

ATAR Notes

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Contents

DESIGN CONCEPTS	3
Relationship between elements of design and principles of design.	3
Features of a User Interface	3
APPLICATION SKILLS	4
Publishing Features.....	4
Types of Digital Publications	4
Advantages and Disadvantages of different types of Digital Publications	5
PROJECT MANAGEMENT	5
Project Management Approaches	5
Project Planning Tools.....	6
Appearance Considerations for a digital products and/or digital solution	7
HARDWARE	9
Specifications of digital devices and their impact upon usability.....	9
Characteristics of development trends in emerging mobile devices.....	9
Suitability of emerging mobile devices to meet client/user needs	9
Usability of digital devices for specific client requirements	9
IMPACTS OF TECHNOLOGY	10
The concept of intellectual property (IP).....	10
Intention and purpose of IP in Australia in relation to copyright and or design of digital products	10
MANAGING DATA	12
Security techniques for the management of data, including:	12
Types of backup techniques and archiving of data.....	12
Online data storage methods	12
Purpose of data mining.....	12
Firewalls	13
Biometrics	13
Anti-virus software.....	13
Digital signatures.....	13
Digital certificates	13
Encryption	13
Concept of user-generated content	13
Advantages and disadvantages of user generated content	13
Concept of hypertext markup language (.htm/.html)	13
Concept of Web 2.0 and Web 3.0.....	14

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Purpose and features of content management systems (CMS)	14
Purpose of world wide web consortium (W3C).....	14
Purpose of W3C conventions.....	15
Validation techniques for online forms	15
NETWORKS	16
Types and characteristics of communication protocols	16
Types of network security measures	18
IMPACT OF TECHNOLOGY	19
Data and information security related to personal or sensitive information.....	19
Purpose of Code of Conduct	19
Online Censorship	19
Issues with the use of cloud computing	20
Impact of digital technologies and global markets.....	20
How digital communication is used for educational purposes.....	21

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DESIGN CONCEPTS

Relationship between elements of design and principles of design.

The arrangement of element and principles create completeness. Principles are built off elements.

Elements

Line
Space
Colour
Tone
Shape
Texture
3D Form

Principles

Balance
Dominance
Pattern
Emphasis
Unity
Movement
Alignment

Features of a User Interface

Logical and Hierarchical Organisation of content

- Not cluttered
- Easy to follow
- Placing things where they're expected to be found

Graphical User Interface suitable for target audience

- Ensuring that the interface is appropriate for the target audience
- e.g. More images on a page with a younger audience

Relevant help features of a graphical user interface

Usability

- People can use the website more effectively
- Making the User Interface simple to use through better design choices
- Clear design structure, simple navigation
- Consistency

Inclusivity

- Providing tools for those of different cultures and languages
- Avoiding colours that affect colour blind users

Accessibility

- Making the User Interface easier to understand and utilize for those with disabilities or minimal understanding
- Text alternatives for non-text content
- Content that can be presented on different devices
- Ways to help users navigate and find content



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APPLICATION SKILLS

Publishing Features

- Colour Schemes
- Layers
- Frames
- Typography
- Templates
- Print/Display Option

Types of Digital Publications

Generation 1

- Electronic versions of traditional media
- CD/DVD-ROM
- eBook
- Electronic Journal
- Online Magazine
- Online News
- PDF

Generation 2

- Evolution
- Blog
- Mobile Apps
- Podcast
- Enhanced publication

Colour Schemes



Complementary



Analogous



Triadic



Split-Complementary



Rectangle (tetradic)



Square

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Advantages and Disadvantages of different types of Digital Publications

ePub

Advantages

- Delivered as one .zip file
- Easy to unpack
- Very user friendly
- Not owned by any large corporations

Disadvantages

- Creating is not easy to do
- Creating .zip for publishing is also difficult



PDF

Advantages

- Can be opened by most computers
- Can be made on various programs
- Reader software is free
- Safe as it is difficult to modify

Disadvantages

- Can sometimes not display correctly on smaller screens
- Not free to edit PDFs
- Editing PDF is not easy



