



Higher Still Notes

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Higher Information Systems

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Information Organisation
Revision Notes

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The Value of Information

Data and Information

Data are recorded facts which appear unstructured. Information is data presented in context and with structure. Information has a cost.

Uses of Information

Planning

Planning is the process of deciding in advance what is to be done and how it is to be done.

Plans should take account of risk (ie contingency plans).

Mission	The purpose of the organisation.
Objectives	Aims or goals to be achieved.
Plans	Strategies; methods of achieving objectives.
Policies	Ethical, moral or legal standards which limit behaviour.

A plan is created to meet certain objectives which are defined by the mission of the organisation. Any plan must comply with the organisation's policies.

Levels of Planning

Strategic	Top level; clear objectives over long term (3-5 years); little detail in plans, hence wide scope.
Tactical	Middle level; follows strategic plan; scale: 1-5 years; more detail created, limiting scope.
Operational	Bottom level; tightly focused aims; 1 day to 1 year; highly detailed, very little scope.

Control

Control is monitoring performance and comparing this with the expected results of the plan, in order to change the input to the system to make the results more desirable.

The nature of control differs with management level:

Operational	Control is the main function of this level Work/result is compared to specific quantifiable terms
Strategic	Control more closely linked to planning Monitoring progress against plan, perhaps changing the plan itself

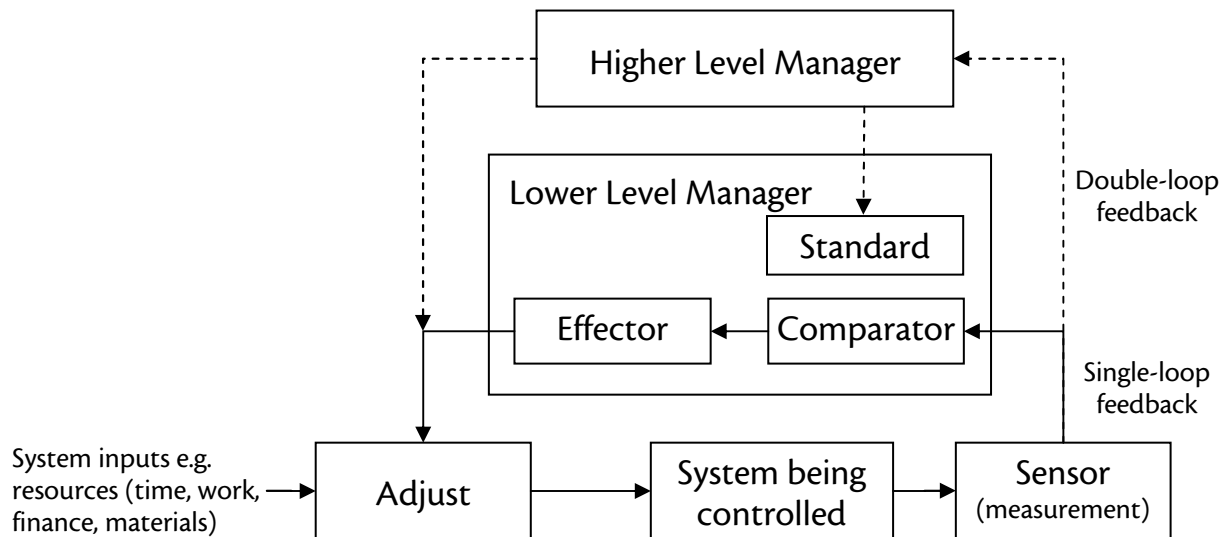
Control is needed to respond to unexpected events.

Feedback

Feedback is the process of using information on performance to alter the input to a system.

Single loop Basic control, adjusting inputs to bring the output in line with a standard.

Double loop Involves higher management, who may alter the standard to fit new circumstances.



Sensor Measures output performance.

Comparator Comparing the actual with the expected and reporting any deviation.

Effector Action taken to alter the input.

Decision Making

Decision making is creating alternative options and comparing their merits to select the most suitable one.

Phases of Decision Making

Intelligence Finding situations requiring decision making.

Design Creating possible solutions.

Choice Selecting and implementing the best option.

Review Evaluating the choice.

Programmed and Non-Programmed Decisions

Programmed Operational decisions with automated responses.

Non-programmed Non-routine situations requiring higher management.

