usually a dumb terminal. This computer will consist of a keyboard, mouse and a screen to enter and display information. The dumb terminal does not process or store any data – it is simply used to gain access to the data. All the processing and storing is done by the mainframe.

When you think of any bank and the number of users that have to access the information at the same time, you will realise that a mainframe needs a lot of processing power and storage capacity – they need a lot of memory and they have to process information quickly. They are therefore very large and very expensive.

Minicomputer

This is a smaller, less powerful version of a mainframe. It costs less than a mainframe but cannot serve as many users at the same time.

Users connect to the mainframe through another smaller computer or a dumb terminal.

Medium-sized companies often use minicomputers as they provide a centralised store of information. An office server is an example of a minicomputer.

Microcomputer

A personal computer or microcomputer is a stand-alone computer system designed for use on a desktop at home or in the office. This is the most common type of

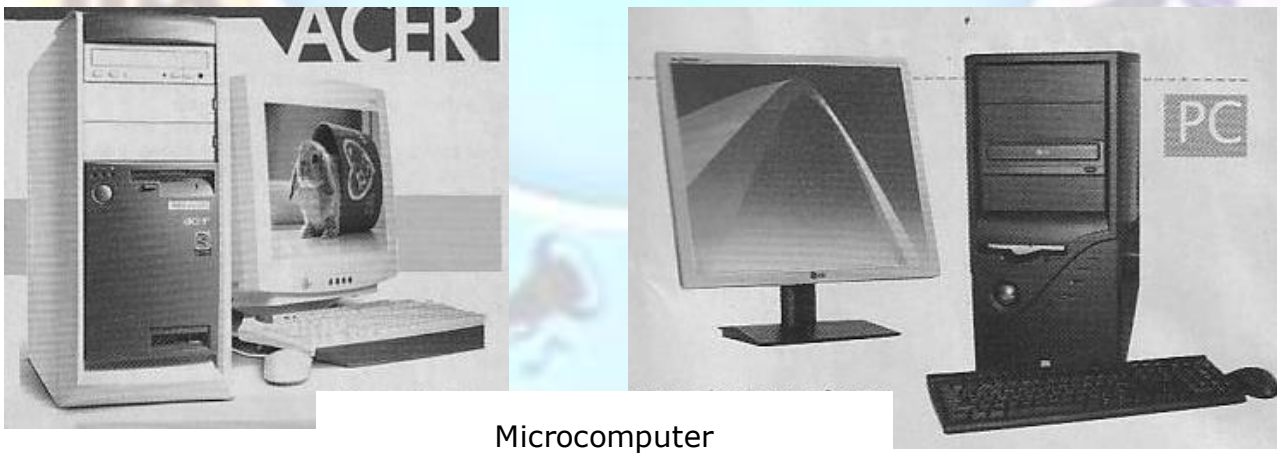
computer found in homes and offices. With the development of the microchip it was possible to design a microcomputer to give more computing power to users of the IT system. The development of software also makes it easier for people to use computers without having to know complex programming languages and commands.

As only one person usually accesses a microcomputer at a time, the computer needs less processing power and storage capacity than a mainframe or minicomputer. This then means that the microcomputer also costs less.

- There is also more than one kind of microcomputer:
- Desktop microcomputers (usually IBM compatible) are usually called PC's
- Apple Macintosh and Apple iMac computers are also popular desktop computers, used especially by people in the graphic design industry.
- Custom-built workstations are used by computer programmers and scientific researchers . These workstations are also used by the computer animation industry to produce animated feature films such as Lion King and Shrek.

All PC's have a similar basic design and are produced by a large number of manufacturers with different specifications and components. PC's can vary a lot in terms of the sort of tasks for which they are suitable and the performance they are capable of.

When the business has a mainframe or a minicomputer a PC is often used as an intelligent terminal to connect to the mainframe. Some information is processed and stored on the PC and then uploaded to the mainframe or minicomputer later.



Microcomputer

Network computer

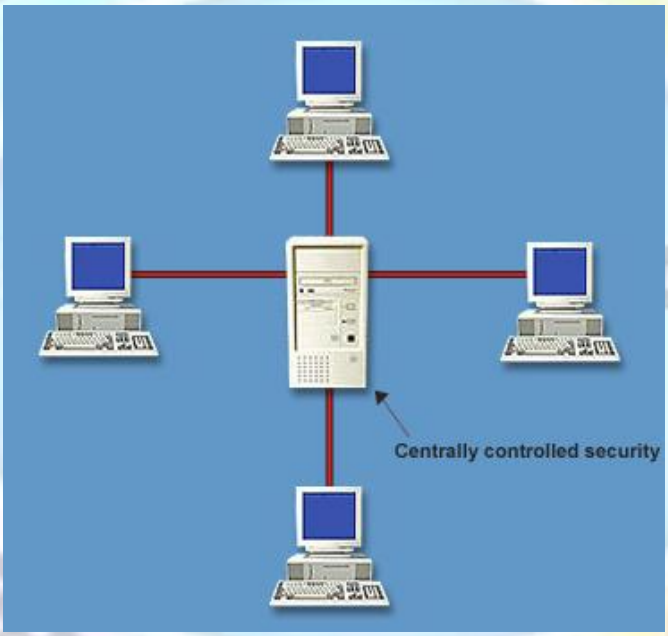
This is a low cost microcomputer. It is designed to connect to and be managed by a central computer such as a mainframe.

Each time the network computer is switched on, it retrieves the latest version of the software it needs from the central computer. A network computer would therefore not have a CD-ROM drive or a stiffy drive, since it does not need these components to install and upgrade software.

Network computers typically have less processing power and storage capacity than microcomputers, therefore they cost less.

A disadvantage of a network computer is that it has no use if it is not connected to a central computer.

