20.06.2022

Competency 01

Explores the basic concepts of ICT together with its role and applicability in today's knowledge-based society

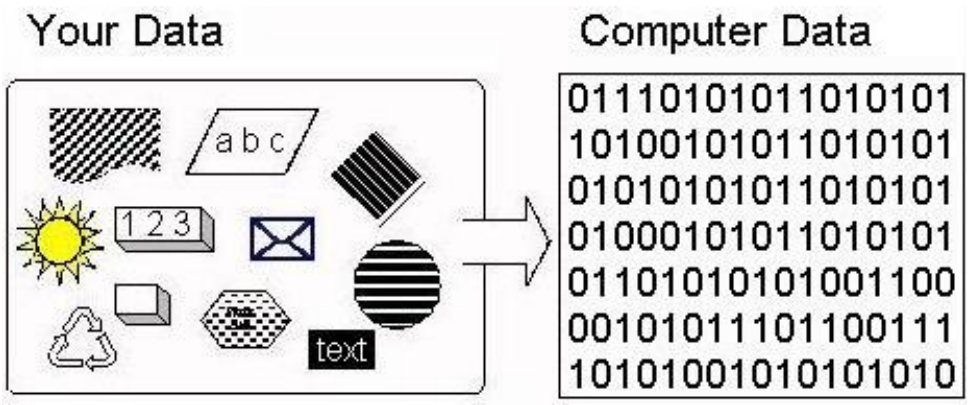
1.1 Investigates the basic building blocks of information and their characteristics

Data

Data is a raw and unorganized fact which input into the system in order to processed to make it meaningful information.

Data consists of numbers, words, sounds and images which has no particular meaning and not organized in order to make decisions.

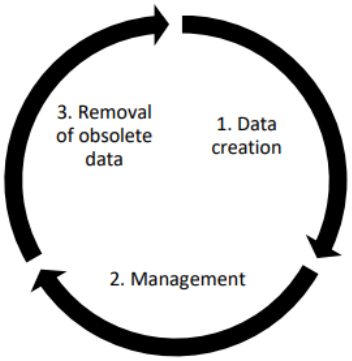
Data is always interpreted, by a human or machine, to derive meaning. So, data is meaningless.



Life cycle of data

The life cycle of data consists of,

1. Data creation
2. Management
3. Removal of obsolete data



For the purpose of creating meaningful information, **data should be introduced into the system or create inside the system.**

Keeping data securely and making them accessible necessarily are done while management of data.

Whenever data will be **outdated and found to be unnecessary anymore, it's the time to remove that data from the system.** This is known as the life cycle of data.

Information

Information is a set of data which is processed in a meaningful way according to the given requirement. Information is processed, structured, or presented in a given context to make it meaningful and useful.

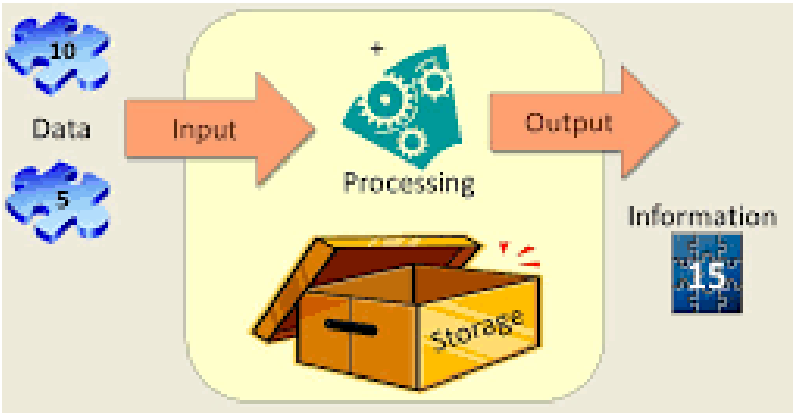
To create information, need to process data. For the processing data, should follow the instruction given by user. In the sense outcome of processed data, we can define as information.

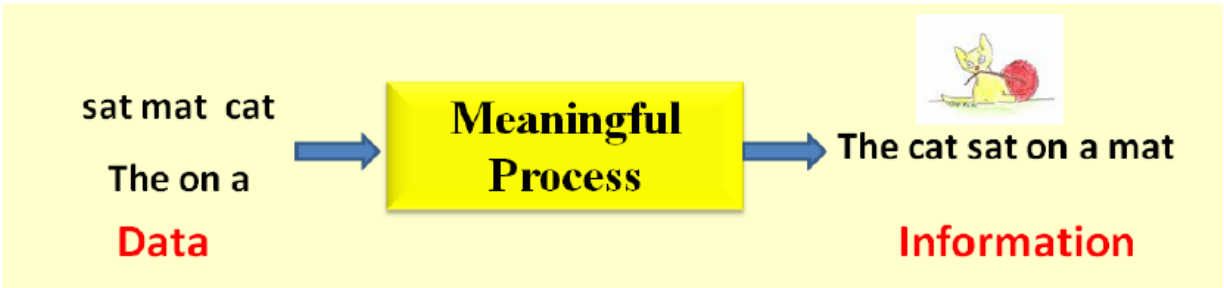
Although information is an output of a process the same information would be a data for another process.