Characteristics of Decisions

Management level	Decision characteristics	Information characteristics
Strategic	Long term, large scale resources, much creativity and judgement, usually unstructured, problems difficult to define, infrequent, much uncertainty	Largely external, informal sources important, forward looking, qualitative information important, precision unimportant, instant access not vital, wide ranging, incomplete.
Tactical	↕	↕
Operational	Repetitive, short time scale, small scale resources, usually structured, clear objectives and decision rules, little or no discretion.	Largely internal, mainly historical, detailed, often quantitative, high precision, instant availability often critical, narrow scope, comprehensive.

Uncertainty in Decision Making

Certainty	One possible outcome, known with absolute confidence.
Risk	A number of outcomes, each with a probability.
Uncertainty	Unknown number of outcomes, their likelihoods not known.

Education

Learning from the past or present to improve future results of other information processes.

Classes of Information

The uses made of the information are used to classify it; ie information used for strategic planning is strategic information. Also, see the information characteristics on the previous table.

Personal Information Requirements

Planning	Aim: Degree in Computing. Plan: Achieve necessary grades at school.
Decision Making	What will I have for breakfast?
Control	Have I got enough money for the cinema?
Education	Not going to a particular restaurant because of poor service on the last visit.

Characteristics and Sources of Information

Characteristics of Information

Accessibility	The ease of access.
Accuracy	The correctness or truthfulness.
Appropriateness	Relevance; suitability or fitness.
Completeness	Amount of information; omissions.
Conciseness	Brevity of information; efficiency.
Cost	The price or charge.
Legality	Relating to acquisition, copyright and use.
Presentation	The appearance of the information; its aesthetic qualities.
Structure	The organisation of the information; its navigation and searching.
Timeliness	When information is received; its topicality.
Value	Worth or importance.

Sources of Information

External Sources

These are sources of information from outwith the organisation.

These are important at a strategic level, where the organisation's environment must be considered.

Published documentation – Census figures, telephone directories, opinion polls, maps

Social contact

Internet (World Wide Web)

Unlike other sources, the information on the World Wide Web does not need to be approved by anyone before it is made available.

When looking at Internet sources, it is important to consider:

Credibility	The trustworthiness of the source.
Accuracy	Providing complete and timely information.
Reasonableness	Thoughtful or truthful, objective account.
Support	Convincing evidence, with corroborating references.

Internal Sources

These are sources of information from within the organisation.

Marketing and sales information

Financial information – Profits, cash flow, etc

Documentation – Order forms, invoices, manuals

Intranets

Same technology as Internet, but over a Local Area Network.

All sorts of information and documents can be made available.

Unlike the Internet, concerns about the information's quality should not apply. Other benefits are:

Cost savings	Less paper and photocopying required.
Timing	Updated information is immediately available.
Accuracy	Improved consistency, since there is only one version of a document in use.

Media for Transmitting Information

Broadcast

This method transmits information from one location to many users.

Radio

Multicasting Sending a video stream over the Internet.

Television Including teletext.

Digital

This method includes the storing or transmission of data and information in binary format.

Internet/Intranet

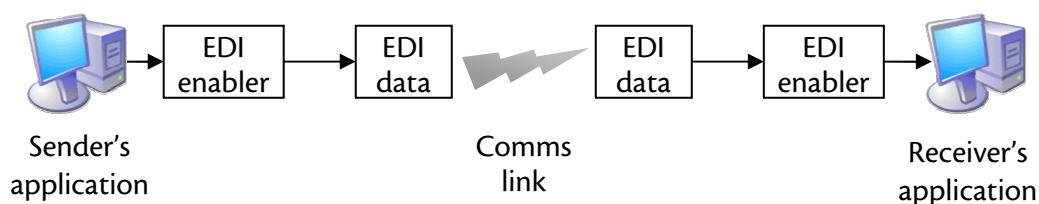
CD-ROM/DVD

Digital Television

Video Conferencing New technology allows this to take place cheaply over the Internet.

Electronic Data Interchange (EDI)

Allows computers to exchange business documents digitally



Benefits of EDI:

Reduced Costs	No paper or postage bills.
Time Saved	No retyping of data.
Improved Accuracy	No retyping eliminates errors.
Improved Response Times	Immediate transactions.
Integration	Allows all parts of a business to communicate.