Call centres and Help desks often use network computers, since users do not need the processing and storage power of PC's but do need access to centralised software and information.



Laptop computers

A laptop computer is a portable computer that can fit into a briefcase. Their processing power and storage capacity is typically the same as a PC, but the technology needed to produce a portable computer is expensive, so a laptop will cost more than a PC with the same features.

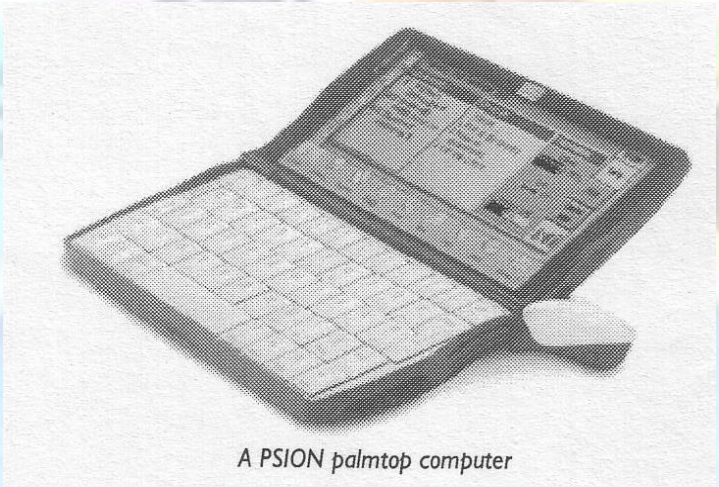
A big advantage of a laptop computer to a businessman is that it can be used almost anywhere. Their screens and keyboards are built in and they have a battery which means that the laptop can be used for several hours without needing power.

Disadvantages of laptop computers are:

- The price
- They are less comfortable to use than a PC or desktop computer as the keyboard is built in
- They are more likely to be stolen than desktop computers

PDA

A palmtop or Personal Data Assistant (PDA) is a hand held device that is used mostly to store contact information and for e-mail and Internet access. They do not have the same features and components as microcomputers.



A PSION palmtop computer

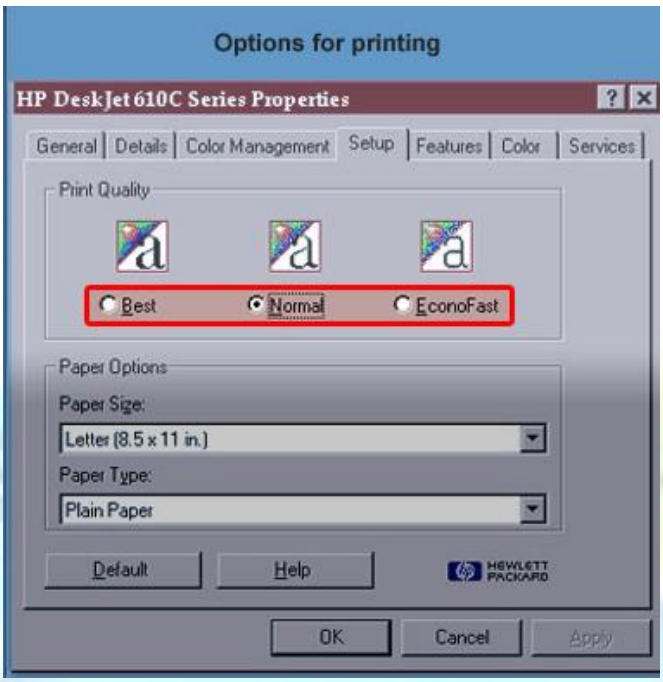
Printers

A printer allows the user to print out on paper a copy of the data that is being processed by the computer. Modern printers will print text and pictures and even photos. Today, printers can print in colour and black and white.

The most common types of printer are:

Printer Types	
Dot matrix	A dot matrix printer creates an image by having a print wire strike an inked ribbon transferring a dot to paper. Dot matrix printers use movable print heads, typically with 9, 18 and 24 pins. Colour dot matrix printers were produced in the past but are seldom seen.
Character impact	At one time, daisy-wheel printers (and similar variations) were relatively common, but are now seldom seen. Daisy-wheel printers operated much like a typewriter. A print wheel is lined up over the paper with the proper character selected. A striker (sometimes called the hammer) would drive the character against the ribbon and the paper.
Ink jet	Ink jet printers have gained wide popularity in the home market because of their relatively low initial cost and support for colour printing. They are used in business to support colour graphics and document printing.
Laser	Laser printers are by far the dominant type of printer currently in use. A wide range of prices, sizes and capacities are available, making it possible for consumers to find cost-effective laser printer solutions. Both colour and black-and-white laser printers are available.

One key characteristic of dot matrix, ink jet and laser printers is printer resolution. Printer resolution is measured in **dots per inch (dpi)**. A higher dpi value means a higher resolution output. Many printers allow you to select the printer resolution, so that draft documents can be printed at a lower resolution and final documents at a higher resolution.



Along with deciding on a printer, you must decide how you will connect to the printer. Most printers support both serial and parallel connections. Many newer printers also include a USB port as a connection option. In addition to supporting local connections, many higher-end printers support direct network connectivity as an option

Ink jet printers

Ink jet printers work just as their name implies. They produce an image by shooting jets of ink through very small holes in ink cartridges. Most early ink jet printers were black-and-white devices. Newer ink jet printers are exclusively colour devices. Most will have a black ink cartridge and a three-color (cyan, red and yellow) cartridge.

This separation of cartridges makes it possible to replace the black and colour cartridges separately when either runs out of ink. Ink jet printers are usually very quiet, making them popular in office or home environments where a noisier

printer could create a distraction and an annoyance.

The quality of ink jet printers has improved rapidly over the years with photographic and near-photographic quality printers readily available at a relatively low cost. It has become common for retailers to include an inexpensive ink jet printer as part of a new computer package targeted for the home and small business markets.