PROJECT MANAGEMENT

Project Management Approaches

Prototype

- Creating prototypes allows users of the software to evaluate developer's proposals for the design of the eventual product.
- It helps developers by receiving feedback on what to improve on

Structured

- Initiate/Conceptualise
- Planning/Design
- Develop/Implement
- Evaluate
- Close

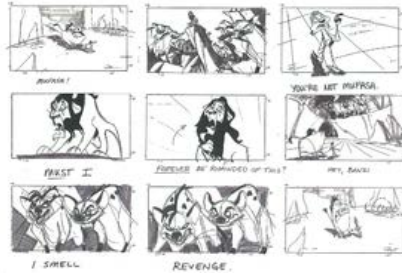
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Project Planning Tools

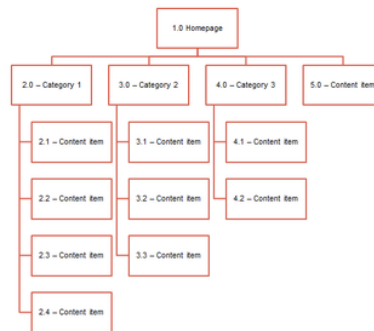
Storyboards

- A graphical representation of how the video will unfold, shot by shot. Made of many squares with illustrations or pictures representing each shot with notes about what is going on in the scene and the script



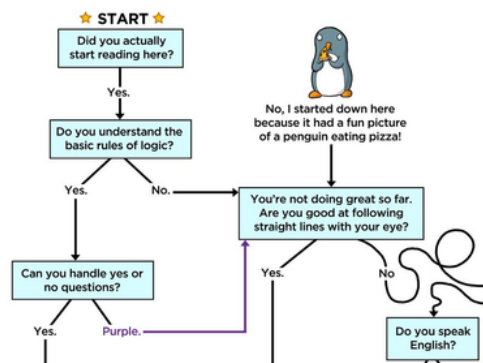
Sitemaps

- Navigational map for a website.
- Provide a direction your website will be built. Helps plan what web pages are required, what purposes they serve and how the web pages relate to one another.



Flow charts

- An easy to understand diagram that shows how the steps of a process fit together.
- circles= start/end
- square= instructions/actions
- diamonds=highlight where you must make a decision
- parallelogram= shows input/output

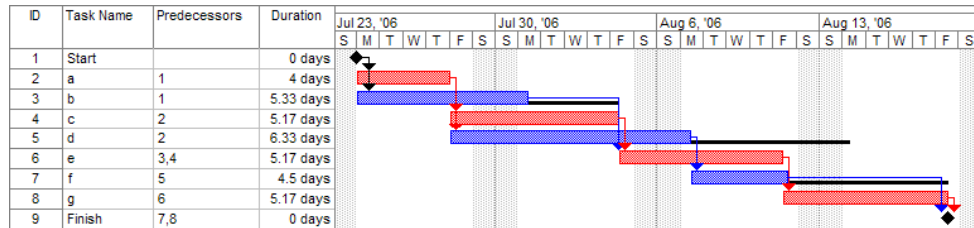


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Gantt Chart

- Shows activities against the Estimated Time of Completion
- Left side of the chart shows the list of activities and the top shows the time scale



Appearance Considerations for a digital products and/or digital solution

Structure

- Structure needs to be planned and considered.
- If a website has 450 pages, what is a likely menu structure
- Too much information on a website, that can't be found leads to web-users being overwhelmed

Usability

- Usability refers to how all people can use the software or digital product,
- how user friendly the product is to use
- include a menu system that is logical and predictable
- choose names for menus that are logical and predictable
- use a search facility
- provide user feedback when they are waiting, i.e. show a slider, countdown timer, something to indicate not to click away or leave the page.
- is the product usable on different devices, tablets, smartphones, desktops?
- make the site usable for many clients; have a choice of language or translation
- make the product accessible

