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# Data Management:

**Data:**

* symbolic depictions of facts
* e.g. display on thermometer

**Information:**

* data in particular context
* data + metadata = information

**Intelligence:**

* processes and the technologies that lead to understanding and taking informed decisions.

**Knowledge:**

* allows us to explain or give reasons for phenomena
* to predict future event
* intelligence + thinking = knowledge.

**Data Organisation:**

* processing & management of data are critical components of business organizations.

## Characteristics of valuable information:

If information is to be valuable to an organization, it must have the following characteristics, (adapted from Ralph M. Stair's book, Principles of Information Systems):

**Accurate:** information is free from error.

**Complete:** information contains all of the important facts.

**Economical:** information should be relatively inexpensive to produce.

**Flexible:** information can be used for a variety of purposes, not just one.

**Reliable**: information is dependable information.

**Relevant:** information is important to the decision-maker.

**Simple**: information should be simple to find and understand.

**Timely**: timely information is readily available when needed.

**Verifiable**: verifiable information can be checked to make sure it is accurate.

## Data Management:

The database approach to managing data replaced previous approaches where data was held to support each application in an organization.

The database approach helped to reduce the problem of duplicated data which could cause update inconsistency and inefficiency.

Is it important to organize data into a database to reflect business operations and practices?

Read more on data management, strategy, organization, system, examples, advantages, definition, model, type, company, hierarchy, disadvantages, business, system:

<http://www.referenceforbusiness.com/management/Comp-De/Data-Processing-and-Data-Management.html#ixzz11xvt8meP>

## Centralization vs Localization:

* The database approach is one of centralization
* The database is a central resource, accessed when needed

## Operational & Historic Data:

* Businesses are continually using operational databases to support their everyday business processes
* Over time this inevitably causes a build-up of historic data
* This historic data may be
  + a storage problem
  + a valuable resource
    - Which is it?

## Business Intelligence:

### Definition 1:

“Analytics and business intelligence (ABI) is an umbrella term that includes the applications, infrastructure and tools, and best practices that enable access to and analysis of information to improve and optimize decisions and performance.”

<gartner.com/en/information-technology/glossary/business-intelligence-bi>

### Definition 2:

“Business intelligence (BI) is an umbrella term that refers to the processes for collecting and analysing data, the technologies used in these processes, and the information obtained from these processes with the purpose of facilitating corporate decision making.”

* Connelly and Begg

## Database models:

* ODMG databases
  + the object model, ODL and schema design
  + OQL, query processing and language bindings
* Object-Relational databases
  + OO extensions to SQL
* NOSQL databases
  + Graph database models