Note: A small number of ink jet printers use three separate colour cartridges. With this arrangement, users can replace just the cartridge that is out of ink, rather than having to replace a cartridge containing all three colours. The claim is that the ability to change individual colours will lead to a long-term cost saving.

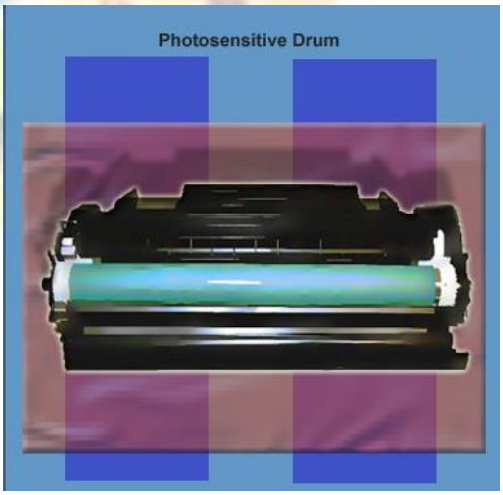
Laser Printers

Laser printers provide the highest quality print, very quiet operation and higher print speeds than other printers. Printer resolutions of up to 1,200 dpi are available, with 600 dpi supported in even most inexpensive laser printers.

Laser printers are relatively complicated devices. Printer components include:

- Logic and Control Circuitry
- Paper Transport Mechanism
- Photosensitive Drum
- Laser
- Primary Corona and Transfer Corona
- Fuser Rollers
- Erase Lamp
- Toner Cartridge

With most laser printers, the photosensitive drum is included as part of the toner cartridge. Take care to avoid touching the photosensitive drum or exposing it to light.



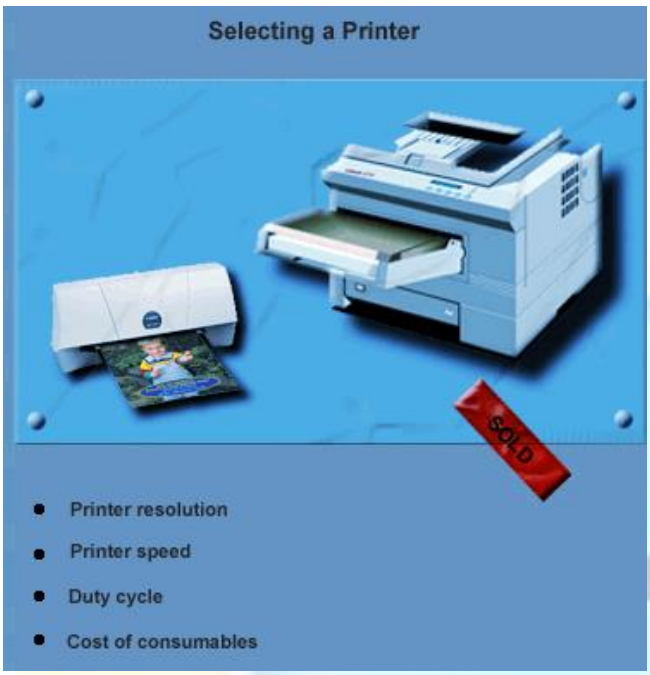
A laser printer combines a very narrow beam of light and a light sensitive drum to fuse particles of toner (a fine white powder) onto the paper.

Selecting a printer

The printer cost is an obvious issue when selecting a new printer, but it is not the only consideration. You need to make sure that the printer will meet your

needs. For example, if you are going to be printing on multi-part forms, you will need some type of impact printer.

Some of the specific issues you need to consider when selecting a printer include:

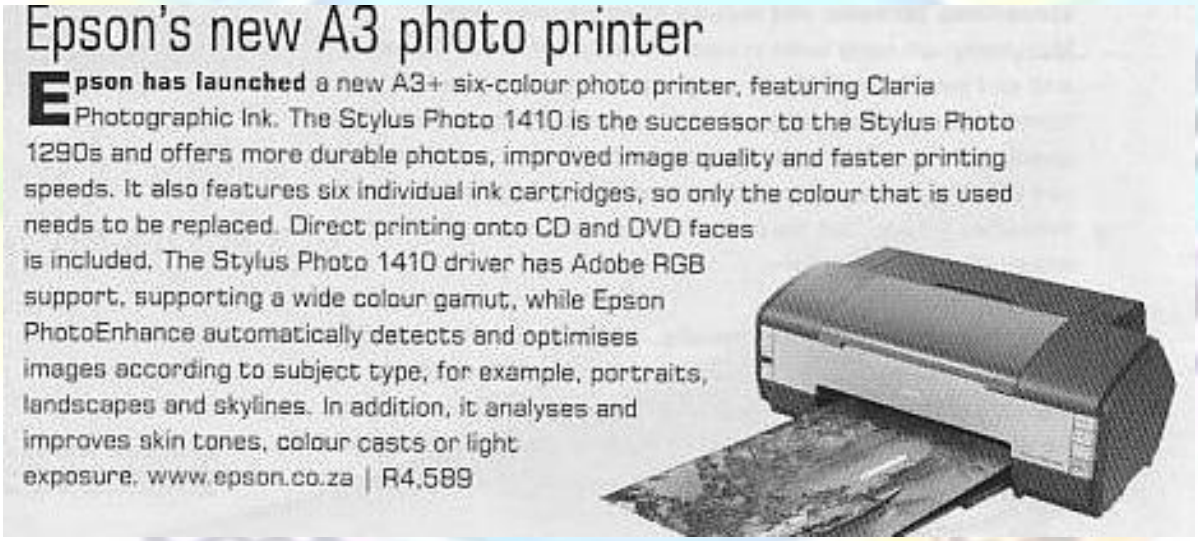


- Printer resolution in dots per inch
- Printer speed in pages per minute
- Duty cycle in pages per month
- Cost of consumables

Calculating the cost of consumables requires you to look at costs such as paper and ink or toner cartridges.