Accessibility

- Use text alternatives to images, so text readers can help other forms people need, eg braille, simpler language
- provide an alternative for audio only information; text or script, subtitles
- provide an alternative for video only information; transcript, text, subtitles
- make it easier for people to see and hear the content; use readable fonts at least 14 points, use good contrast
- do not provide content that may cause people to have seizures; flashing < 3 times a second, small flash area
- navigable; use techniques to help people know where they are on the website; breadcrumbs, menu system
- predictable; make web content operate in expected ways
- readable; make the text readable and understandable; include font size increase facility, larger fonts

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User Experience (UX)

- The process of enhancing customer satisfaction and loyalty by improving the usability, ease of use, and pleasure provided in the interaction between the customer and the product.

User Interface (UI)

- The user interface is the way humans interact or engage with a computing device, handheld, laptop or desktop

Concept of service level agreements

- A SLA is a part of a service contract where a service is formally defined. Aspects of the service-scope, quality, responsibilities, etc. are agreed between the service provider and the service user.
- Features of service level agreements, including
 - Availability of service
 - Type of services
 - Availability of service
 - Contracted delivery time
 - Price
 - Responsibilities
 - Services and quality of service

Advantages of local and global outsourcing compared with in-house production

- **Advantages of outsourcing**
 - Better revenue and enhanced returns on investments, lower labour cost and increased realization of economies of scale, tapping into a knowledge base for better innovation, frees management time and enables companies to focus on core competencies while not being concerned about outsourced routine activities, increases speed and the quality of delivery of outsourced activities and reduces cash outflow and optimizes resource utilization
- **Purpose of outsourcing data management**
 - Outsourcing is the process of assigning a company's business processes to an external agency with the aim of enhancing service quality, driving innovation or deriving benefits of lower labour costs, when processing outsourced to organisations located in other countries or to foreign subsidiaries it is known as offshore outsourcing or offshoring

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HARDWARE

Specifications of digital devices and their impact upon usability

- Computer case
- motherboard
- CPU
- RAM memory
- HDD
- Video card
- optical drive
- power supply
- Cables

Characteristics of development trends in emerging mobile devices

- tablets and mobile devices are selling at near desktop levels now
- improved processing
- tablets and mobile devices will download more apps than desktops

Suitability of emerging mobile devices to meet client/user needs

- Interactivity so people can actively engage with apps. email, banking transactions, shopping, taxi and bus services, restaurants and more

Usability of digital devices for specific client requirements

- clients expect better resolution
- clients expect faster processing speeds to be able to complete higher processing tasks such as video and image manipulation
- clients expect tablets which include virtual on-screen keyboards, some have hand writing recognition, attachable keyboards



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IMPACTS OF TECHNOLOGY

The concept of intellectual property (IP)

- Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.

Patents

- A patent is for a newfound invention (such as device, method, substance or process) that you believe to be new or useful. A patent is a legal permission from the government and allows you to exclude and limit who can produce or sell your invention.

Trademarks

- A trademark is for many different things, including words, catchphrases, symbols, images, goods and services. A trademark is used to separate business from one another and is widely used to recognize and represent the company itself.

Designs

- Designs is the protection of your own unique creation, especially the visual presentation and expression of your creativity. Some aspects that can be protected under a design suit includes: Shape, Colorways/usages, pattern and the arrangement or configuration of a product.

Copyright

- Copyright protects an artist's original ideas and concepts, regardless of whether they are published or not. Copyright protection covers books, musical compositions and lyrics, graphic designs and designed products (such as advertisements, articles, labels, etc.) and product designs.

Intention and purpose of IP in Australia in relation to copyright and or design of digital products

The concept of online defamation in Australia

- When a person information and private life or false information is spread purposely to cause their peers to think lowly of them.
- Some examples of what is considered as defamation is; Making someone the butt of jokes,
- Damages their reputation, causes others to avoid them

Legal action available in Australia to counteract online defamation

- If someone is found guilty of defamation in court, civil fines can be applied meaning that you are ordered to pay compensation to the victim of the crime.
- Defamation can also be considered a criminal matter in larger cases, with larger fines and even jail time.