Thus, data and information can be identified distinctly through examining inputs and outputs of a particular process.

Data can be identified as the inputs into a system to create meaningful information.

Information can be defined as the set of data which is organized meaningfully and information helps to make decision.





Data Vs Information

Individual pieces of data are rarely useful alone. For data to become information, data needs to be put into context.

Information = Data + Context + Meaning

e.g.

Data	28101955	This has no meaning or context
Context	It is a British date	This allows us to register it as 28th October 1955.It still has no meaning and therefore not Information.
Meaning	The Birth Date of Bill Gates	This gives us all elements required for it to be called "Information"

Classification of Data

Data can be categorized as,

- Quantitative Data
- Qualitative Data

Quantitative data is information about quantities; that is, information that can be measuring or counting and written down with numbers (numerical). Quantitative data can be arranged in a numerical order or can be subjected to arithmetic process.

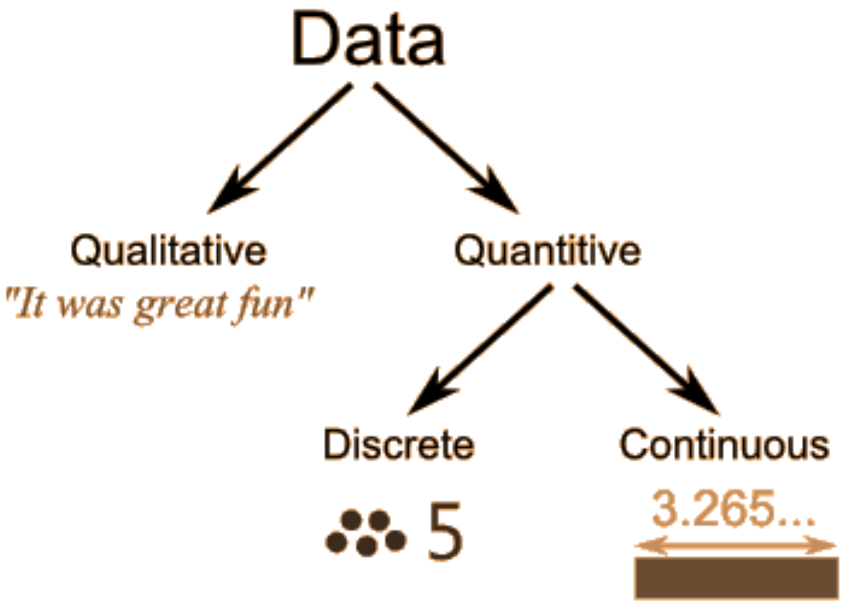
Some examples of quantitative data are your height, your shoe size, and the length of your fingernails, number of students in the classroom, marks obtained for ICT paper

Quantitative data can be dividing further as,

- Discrete data
- Continuous data

Discrete data can take on only integer values whereas **continuous data** can take on any value.

Qualitative data is information about qualities; information that can't actually be measured but can identified as properties of something. Some examples of qualitative data are the softness of your skin, and the color of your eyes.



Value of Information

Valuable information should have characteristics such as,

- Relevance
- Timeliness
- Accuracy
- Completeness
- Understandability

Valuable information assists to make smart decisions.

Relevance – Value of the information will depend on its relevance for a particular person.

Timeliness – An information should be updated. Timely information is valuable for making effective decisions.

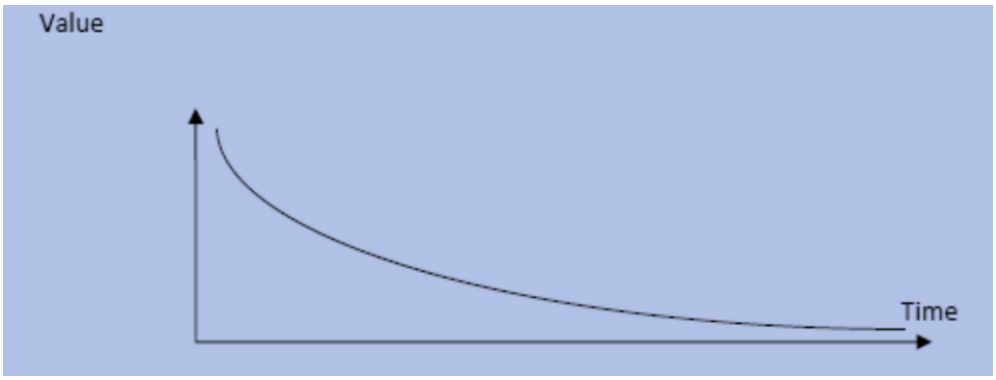
Accuracy – Accurate information is helpful for making correct decisions.

Completeness – Information presented with the context are useful where incomplete information is not sufficient to make decisions.

Understandability – Information should be clear and unambiguous

The golden rule of information graphically represents the value of information in its maximum level at the moment the information is created or the information is released.