Just comparing replacement cartridge cost will not tell you what you need to know, however. You need to consider the number of pages the cartridge can be expected to print, so you can calculate a cost per page.

It is not unusual for a more expensive cartridge to cost less to use.



Modem

Computer systems work with digital data. In a digital system, every unit of information is reduced to a combination of bits. Each bit can have one of two values: **On** or **Off**. (or **0** and **1**).

Many data transmissions, such as a telephone line, use analogue transmission. An analogue transmission uses variations in a signal wave to represent data. When someone speaks to you, you hear a sound wave, and interpret the data as words depending on the variations in tone and pitch.

This means that, in order to send information via a telephone line, digital data has to be converted into analogue data on the side of the sending computer and back into digital data on the side of the receiving computer.

This is why you need a modem to connect to the Internet – it converts digital signal into analogue signals so that you can send information via a telephone line, and on the other side it converts the analogue signals into digital signals.

A modem is therefore regarded as an input/output device.

Formative assessment

In groups, discuss the type of computer that will be most suitable for the following:

You have to make a sales presentation at a client's office, using business graphics software
Laptop
Create a company newsletter
Microcomputer or laptop
Store a sales database for 6 regional offices worldwide
Mainframe
Give 1500 staff access to the sales database plus a word processing application for creating letters, both stored on a server computer
Network computer
Update client contact details after a sales meeting at the client's offices
PDA or laptop

EFFECT OF ICT ON THE PHYSICAL ENVIRONMENT

Outcome

Explain the effect of ICT on the Physical environment.

Assessment criteria

- Explain what the physical or natural environment is. Air, water, land
- What is the negative effect ICT is having on the physical environment? Disposal of solid waste (cartridges), disposal of ink, destruction of trees, radiation, global warming
- Explain how ICT`s can positively effect the physical environment. Paperless, reduced commuting, access in remote areas.

Compiled by: Sakhisisizwe	Approved By: L.Levin

Natural environment

The **natural environment**, commonly referred to simply as the **environment**, is a term that comprises all living and non-living things that occur naturally on Earth or some part of it (e.g. the natural environment in a country). This term includes a few key components:

1. Complete landscape units that function as natural systems without massive human intervention, including all plants, animals, rocks, etc. and natural phenomena that occur within their boundaries.

2. Universal natural resources and physical phenomena that lack clear-cut boundaries, such as air, water, and climate, as well as energy, radiation, electric charge, and magnetism, not originating from human activity.

Environmentalism is a broad movement across political and social borders to protect the natural environment by

- Cleaning up man-made pollution
- Reducing people's use of non-renewable fuels such as petrol and diesel
- Developing green, low-carbon or renewable energy sources
- Conserving scarce resources such as water, land, and air
- protecting unique ecosystems
- preserving and expanding threatened or endangered species or ecosystems from extinction;
- the protection of biodiversity and ecosystems upon which all human and other life on earth depends.

Electronic waste

Electronic waste is a waste type consisting of any broken or unwanted electrical or electronic appliance. It is a point of concern considering that many components of such equipment are considered toxic and are not biodegradable.

Electronic waste includes

- PCs
- printers
- faxes

- entertainment electronics
- mobile phones and
- other items that have been discarded by their original users

Toxic substances

- Toxic substances in electronic waste may include lead, mercury, cadmium.
- Carcinogenic substances in electronic waste may include polychlorinated biphenyls (PCBs).

A typical computer monitor may contain more than 6% lead by weight, much of which is in the lead glass of the CRT.

Capacitors, transformers, PVC insulated wires, PVC coated components that were manufactured before 1977 often contain dangerous amounts of polychlorinated biphenyls.

Up to thirty-eight separate chemical elements are incorporated into electronic waste items.

Almost all electronics contain lead and tin (as solder) and copper (as wire and PCB tracks), though the use of lead-free solder is now spreading rapidly.

- Lead: solder, CRT monitors (lead in glass), lead-acid batteries
- Tin: solder
- Copper: copper wire, printed circuit board tracks
- Cadmium: light-sensitive resistors, corrosion-resistant alloys for marine and aviation environments
- Aluminium: nearly all electronic goods using more than a few watts of power (heatsinks)
- Iron: steel chassis, cases and fixings
- Silicon: glass, transistors, ICs, printed circuit boards.
- Nickel and cadmium: nickel-cadmium batteries
- Lithium: lithium-ion battery
- Zinc: plating for steel parts
- Gold: connector plating, primarily in computer equipment
- Americium: smoke alarms (radioactive source)
- Germanium: 1950s–1960s transistorised electronics (bipolar junction transistors)

- Mercury: fluorescent tubes (numerous applications), tilt switches (pinball games, mechanical doorbells, thermostats)
- Sulphur: lead-acid batteries
- Carbon: steel, plastics, resistors. In almost all electronic equipment.

Recycling

Electronic waste is a valuable source for secondary raw materials. If treated properly, they can be reused, for example, many fully functional computers and components are discarded during upgrades.

Computers can also be refurbished, where old computer components are fitted into second hand computers.

When materials cannot or will not be reused, conventional recycling or disposal via landfill often follow

Positive effects of ICT

While there are many negative effects of electronic waste, there are also many benefits:

Because ICT makes it possible to store information in hard drives and on CD-ROM's it is possible to use less paper. Paper is made from wood that comes from trees, so a paperless society can save our trees. Of course, we all know that trees provide shade, wood for fire but, most importantly, trees manufacture oxygen – that bit of the air that we need to breath. Without trees, we will not have enough oxygen to breath.