The concept of freedom of information (FOI) in Australia

- Freedom of Information act 1982
 - The FOI Act grants access to individuals that allows them access to documents from most of
 - Australian government ministers/agencies.

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- FOI is important because;
 1. FOI allows individuals to see what information government holds about them, and to seek correction of that information if they consider it wrong or misleading.
 2. FOI enhances the transparency of policy making, administrative decision making and government service delivery.
 3. A community that is better informed can participate more effectively in the nation's democratic processes.

Advantages, disadvantages and implications of virtual and physical collaboration

- **Virtual collaboration** would mean you could collaborate with a group of people to work on a project from anywhere in the world provided that there is an active internet connection for everyone to work from and people work at the same time.
 - **Why**
 - Parties not be in the same location, Skill-set or expertise may not be available financially or nearby in the local area, Access more resources, Cost efficient (outsourcing)
 - **Looks like**
 - Forums, Blogs, Instant chat, Video calls, Google docs, File sharing, Cloud services
 - **Advantages**
 - No location
 - Cost efficient
 - **Disadvantages**
 - Time zones
 - Language barriers
- **Physical collaboration** is collaborating with a group of people but you pretty much need to be in the same building to work with each other to work towards a common goal.
 - **Why**
 - Parties are in the same location and it is easier to communicate in person, Physical interactions can take place, Body Language is a good communicator.
 - **Looks like**
 - People meeting, Conference room, Workshop

Impact of convergence trends in contemporary digital technologies

- In the old days, one device did one job e.g. a telephone only made calls to people, a camera only took photos, etc.
- desktop computer did one job
- laptops were the start to technology going 'mobile'.

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MANAGING DATA

Security techniques for the management of data, including:

Disaster Recovery Plan

- A plan that details how a company recovers from losing all of the data stored on systems.
- Policies and procedures to enable recovery, continuation of vital technology infrastructure after a natural/human disaster, Offsite backups example, Loss of key staff members, hardware or data

Audit Trail

- Automatically tracks every action done by a user on a network. Helps IT works out whether a user is misusing a system, as well as easily find accidents and easily alter them, Examples:
- When a user logs in, keystrokes pressed

Types of backup techniques and archiving of data

Full

- Stores all selected files and data for backup, underlies any archive and forms the base for incremental and differential backups, Archives contains multiple full backups, Slowest to do but fastest to restore

Differential

- Takes a copy of all items that were changed since the last full backup, takes a copy of what was changed or added since the full backup, faster than a full backup, less storage space used

Incremental

- Copies only the data that was changed/alterd from a full backup, requires all incremental pieces/full backups to create an incremental backup and cannot work without this

Daily

- Backs up files from that day

Online data storage methods

Data warehouses

- Database used for reporting and analysis, Data stored here is uploaded from the systems, a large store of data accumulated from a wide range of sources within a company and used to guide management decisions.

Data marts

- The data mart is a subset of the data warehouse and is usually oriented to a specific business line or team. Whereas data warehouses have an enterprise-wide depth, the information in data marts pertains to a single department.

Data in the cloud

Purpose of data mining

- The practice of examining large pre-existing databases in order to generate new information. Processing of data considering security of data through the use of using a name and code that will allow you to access a file. The name should be used for authentication and code is a secret phrase containing numbers and letter

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Firewalls

- Works as a literal wall that filters out traffic and in traffic on a network and works to protect and block unauthorised data from harming data on the network

Biometrics

- Uses unique biological characteristics such as eye and finger prints to completely authorise who is using the scanner

Anti-virus software

- Prevents, detects and fix problems on the computer revolving specifically around malware and virus' and works to clean the computer of dangerous infections

Digital signatures

- Digital signatures: a virtual version of a person's signature. This is used to show authenticity and authoritative as the signature should be unique and recognisable and associated with a person

Digital certificates

- A digitise certificate is a private key logged on a computer and require certification and acceptance before it is allowed access, this way certified confirms that both networks/computers are who they say they are

Encryption

- Encoding and ciphering a message or information so that only trusted devices and computers can access the encrypted message with a key

Concept of user-generated content

- Any form of content and media that was created by users of an online system or service, often made available via social media websites.