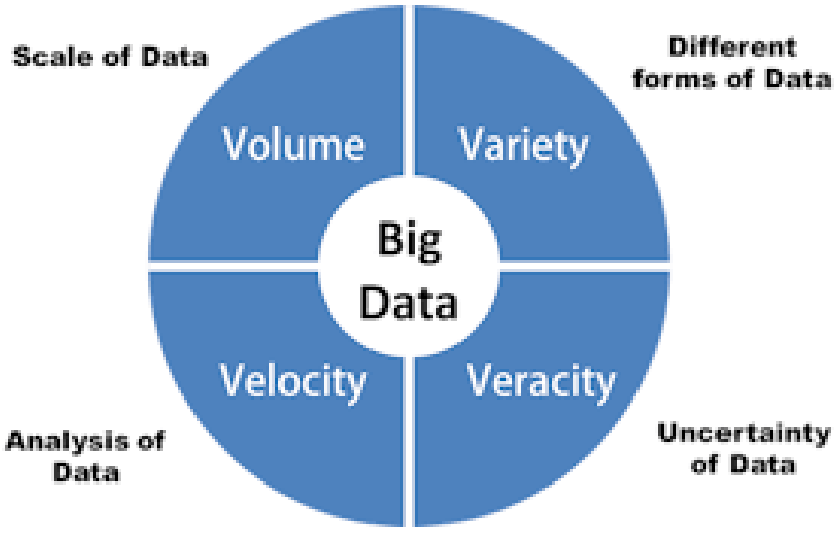
The value of the information is reduced gradually with the time and become less valuable.

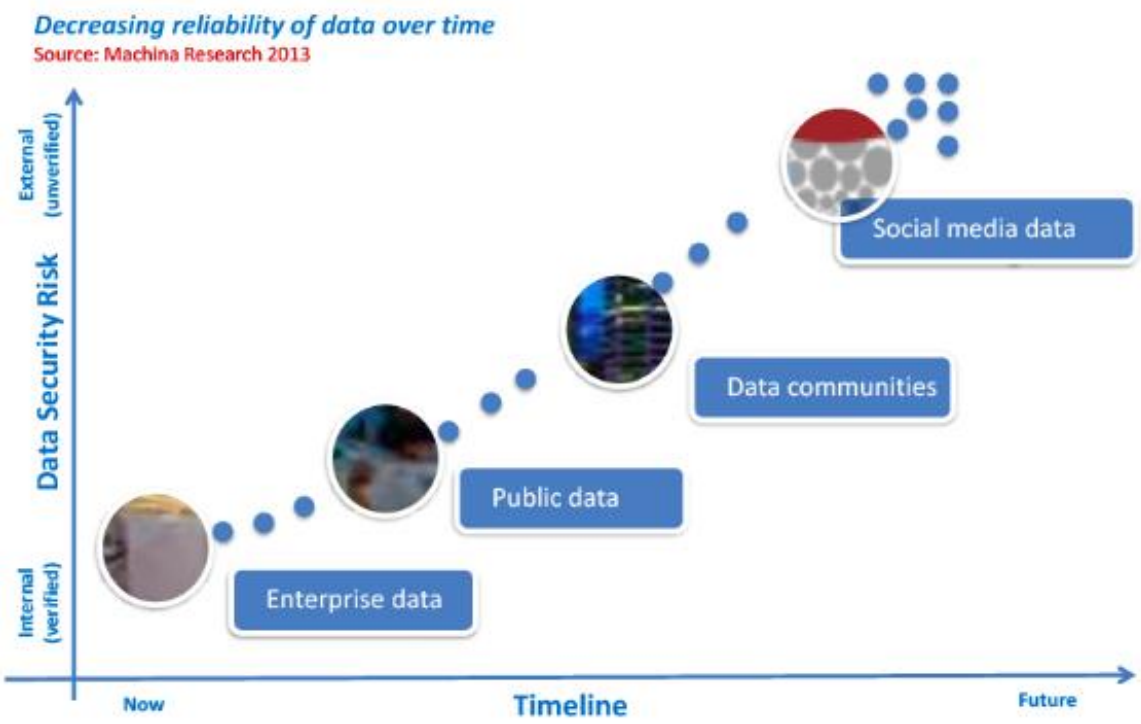


Big Data Analytics

Big data analytics allows data scientists and various other users to evaluate large volumes of transaction data and other data sources that traditional business systems would be unable to tackle. Traditional systems may fall short because they're unable to analyze as many data sources. This big data is gathered from a wide variety of sources, including social networks, videos, digital images, sensors, and sales transaction records.

Sophisticated software programs are used for big data analytics, but the unstructured data used in big data analytics may not be well suited to conventional data warehouses. Big data's high processing requirements may also make traditional data warehousing a poor fit. As a result, newer, bigger data analytics environments and technologies have emerged, including Hadoop, MapReduce and NoSQL databases. These technologies make up an open-source software framework that's used to process huge data sets over clustered systems.





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