ICT also makes it possible for people in remote areas to contact each other – via cell phone or the Internet

As our dependence on ICT grows, it can have the effect that people travel less. For example if more people work from home, less people will commute to work and back. Or more meetings will be done by conference call rather than everyone traveling to a central point to attend the meeting. This, in turn, will use less energy.

Formative assessment

Explain what is meant by electronic waste

Which devices are included in electronic waste?
What toxic substances can be found in electronic waste?
What can you in an office to protect the environment?

ICT AND THE SOCIAL ENVIRONMENT

Outcome

Explain the effect of ICT on the social environment.

Assessment criteria

- Explain what the social environment is.
- Explain the benefits of ICT`s on society: Telecommuting, highly paid employment, convenience, more recreation, lower costs.
- Explain the negative effect of ICT`s on society: Unemployment, crime, health, breakdown of morals and cultures, anti-social behaviour

Social environment

Social environment: the culture that an individual lives in, and the people and institutions with whom they interact.

The social environment includes

- people we work with
- people we meet when pursuing our hobbies such as sport
- friends
- family

Negative effects of ICT

Unemployment

Unemployment is the state in which a worker wants, but is unable, to work.

In theory, the unemployment rate is the number of unemployed workers divided by the total civilian labor force

Types of unemployment

There is more than one type of unemployment

Frictional

When moving from one job to another, the unemployment temporarily experienced when looking for a new job.

Structural

Caused by a mismatch between the location of jobs and the location of job-seekers. "Location" may be geographical, or in terms of skills. The mismatch comes because unemployed are unwilling or unable to change geography or skills.

Technological

Caused by the replacement of workers by machines or other advanced technology.

Consequence of unemployment

- Unemployed individuals are unable to earn money to meet financial obligations.
- Failure to pay rent may lead to homelessness through foreclosure or eviction.
- The loss of income that comes with unemployment increases susceptibility to malnutrition, illness, mental stress, and loss of self-esteem, leading to depression.
- Another cost for the unemployed is that the combination of unemployment, lack of financial resources, and social responsibilities may push unemployed workers to take jobs that do not fit their skills or allow them to use their talents. Unemployment can cause underemployment.
- At times unemployed people resort to crime in order to obtain some money
- Unemployment can also lead to a breakdown of morals and cultures in a society. Where there is high unemployment many people will resort to crime and this leads to a disrespect for other people and their property

Positive effects of ICT

Employees who have ICT skills such as Software, programming or technician knowledge and skills are more sought after by employers and can earn higher salaries. This of course improves the standard of living of employees

If an organisation can replace a manual system, where for example 20 people are employed, with a computerised system that only needs 2 or 3 people to operate it, the organisation saves costs. These savings can go into expanding the organisation, paying bonuses or better salaries, etc.

When business people communicate using ICT, it can mean that people from all over the world can communicate with each other without having to travel to meet. This option is cheaper, saves time and can be done in the comfort of your home.

Formative assessment

In groups, discuss the effects of unemployment in your immediate social circle. Specific topics to discuss are:
The effect of unemployment on the family unit

The effect of unemployment on the society you live in
One of your neighbours' children has the opportunity to enroll in a learnership to become a computer technician. Once the learnership has finished, s/he will have the opportunity to obtain employment at the IT company where the learnership was hosted. Discuss the positive effects that this will have on the family unit.
Discuss the positive effects this will have on the society

THE LEGAL ENVIRONMENT

Outcome

Explain the effect of the legal environment on ICT`s.

Assessment criteria

- Explain what legislation is
- Explain the benefits of having legislation
- Explain the legal issues that arise out of the ICT industry: Intellectual property, cyber crime, infringement of privacy, service level agreements, purchase and sale agreement
- Identify the legislation that impacts on ICT: Copyright Act, ECTA, access to Information act, law of contract.

Legislation

There are several laws, called Acts, that govern the various aspects of information and ICT:

- PROATIA
- SA Constitution
- Copyright Act
- ECTA

Together they form the legislation that governs ICT and information. The term legislation means laws as a whole.

The purpose of laws and legislation is to:

- Prevent conflict between parties by laying down rules according to which certain acts can be committed by people
- In the case of conflict to give guidelines for the resolution of the conflict
- If the parties cannot reach agreement, the matter is referred to the courts of law to make a final decision.

The benefits of legislation are:

- People know exactly what they may and may not do
- In the case of conflict, a solution can be reached by going according to the letter of the law
- If agreement cannot be reached, a third party, the court of law, will make an unbiased decision

Various laws regarding ICT

Cyber-crime

Hacking and phishing offenders under fire.

Synatec's biannual Internet security report (released on 21 March) revealed that Website phishing is up by approximately 366% worldwide. It is believed the phising, together with hacking into sites and databases are carried out especially to compromise the integrity of corporate and personal information, and therefore will continue to rise.

The drafters of the Electronic Communications and transactions (ECT) Act specifically saw hacking and related unauthorised access to data as a serious problem. Accordingly, the ECT Act is specifically geared to protect against these issues.

In terms of the Act, a number of actions by an individual are made illegal and are therefore offences under the Act. These are:

- Any person who intentionally access or intercepts any data without authority or permission to do so (access is defined as "[including] the actions of a person who, agter taking note of any data, becomes aware of the fact that he or she is not authorise to access that data and still continues to access that data")
- Any person who intentionally and without authority to do so, interferes with data in a way which causes such data to be modified, destroyed or otherwise rendered ineffective;
- Any person who unlawfully produces, designs, sells or distributes a device (which includes software) which is designed to overcome security measures to protect data (including breaking passwords or access codes); and
- An act or any of the actions referred to above with the intent of creating a denial of service.

It is therefore clear that the conventional ideas of hacking and phishing are illegal in terms of the Act, as well as other related activities such as developing software to enable those illegal activities.