Examples

- Video, blogs, discussion forum posts, digital images, audio files.

Advantages and disadvantages of user generated content

Positives

- Voice, upcoming trends, simple, marketing strategy, share stories and easily accessible

Negatives

- Bias, credibility, moderation and ownership

Concept of hypertext markup language (.htm/.html)

- A programming language but instead of using syntax, it uses tags. Tags are used to tell a web browser where and how to display information

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Concept of Web 2.0 and Web 3.0

Web 2.0

- Allows for user interaction and participation by having a user-friendly interface where one can edit and publish the existing information. Web 2.0 has implemented: Collaborative, Group Participation, Two-Way Communication, Active Involvement, User-Generated Content & Blogging.
 - has a focus on user-generated content?
 - social networking is web 2.0
 - self-publishing is common
 - sharing content is common
 - adding opinion is common
 - writing a review for a product is common
 - anyone can participate
 - many content creators
 - Examples are blogs, wikis, Facebook, Wikipedia, Curating with RSS

Web 3.0

- Semantic Web, describes sites where computers will be generating the raw data on their own and is the next evolution of the internet. This refers to devices being able to communicate and exchange data between one another that are connected to the web and even generate new information.
 - sometimes called the semantic web
 - each web search that you make, gives web 3.0 information to learn more about you
 - this Web 3.0 information can help your web searching
 - as of 2015 we are starting to see ads appearing next to our google search window for previous search content
 - browsers are being built that will analyse your search content and be able guess or answer your search
 - advertising is likely to be the biggest money spinner for Web 3.0 in the short term

Purpose and features of content management systems (CMS)

- A computer application that supports the creation and modifications of digital content using a simple interface to abstract away low-level details unless required, usually supports collaborating users.

Purpose of world wide web consortium (W3C)

- Main organisation behind placing global standards for the internet/world wide web, attempt to capitalise on the potential and full potential that the world wide web offers, enforces 9 conventions to install capability, compatibility and agreement, attempts to keep the world wide web consistent, Consortium implements set of core principles and components hand chosen by the W3C

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Purpose of W3C conventions

HTML & CSS

- All web pages must use HTML and CSS
- Most current version is not necessary but must use a sort of html/CSS
- W3C accepts the use of Web Fonts

Graphics

- You must always use .png file format for any raster image for webpages
- You must always use .svg file format for any vector image for webpages

Audio and Video

- Recommended to use following formats for audio and visual: SMIL, Timed text media and media annotations

Accessibility

- W3C request that you follow 4 sub-criteria to make the webpage most available for all, these criteria are: Perceivable (able to be read or alternatives to reading), Operable (increasing functionality and allowing users to safely and easily access the information), Understandable (Making information readable/understandable and easy to follow motion) and Robust (making information large enough for users to read)

Internationalisation

- Easy for the information to be perceived by people of different cultures, background and language capabilities
- Promotes the use of Unicode so that information can be easily translated through third party means
- Easily convey to users which language is used in the website and which languages are available

Validation techniques for online forms

- Check to see if the data is in the correct format
- eg for an email field; is an @ symbol and domain present
- check for duplication eg creating an account displays username availability
- check for completion of essential details eg some forms have an asterisk * for essential fields
- for essential details, it is a good idea to put it in twice. eg choose password, re-type password
- if validation fails, the user should be given clear help to identify the error. eg a red box around the mistake
- the error can also be a pop up tool tip, or a change of colour of the field
- can occur once the submit button is clicked
- can occur in real-time, while the user is filling in the field

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NETWORKS

Types and characteristics of communication protocols

Transmission control protocol/internet protocol (TCP/IP)

The Internet protocol suite is the conceptual model and set of communications protocols used on the Internet and similar computer networks. It is commonly known as TCP/IP because the foundational protocols in the suite are the Transmission Control Protocol and the Internet Protocol.

