

1 Storage & Transmission

The aim of this topic is to understand where information is held or **stored** globally and how it is sent or **transmitted**.

1.1 Holders of information, i.e.:

- categories of holders (individual citizens, businesses, educational institutions, governments, charities, healthcare services and community organisations)
- location (e.g. developing country, developed country, urban, rural, home, workplace)
- comparison of technologies available and access issues across the global divide (e.g. between developed and developing countries)

1.2 Types of information storage media, i.e.:

- paper (e.g. forms, handwritten notes, maps, telephone directories)
- optical media (e.g. CD and DVD)
- magnetic media (e.g. magnetic hard drives and tapes)
- solid state media (e.g. SSD hard drives, memory cards)
- characteristics
- purpose
- advantages and disadvantages

1.3 Types of information access and storage devices, i.e.:

- handheld device (e.g. small tablet, smart phone, wearable device, eBook readers)
- portable devices (e.g. laptop, large tablet)
- fixed devices (e.g. desktop computer, smart TV, games consoles)
- shared devices (e.g. database server, data centre, cloud storage devices)
- characteristics
- purpose
- advantages and disadvantages

1.4 The internet, i.e.:

- a network of interconnected networks, spanning the world
- internet connections
- type (e.g. copper-cable, optical-fibre, satellite, microwave, mobile data networks)
- characteristics (e.g. speed, range (distance), storage capacity)

1.5 World Wide Web (www) technologies, i.e.:

- types of www technology networks:
 - internet (e.g. public, open access)
 - intranet (e.g. private, closed access)
 - extranet (e.g. private, part shared access)
 - comparison (e.g. suitability for given uses, issues related to access to the network)
 - characteristics
 - purpose

1.6 Information formats, i.e.:

- webpages (static and dynamic)
- blogs
- podcasts
- streamed audio and video (e.g. internet radio, catch-up TV)
- social media channels (e.g. Twitter, LinkedIn, discussion boards)
- document stores (upload and download)
- RSS feeds:
 - purpose
 - accessibility

1.7 Advantages:

- for individuals (e.g. speed of personal communication, easy access to large amounts of information for research, access to internet banking 24/7)
- for organisations (e.g. share large amounts of information quickly between different countries; charity websites accepting donations 24/7)

1.8 Disadvantages:

- for individuals (e.g. potential for identity theft, cost of data connection)
- for organisations (e.g. threats caused by malicious attacks, cost of maintaining websites and data stores)

1.1 Holders of Information

Categories of Holders

Citizens

People hold their own personal details plus contacts & businesses eg for bank & bills.

Business

Store **staff** personal details (eg medical, banking) plus info about **customers, suppliers** & even **rivals**.

Charities & Clubs

Store details about **supporters** (eg bank details for fund raising) and **community groups**.

Government

Holds huge amounts of data about **citizens** and **businesses** (eg tax and national census)

Councils

Also '**public**' organisations that hold details on local **residents** (eg council tax) as well as local **businesses**.

Healthcare

NHS is another '**public**' organisation that holds lots of **confidential** details about **patients** & **staff**.

Location

Developed Countries

Means countries such as the UK and USA with **strong economies** & generally **good technology infrastructure** eg fibre for fast Internet & 4G for smartphones.

Developing Countries

Means poorer countries such as in Africa or Asia where the economy is less strong and less access to technology for people & business eg Internet & mobile.

Urban Areas

Means **big towns & cities**, where technology infrastructure gets lots of investment due to population density eg more consistent 4G & faster fibre links.

Rural Areas

Means **countryside** where '**digital divide**' more obvious with 'not spots' with no Internet access or less availability of faster fibre links for business & people.

Comparison of Technologies

Computers



Digital divide between **rich & poor countries** includes basic access to computers eg schools in Africa with few or no PCs.

Internet



Same with **unequal access** to the **Internet** between nations that impacts on growth in society and business,

Mobiles



Also mobile phones, where global use is rising but **inequality** remains, such as with access to faster **4G & 5G networks**.

1.2 Types of Information Storage Media

Paper

Examples



Advantages

- Do not need to have a computer to read/use
- Don't need an internet/Wi-fi connection
- Easy to make urgent changes
- Can write & re-write

Disadvantages

- Can be easily lost/misplaced
- Text on paper can become illegible, such as if paper gets wet
- Have to use slow post to share paper docs

Optical

Examples



Advantages

- **CDs or DVDs** use lights & lasers to store data
- Discs are **low cost**
- Small & **portable**
- Were **very popular** & still used by many

Disadvantages

- **Poor robustness**, eg disc can be scratched
- **Limited storage capacity** eg 1 movie
- **Data access speed** is slow, eg load music

Magnetic

Examples



Advantages

- **Hard drive** or HDD uses billions of magnetized dots to store data
- **Large storage capacity** eg 2 TB
- **Cost** of a HDD is less than a SSD

Disadvantages

- Weak **robustness** since HDD has moving parts that can crash if moved suddenly
- **Data access speed** of HDD is slow compared with a SSD

Solid State

Examples



Advantages

- **Solid state** uses chips
- **Data access** is faster
- **Robustness better** as no moving parts
- Examples **SSD, SD card** and **USB stick**
- Also **external SSD**

Disadvantages

- **Less storage capacity** than HDD eg 128 GB
- **Cost** is more than HDD
- Some devices are portable but **easily lost or broken** eg USB stick

1.3 Types of Info Access & Storage Media

Handheld Devices

- Examples include smartphones or eBook readers or wearable devices eg smartwatch
- In business, these devices enable 'mobile working' such as staff accessing emails outside the office.



- **Advantages:** Mobile working can increase staff productivity and make an organisation more efficient
- **Disadvantage:** Without an Internet connection, staff will be unable to do work with devices.

Portable Devices

- Examples include tablets and laptops
- In business, these devices also enable 'mobile working' but with larger screens that suit business software.



- **Advantages:** Larger screens can help productivity, such as editing a spreadsheet
- **Disadvantage:** Tablet can lack processing power so limited use, eg showing presentations.

Fixed Devices

- Examples include desktops, smart TVs and game consoles.
- In business, these devices



- **Advantages:** Mobile working X
- **Disadvantage:** Without X

Shared Devices

- Examples include tablets and laptops
- In business, these devices enable 'mobile working' such as staff accessing emails outside the office.



- **Advantages:** Mobile working X
- **Disadvantage:** Without X

1.4 The Internet

Network of Networks

x

x

Internet Connections

x

Type of Connections

x

ggg

Characteristics

x

x

1.5 WorldWide Web Technologies

Public Internet

x

x

Intranet

- Is a **private network** with **restricted access**
- So it's only accessible to staff in an organisation (or people with authorised logon).
- jj

Extranet

x

ggg

1.6 Information Formats

Webpages

x

Blogs

x

Podcasts

x

Streamed Audio & Video

x

Social Media Channels

ggg

Document Stores

x

RSS Feeds

x

1.7

1.8

Advantages & Disadvantages

Advantages

Fgdfg

Disadvantages

x