In addition, where any person uses one of the activities above to gain an unlawful proprietary advantage', he /she will be committing an offence. In other words where a person uses or threatens to use one of the activities above to gain an advantage over a competitor, he/she will be acting illegally. In addition, any data that is intentionally faked to gain a competitive advantage would be illegal.

The Act lastly also covers any person aiding or abetting someone who is performing any of these illegal acts.

The penalties for committing these offences differ, with the offences carrying a penalty of a fine and/or imprisonment of between one and five years.

Cyber Inspectors

Chapter XII of the Act also establishes what are referred to as cyber inspectors. These are people employed by the Department of Communications who are to 'police' the provisions of the Act.

The cyber inspectors are empowered to amongst other things:

- Monitor and inspect any Website or activity n an information system 'in the public domain' and report any unlawful activity to the appropriate authorities; and
- Ensure compliance with the Act by cryptography and accreditation service providers.

The cyber inspectors may also obtain assistance from the police in their duties, and obtain warrants to:

- Inspect and search an individual's premises (and information system);
- Inspect records on an information system; and
- Obtain access to computers which are believed to be connected to an offence.

A person who fails to cooperate with a lawful search and seizures is guilty of an offence under the Act.

It is therefore foreseeable that the cyber inspectors, together with the police, are empowered by this Act to track down and investigate anyone who is believed to be hacking or phising.


Sakhisisizwe cc

Website copyright infringement beware

29th August 2005 - In one of the first cases of its kind in South Africa, a company accused of online copyright infringement has paid an out-of-court cash settlement to the copyright owner. www.FindanAdvisor.co.za, billed as South Africa,s premier online Financial Advisor directory, recently took legal action against another directory site, for what it saw as a direct breach of its intellectual property. The alleged wrongdoer purportedly copied, word for word, a large piece of text from FindanAdvisor,s website and distributed such as part of an email newsletter for its own marketing campaign.

Up until now, website content has been pretty much a free-for-all. The ease of copying and pasting from millions of online sources has exploded. Copying images from the web also contravenes copyright. Everybody, from plagiarising post-graduate students to bogus overnight medical experts, has participated. Many are unaware that they are in fact breaching the law, but, as internet business gets more serious, more litigation of this nature can be expected. Specialist companies have even sprung up overseas that scout the web for copyright infringers and then report them to the original content owners (presumably for a commission). If found guilty, offenders can be sued for up to three or four years of royalty fees, or even more if financial loss can be proven.

Parties making use of content from websites need to quote the source of the content, and preferably provide a link back to the source website. Most web authors will be content with the publicity and incoming link. However, in order to be completely watertight, express authorisation by the author of the content needs to be obtained.

With the worldwide web being such a huge place, content authors who have had their work plagiarised are seldom aware that their rights have been infringed. A good way (but not guaranteed) to find out is to type a long sentence of your text into a few good search engines and see what comes up. In theory the search should render no results, unless of course somebody came up with the identical sentence on their own accord. If not speak to your lawyer!

FindanAdvisor.co.za is pleased with the settlement and is continuing to establish itself as a top class portal for members of the South African public needing to make an informed, un-pressured and proactive choice about which financial advisor or broker to appoint. Reputable financial advisors around the country are also benefiting from the exposure they are getting to a growing, astute and affluent segment of the South African population. In fact, the website has had such success that a sister site, FindanAccountant.co.za, is due to be launched in the next month.

This information is distributed for and on behalf of FinandAdvisor.

For further info please Contact Chris Preen Tel 021-7832183 or chris@FindanAdvisor.co.za

P2P AND THE LAW

According to recent research, international demand for bandwidth grew by 42% in 2004, and the majority of traffic was for the peer-to-peer trading of content. Due to this explosion of file sharing, a whole body of litigation has developed in the United States.

Napster

Napster provided software as well as operated a centralised database that indexed files available for downloading from users' computers. In 2000, various parties sued Napster for copyright infringement. The court in A&M Records v Napster found that regardless of what the peering network was intended to be used for, Napster:

- Had actual knowledge that the files accessed were being copied/downloaded, and therefore was indirectly infringing on the content owners' copyright; and
- Materially contributed to infringement by providing a site with indexing of the sites and files available for downloading.

Grokster

A second round of litigation kicked off in 2003 against Grokster. Unlike Napster, Grokster didn't provide a centralised database of files available for downloading. Instead, users connected and uploaded files to 'super nodes' that belonged to users on that network.

In MGM v Grokster, the court came to a different decision to Napster and held that Grokster wasn't liable for copyright infringement. The rationale behind the judgement was that:

- Grokster didn't control any access to a database or index listing of files to be downloaded;
- If Grokster were to be closed down, the software and services could still be used for sharing; and
- It was not sufficiently proved that Grokster had 'reasonable knowledge' of specific infringing files on users' computers.

As a result of the Grokster case, the Recording Industry Association of America issued thousands of lawsuits against individual file sharers.

In June 2005, the Grokster case went on appeal before the US Appeal Court. In this instance, the court unanimously overruled the lower court's decision and found that Grokster was guilty of copyright infringement because:

- Grokster marketed itself as an alternative to Napster, and therefore knew that its service could be used for copyright infringement;
- No effort was made by Grokster to filter out copyrighted material from users' downloads; and
- Even though Grokster might have had no actual knowledge of infringement, it was foreseeable that the software would be used for illegal purposes.

The decision of the court was not technology specific, and would therefore seem to apply to any software provider enabling copyright infringement.

Effects of the decision

The question is what effect this judgement has on providers of P2P services and to users of those services.

It seems that many innovative technologies might be put out of business. LimeWire for example, has decided that its file sharing program will block downloading unlicensed content for fear of infringement. The Electronic Frontier Foundation also agrees that the decision could've a chilling effect on technological development.

The counter argument remains that the majority of users use P2P software to download content that they haven't paid for, and users sharing or downloading that content realise that what they are doing infringes on someone else's rights in some way.