- is the standard to connect to a web server
- is the standard that divides your expected webpage into smaller 'packets'
- gives an address for each packet
- gets sent
- is the standard for receiving a webpage
- it does error checking to make sure some of the packets aren't missing
- it reassembles the 'packets' into the correct sequence for the expected webpage

Hypertext transfer protocol (HTTP)

The Hypertext Transfer Protocol is an application protocol for distributed, collaborative, and hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web. Hypertext is structured text that uses logical links between nodes containing text.

- is the standard to transfer hypertext
- HTTP is the request, response protocol
- a client requests, yes via typing http... into the web address bar
- if the web server can proceed with the request, i.e. the web address is correct, it will send the page
- if the server cannot proceed with the request, i.e. the web address is wrong, it will send an error page 404 page not found

Hypertext transfer protocol over secure socket layer (HTTPS)

Hypertext Transfer Protocol Secure is an extension of the Hypertext Transfer Protocol for secure communication over a computer network, and is widely used on the Internet. In HTTPS, the communication protocol is encrypted using Transport Layer Security, or formerly, its predecessor, Secure Sockets Layer.

- is the standard to transfer hypertext, but with a secure connection
- it is secure because data passes within a connection encrypted by SSL
- a web server will authenticate to see if the password, called a digital certificate public/private key matches,
- if this key setup matches, it remains secure and you can get into the webpage

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Wireless application protocol (WAP)

Wireless Application Protocol is a technical standard for accessing information over a mobile wireless network. A WAP browser is a web browser for mobile devices such as mobile phones that uses the protocol.

- is the standard to access data over a mobile wireless system
- it can access all operating systems, on all mobile devices such as smartphones, tablets, laptops
- Wireless Markup Language (WML) delivers the content to the smaller display screens
- WML is similar to Hypertext Markup Language

802.11x (wireless)

802.11 refers to a family of specifications developed for wireless Lan (WLAN) technology. 802.11 specifies an over-the-air interface between a wireless client and a base station or between two wireless clients.

802.3 (Ethernet)

802.3 specifies the physical and networking characteristics of an Ethernet network, like how physical connections between nodes (routers/switches/hubs) are made through various wired media like copper coaxial or fibre cable.

802.3 Advantages

- not expensive to implement
- simple to join, connect to switches
- flexible cabling

802.3 Disadvantages

- only good for light loads of 30% capacity
- data packet collisions cause many resends
- one fault and the whole system goes down

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Types of network security measures

Network security is the practice of preventing and protecting against unauthorized intrusion into corporate networks. It is the process of taking physical and software preventative measures to protect the underlying networking infrastructure from unauthorized access, misuse, malfunction, modification, destruction, or improper disclosure, thereby creating a secure platform for computers, users, and programs to perform their permitted critical functions within a secure environment.

Firewalls

A firewall is a system designed to prevent unauthorized access to or from a private network. You can implement a firewall in either hardware or software form, or a combination of both. Firewalls prevent unauthorized internet users from accessing private networks connected to the internet, especially intranets.

- can be a server that filters incoming data from blacklisted IP addresses
- can be a proxy server, the gatekeeper for what packets of data get in or out
- can be software on your computer to protect who accesses your computer
- you can ban certain protocols, e.g. File Transfer Protocol (FTP) which can upload dangerous files to computers

Passwords

A Password is a set of secret characters or words utilized to gain access to a computer, web page, network resource, or data. You need a username and password to maintain the security of your account. It will ensure that no unauthorized parties can access your private information.

- is an access code to get into a computer or device
- better passwords are NOT just dictionary words eg 3nter
- better passwords are longer passwords, the longer the better, eg 15 characters or more will take a long time to crack
- if you have important data, use a strong password
- eg of a strong password; !Liv3@al0velyPIAce = lliveatalovelyplace = I live at a lovely place
- don't use a password that is a family member or pet

Physical security

Physical security describes security measures that are designed to deny unauthorized access to facilities, equipment and resources and to protect personnel and property from damage or harm.

