Information is one of the basic concepts of 20th-century science.

According to our scientific physical world view, the material particles and objects in our world constantly exchange energy in the four-dimensional space-time continuum while their order changes.

Information is somehow connected to the spatial and temporal distribution and orderliness of these materials and energies. *Information* can be examined in different aspects (from different viewpoints) as well:

1. Information can be an intel, a report or some kind of notice about a given person, subject, or situation.
2. Information can be the special meaning of a given symbol group, which also carries information about a given object.
3. Information can be any kind of news that gives us necessary information about uncertainty.
4. Information can be used to measure the orderliness of a structured object.
5. Information is the world's most common internal status indicator, determined by physical constants and laws.

Information is a difficult and abstract concept that represents the orderliness of the material structures (which are constantly reacting to each other) in our universe.

Definition:

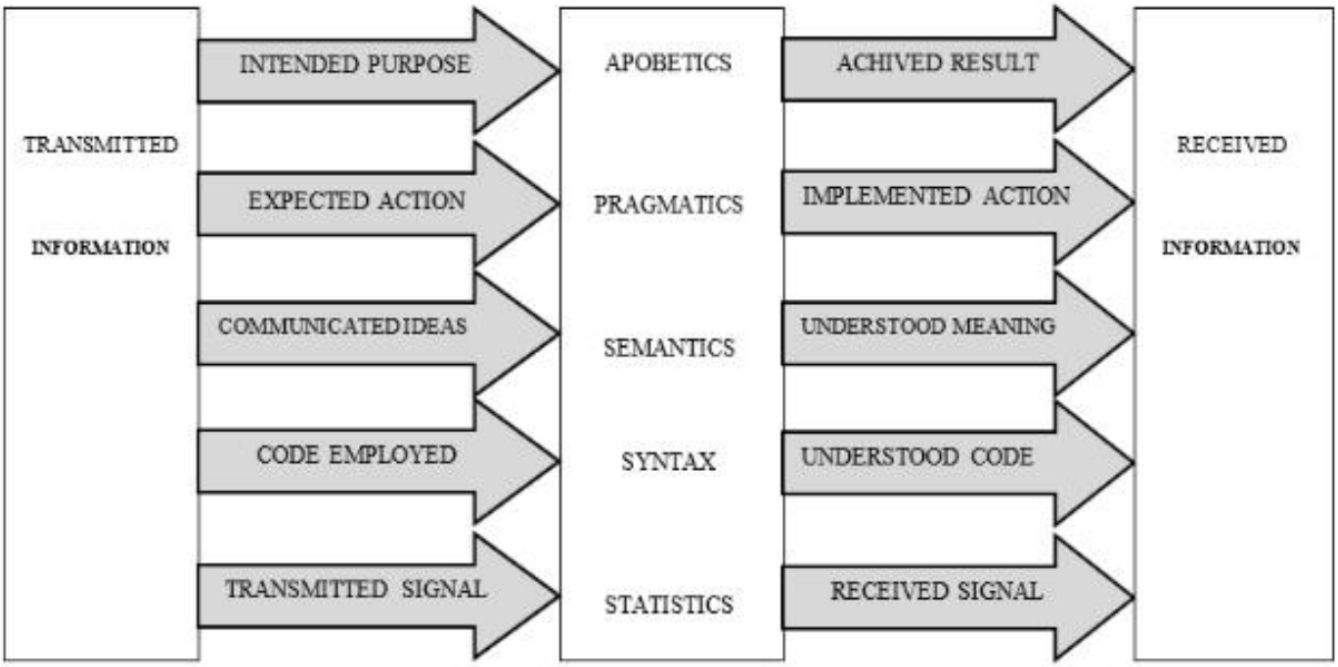
Information is both **quantitative** and **qualitative**. It is the characteristic of those groups that carry static and structural meaning (and constantly react to each other).

Information can be used to achieve an individual's goals by enhancing that person's knowledge.

The properties of information form a hierarchical structure

There are usually between 3 and 5 levels in this structure, according to the researchers of this area.

The most widely accepted structural layout is the 4-layer structure, but the following model may have 5 layers.



The multi-level model of information is suitable for several kinds of analyses (according to different aspects).

The information's Quantitative properties are defined by the static and syntactical laws of encoding, while its qualitative properties are defined by the semantic and pragmatic laws.

Different approaches

1.) Statistical approach examines the measurability of the information. This level deals with the quantitative aspect of information. It focuses on the measurement and transmission of data, emphasizing the volume, redundancy, and entropy in a communication system. This approach is highly relevant in fields such as information theory (e.g., Shannon's theory), where the goal is to determine the efficiency of information encoding, transmission, and storage without considering the content or meaning of the data.

Example: Measuring how much data can be transmitted over a communication channel while minimizing errors.

2.) The Syntactical approach examines the formal qualities using the theory of coding and language theory. The syntactical level concerns the formal structures and patterns used to represent information. This includes rules governing how symbols, letters, or words are combined according to a predefined set of grammar or syntax rules. The focus here is on structure rather than meaning, making this layer important in language theory and coding theory. *Example*: Correctly encoding a message into a sequence of bits following a defined protocol. 3.) Semantic approach **examines the meaning of the so-called informational primitives according to given semiotic and signal theories. At this level, the focus shifts to the meaning of the information. The semantic layer is concerned with interpreting the symbols, determining their relevance, and understanding the relationship between them and what they represent. This is critical for communication theory, linguistics, and semiotics, where the meaning carried by the message must be extracted and understood. *Example*: Understanding the meaning of a sentence based on the relationship between**

words and what they represent in the world. 4.) Pragmatic approach **seeks the effect of information according to the results/reactions and the related behaviours. The pragmatic level evaluates how the information affects the receiver's behavior or decision-making process. It concerns the usefulness of the information, analyzing how the receiver reacts or changes based on the conveyed message. This is relevant in decision theory and behavioral sciences. *Example*: How a user responds to a weather alert by preparing for a storm.** 5.) The Apobetical approach** seeks the sender's intended purpose and the receiver's results. It has less meaning from an engineering point of view. The apobetical level focuses on the intent behind the transmission of information and the desired outcome. It examines the purpose for which the information is sent and how effectively it fulfils the sender's goal. Although less prominent in engineering, this level is significant in communication design and strategy.

Example: Sending a marketing message intended to persuade a customer to buy a product.