The fact remains that users are prepared to download content (with knowledge that what they are doing infringes on someone else's intellectual property rights) regardless of the legal implications. Virtually all new PCs are equipped with DVD writers, and PVRs and digital recording media are on the rise worldwide, indicating that the traditional idea of buying a physical copy of content (and not being able to duplicate or share that copy) seems to be redundant.

Some experts have even gone as far as suggesting a new way of looking at intellectual property law, and the way in which licensing of software and content should work.

Whatever the resolution, it would seem that file sharing is now part of the way that content is to be distributed, and only time will tell how (or rather, if) this manner of access to content will be regulated. **SACM**

Marlon Cohen

Communications Lawye

Compiled by: Sakhisizwe	Approved By: L.Levin

ACCESS TO INFORMATION

Clause 31(1) of the South African Constitution states that "Everyone has the right of access to (a) any information held by the state, and (b) any information that is held by another person and that is required for the exercise or protection of any rights."

In order to expand on this right, the South African legislature promulgated the Promotion of Access to Information Act (or PROATIA).

Whom does the Act apply to?

PROATIA goes further than the majority of similar legislation in other countries, and is not only applicable to public bodies, but also applies to private bodies. As a result, anyone conducting a business (whether online or in the traditional business world) would need to comply with the provisions of the Act, and specifically the manner in which information is granted.

What data/information can be requested?

The Act applies to any record held by a private body, regardless of when that record came into existence.

A record is defined as:

1) Any recorded information;
2) Regardless of form or medium;
3) That is in the possession or under the control of the private body; and
4) Whether or not that information was created by that private body.

The definition is wide and would include information such as e-mails and stored information kept by the company. All four elements of the definition must however be present for the data concerned to be defined as a 'record' in terms of PROATIA.

Who can request the record?

Any person, including another company or a public body may request the record.

The requester of information is only entitled to the record if:

1) The record is required for the exercise or protection of a right;
2) The person complies with the procedural requirements relating to requesting information in the Act; and
3) The request is not refused on the grounds of refusal set out in the Act.

In addition to requesting a record, a person may also request any personal information that the company may have about him or her.

How do you request the information?

In terms of the Act, all private bodies must compile a manual setting out the procedures for obtaining information from that private body, and must make that manual available at the private body's premises and on its Website (if it has one). In terms of additional regulations under the Act, private bodies have until 31 August 2005 within which to submit these manuals (which need to be submitted to the South African Human Rights Commission).

PROATIA was amended in 2004 and now states that a head of a private body "...who wilfully and or in a grossly negligent manner fails to comply with (the provisions of the Act relating to the PROATIA manual) commits an offence and is liable on conviction to a fine, or to imprisonment for a period not exceeding two years".

Although the criteria for non-compliance are high, the penalties for non-compliance are harsh, and it is suggested that companies try to comply with the requirements if they have not done so.

How does the request for information work?

The basic idea is that the requester of information has to request the information in a specific format (which is set out in the private body's manual) and has to pay the private body the prescribed request fee.

The head of the private body must within 30 days of receiving the request decide whether to grant the request or not, and advise the requester of that decision. PROATIA also sets out the manner in which you can extend the time to obtain the records, as well as the appeal process if you can't give the requester the records. It is, however,

use

an offence if a record is intentionally destroyed, concealed or falsified, and any conviction for said offence carries a sentence of two years imprisonment or a fine.

Can you ever refuse access to a record?

There are a number of grounds on which the private body may refuse access to a record. Access may be refused where the:

1) Access to the record would involve the 'unreasonable disclosure of personal information' of a 3rd party;
2) Record concerned contains trade secrets of a 3rd party;
3) Information (other than trade secrets) which is likely to cause harm to the financial or commercial interests of a 3rd party;
4) Information provided to the private body which "would reasonably be expected" to place the 3rd party at a disadvantage in commercial negotiations;
5) Record/information concerned is covered by a confidentiality agreement;
6) Record could endanger the life, physical safety, safety or security of property of a 3rd party;
7) Record is covered by legal privilege (unless that privilege has been waived); or
8) Record relates to research being undertaken by the private body or another 3rd party.

As is evident from the aforementioned, PROATIA is a highly complex and fairly onerous Act which seemingly binds most (if not all) businesses in South Africa. While the intention of the Act is commendable, it is doubtful whether the level of transparency created by the Act is feasible, and whether the majority of companies will even be able to comply fully with the Act.

For an introduction to the Act, as well as the forms and procedures you need to comply with, see http://www.sahrc.org.za/sahrc_cms/publish/cat_index_30.shtml.

The Human Rights Commission (who manages this Act) can be contacted on (011) 484-8300, or you can e-mail them at paiar@sahrc.co.za. **SACM**

— Marlon Cohen

Communications Lawyer


Sakhisisizwe cc

Couple hunt down e-mail hoaxers

Celebrities shocked by claim that they are HIV-positive

THABO MKHIZE

A DEFAMATORY e-mail claiming that celebrity couple Zam and Nkhensani Nkosi are HIV-positive was disseminated far and wide, even reaching friends in London.

Two weeks ago Metro reported how an employee at a Joburg-based events and advertising company circulated an e-mail claiming that the couple were not only HIV-positive but that TV star Zam regularly cheated on his wife.

This week Zam and Nkhensani, who co-present the popular talk-show *Mojo* on SABC1, told Metro that they were taking legal action against 15 "culprits" who circulated the e-mail.

The author of the e-mail has been identified as Zizipho Mtshizana, an implementation planner at Naledi Media.

"A whole group of people were involved and knew about this thing," said Zam, adding that the 15 culprits even distributed the e-mail to newspaper newsrooms around the country.

"We've got their names and these are the people we are going after," he said.