- stop anyone from getting into the building
- keep the doors locked
- stop anyone from taking the data
- physical security can include someone standing in front of a door

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IMPACT OF TECHNOLOGY

Data and information security related to personal or sensitive information

- **Personal Information**
 - is information or opinion that can be linked back to an individual
 - are private details such as date of birth, address, work place, email address
- **Sensitive Information**
 - is information or opinion about...
 - race or ethnic origin
 - religious beliefs
 - criminal record
 - health details
 - bank details
- **Why Protect this Information?**
 - to prevent physical harm
 - to prevent embarrassment
 - to protect privacy
 - to prevent stalking, hacking

Purpose of Code of Conduct

A code of conduct is simply a set of rules that outlines the responsibilities and expectations of an individual, party or organization.

- **Work Hours**
 - The hours to be worked are documented. This would include work breaks
- **Employee Email Use**
 - The employer provides an email system for work purposes
- **Employee Internet Use**
 - The employer provides internet use for work purposes
- **Employee Privacy**
 - The hours to be worked are documented
- **Employers Monitoring Computer Use**
 - Employers are always very keen to run a business as efficiently as possible.

Online Censorship

- **How is it done?**
 - Censorship is done by controlling Internet Service Providers.
- **Why Censor the Internet?**
 - There are many categories of information on the internet
 - Pornography, gambling sites, chat and many others that have content that can cause great discussion.

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Issues with the use of cloud computing

- It reduces both hardware and software operating costs for business and private users.
- It is very convenient to access it on multiple devices.
- **Availability of Online Applications**
 - We can use online applications such as social networking to keep in touch with family and friends.
 - The more that data is stored online, the more opportunity for criminal activity such as theft and fraud.
- **Level of Accessibility**
 - Access to the data, means who can get to the data.
 - The more valuable the data is, the more care needs to be taken to keep it safe.
- **Confidentiality of Data**
 - Confidential means, meant to be secret.
 - People need to consider where they place confidential or secret data.
- **Sensitivity of Documents**
 - Data stored in the cloud is important.

Impact of digital technologies and global markets

- Digital technologies have changed the way many businesses operate. The information age and the speed of networked communications means that information spreads very quickly.
- **Impacts of Digital Technologies and Global Markets on Productivity**
 - Global markets provide more opportunities for consumers.
 - Apple's global productivity has picked up as result of digital technologies. Sales of the iPhone are carrying the company to record sales profits.
- **Impacts of Digital Technologies and Global Markets on Access to Knowledge or Resources**
 - **Access to learning;**
 - 24/7 access to university and courses online, cheaper method of getting a degree, less travel,
 - **Access to entertainment**
 - 24/7 access to movies on demand, is there uncontrolled viewing for young
 - **Access to work**
 - 24/7 access to work extranets
 - **Access to online purchasing**
 - 24/7 access to eBay and gumtree style of websites
 - **Access to family and friends**
 - 24/7 access to social networking to share news and events.
 - **Access to online gambling**
 - 24/7 access to losing money and possibly a marriage as well.
- **Impacts of Digital Technologies and Global Markets on Outsourcing**
 - Outsourcing is getting other companies to do some of a company's normal business activity.
 - Security of company details could be lost if off shore. Privacy laws in Australia are not relevant in other countries so privacy is a large issue.

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How digital communication is used for educational purposes

- Digital communication has changed education
- It has changed for teachers and administrators
- It has changed for students
- **Virtual Learning Environment**
 - The virtual learning environment happens using a computer or mobile device.
Virtual = not physically existing

How Teachers use Digital Technologies

- they provide learning to students via a portal 24/7, anywhere anytime
- they share collaborative documents eg google docs
- they provide upload of assignment locations to students
- they provide online assessments to students

How Students use Digital Technologies

- students use digital technologies to socialise
- they collaborate using online forums

How Parents use Digital Technologies

- they observe student progress through school portals

Disadvantages of Digital Technologies in Education

- an internet connection is essential, if it fails so does the learning
- students get distracted by game websites preventing learning