Paper

In this method, information supplied on paper

Benefits of Paper

Portable	In relatively small amounts.
Compatible	No special hardware needed.

Problems with Paper

Bulky	Can be expensive to transport.
Fragile	Easily damaged (worn or ripped).
Costly	Especially if many copies are needed.

Implications of Information Systems

Social Implications

Better technology has led to more efficient processors, allowing increased volumes of information to be handled.

A new ‘information handling’ sector of the workforce has emerged as information systems developed.

Reduction in labour intensive jobs, coupled with an increase in information-based jobs. Possible new jobs developing in years to come.

Telecommuters

Work at home and communicate with their workplace through telecommunications links.

Advantages of Telecommuting

- Flexible work patterns allowing work to be fitted around family life
- Reduced environmental pressures arising from commuting (eg pollution/congestion)

Disadvantage of Telecommuting

- Possibly leads to a society with poor social interactions
- Workers may have lower productivity as a result of distractions around the home.

Social deprivation is a real possibility, with a division between those with access to information systems (“information rich”) and those without (“information poor”).

Ethical Implications

With systems such as the Internet, anything can be made available, so professionals (and also the general public) must follow acceptable standards.

Netiquette

A guide to polite conduct concerning the Internet

Censorship

Different people are offended by different things, so boundaries are hard to define.

Control of information could hinder freedom of speech.

Users could be considered responsible for what they see, since search results usually make clear the general content of the pages.

Spam

Should senders of spam (unsolicited e-mail) be censored or prosecuted?

Professionals

Many professionals’ organisations (such as the British Computer Society) declare a code of ethics, which their members are expected to follow.

Laws and Legal Implications

The Data Protection Act

Data Controllers	People keeping the information.
Data Processors	People or companies processing the information held.
Data Subjects	The people with information about them recorded.

Data subjects must be allowed to see all the information held about them, and have it corrected if they find errors. They may have to pay administrative costs to do this.

Computer Misuse Act

It is an offence to gain unauthorised access to a computer system. This is known as Hacking.

Unauthorised Access

Includes trying to use, guess or obtain another person's password.

Penalties: 6 months in jail and/or a maximum fine of £2000.

Unauthorised Access with Intent to Commit an Offence

Applies if another related offence is to be committed, such as blackmail or robbery (not necessarily using a computer).

Penalties: 2 years in jail and/or a maximum fine of £10 000.

Unauthorised Modification of Data

Offences include deleting another's files, introducing viruses, etc.

Penalties: 6 months in jail and/or a maximum fine of £2000.

Copyright, Designs and Patents Act

- Duplication has become economically viable and requires little expense.
- Transmission is also easier, for electronic media, and conversion to electronic form is also easier.
- Manipulation of electronic versions can make infringements hard to detect.
- Monitoring of electronic transmissions is rare, especially due to the impractically large volume of traffic.
- Availability of copyrighted works is now far greater, so the temptation to duplicate them is increased.
- Exposure to illegal copies has increased, diminishing the importance of copyright in public opinion.

Work Covered

- | | | |
|--------------|----------|-------------------|
| • Literature | • Music | • Graphics |
| • Pictures | • Drama | • Motion pictures |
| • Sculptures | • Sounds | • Architecture |

Not Covered

- Works not fixed in tangible form (eg choreography and improvised speeches)
- Titles, names, phrases, slogans, symbols, designs etc (Trademark law may apply here)
- Ideas, procedures, processes, concepts, devices etc (Patent or Trade Secret laws may apply here)
- Works consisting of common property (calendars, rulers, etc)

Copyright is secured automatically on creation of an original work. Creation occurs when the work is fixed (ie recorded). The copyright notice (eg Copyright 2004 John Smith) is no longer needed, but is recommended.

Copyright generally lasts for the lifetime of the holder, plus 50-75 years after their death. The rights to a work can also be sold, transferred or bequeathed in a will.

Public Domain

Some works have no copyright protection, because:

- The copyright has expired
- The owner has relinquished their rights
- The work cannot be copyrighted (eg US government documents)

The copyright on these works cannot be reinstated.

Fair Use

Fair Use is intended to allow people to access copyrighted works. Such use should generally be not-for-profit, only making copies of small portions, and not detracting from the copyright holder's market.