The couple's attorneys this week began issuing legal letters to the companies, which include banks and financial institutions, where some of these culprits worked and distributed the hoax e-mail.

The legal documentation has instructed the companies to state their position on the matter.

"Employers must tell me their position. They [the companies] need to either protect their employees . . . in which case I'm going after both the organisation and individual," said Zam.

He said the companies had the option of distancing themselves from the entire matter.

On Wednesday the angry couple revealed how the e-mail had swept across the globe. They said they still could not believe what had happened and did not know why they were targeted.

While in the process of wrapping up their TV show *Mojo*, which comes to an end in May, the couple have spent the past two weeks consulting with their attorneys.

'Anyone who pushes the send or forward button [to send a defamatory e-mail] to any other person can be sued'

When it surfaced earlier this month, Zam immediately called his attorney and put up a R50 000 reward to trace the culprit. His wife, founder of trendy fashion label Stoned Cherrie, was in Brazil on business.

Within a few hours, Zam managed to track down the author of the e-mail. Mtshizana was so stunned that she had been identified that she confessed that it had been a prank.

"I was joking around with my friends about it and I'm really, really sorry," she said.

In the e-mail, Mtshizana described Zam as a womaniser who prowled the streets of Hillbrow.

Zam said he wanted this matter to set a precedent so that people understood that high-profile personalities were not "soft targets".

Meanwhile, media attorney Pamela Stein cautioned that anybody who distributed or forwarded defamatory e-mails could face legal action.

"Anyone who pushes the send or forward button to any other person can be sued," she said.

The Constitution Of The Republic Of South Africa

The Bill Of Rights of the Constitution states:

Privacy

14. Everyone has the right to privacy, which includes the right not to have

a. their person or home searched;
b. their property searched;
c. their possessions seized; or
d. **the privacy of their communications infringed**.

Access to information

32. (1) Everyone has the right of access to:

a. any information held by the state; and
b. any information that is held by another person and that is required for the exercise or protection of any rights.

(2) National legislation must be enacted to give effect to this right, and may provide for reasonable measures to alleviate the administrative and financial burden on the state.

Formative assessment

Formative Assessment 10

PROATIA states that you are allowed to request information from a private body, subject to certain conditions. What information may be requested?
Who is allowed to request this information?

PROATIA also states that private bodies must compile a manual that details the procedures that must be followed when you want to request information. Where must this manual be made available?
What is the penalty if a company does not comply with the requirements of PROATIA?
You are allowed to request the information you require, provided you follow the procedures as set out in the company's manual and provided you pay their fee. The company must then let you know within a specified time period whether they are going to make the information available to you or not. What is this time period?
The instances where the organisation can refuse to make information available to you are listed in PROATIA. What are these instances and what do they mean?
The Constitution states that the privacy of your communication may not be infringed. PROATIA, on the other hand, states that information may not be withheld under certain circumstances. If someone you know is distributing child pornography via e-mail, do you think they should be reported? Quote from PROATIA to motivate your answer.

If an e-mail contains racist jokes or remarks, should the person responsible be held accountable? Quote from PROATIA to motivate your answer.
If an e-mail contains hate speech directed at one group of the population, should the responsible person be held accountable? Quote from PROATIA to motivate your answer.
If an e-mail contains slanderous information about another person, should the originator of the e-mail be reported? Quote from PROATIA to motivate your answer.
In the light of the questions above, do you think it is fair that a system administrator employed by an organisation should monitor the e-mails of staff? Motivate your answer.

Refer to the article from the Sunday Times of 2 April 2006, about an e-mail that was originated by one person and in the end sent to many people. The e-mail contained slanderous information about two well-known people. Do you think sending an e-mail like that is fair? Motivate your answer.
How would you feel if it happened to you? Motivate your answer.
What disciplinary steps should be taken against the originator(original sender) of the e-mail? Motivate your answer.
Do you think the information about the originator of the e-mail should have been kept private? Motivate your answer.
How did this e-mail infringe on their right to privacy?

According to the article posted about copying from a website, there are two things you must do if you want to use information contained in a website. Name and explain them.

USE AND EFFECT OF ICT ON SOCIETY

Outcome

Describe the use and effect of ICT on modern society.

Assessment criteria

- A comparison of the use of computers versus people. Highlight the advantages and disadvantages of each
- Describe the effect of ICT on modern society. Any three of: information age, information availability (time and place), information overload, jobless growth, competencies, globalization, mobility.
- Examples of computer applications are described giving the advantages and disadvantages of computerized applications- Any three of: In the Home, Banking, Insurance, Manufacturing, Hospitality and Tourism, Retail, Healthcare, Education, Teleworking, Libraries, Mining, Government.

Formative assessment

Discuss the following topics in groups, making notes.
You own two taxis. One is used to transport pensioners to shops and to collect their pensions and the other is used to transport children to school and back. Should you invest in computers and what use would you put them to.

You are a tour guide and have to arrange day tours of the city for groups of people from 10 members to about 40. What would be the advantages and disadvantages of using computers?

Discuss the following statements: We all know that we live in the information age. In fact, we have access to so much information that we at times suffer from information overload. What do the statements mean?

How does information affect your daily life?

How is it possible to suffer from information overload?

How can a company grow without employing more people?

Globalisation means the ability to operate worldwide. If you are a tour bus operator, how can globalisation benefit you?

Refer back to the software section of unit standard 117925. Which software program would you use at home and what would you use it for?

What kind of software program can help you to build a database of learners, the subjects they are studying and their results?

You are providing health care in a clinic in a remote area of South Africa. At times you see patients where you have trouble diagnosing their illnesses. There is a big hospital with many qualified doctors 150km from you. Discuss how you can use computers, Internet and networks to access the information that is available in the hospital.

How do banks use computers and software programs to process daily transactions?


Sakhisisizwe cc