Information: basic definitions

Steven Lindell
Haverford College
October 26, 2012

Excerpts from The American Heritage Dictionary

• in·for·ma·tion (ĭnˈfərˌməˈshən) noun
  1. Knowledge derived from study, experience, or instruction.
  2. Knowledge of a specific event or situation; intelligence.
  3. A collection of facts or data: statistical information.
  4. The act of informing or the condition of being informed: communication of knowledge. Safety instructions are provided for the information of our passengers.
  5. Computer Science. A nonaccidental signal or character used as an input to a computer or communications system.
  6. A numerical measure of the uncertainty of an experimental outcome.
  7. Law. A formal accusation of a crime made by a public officer rather than by grand jury indictment.

• —in·for·ma·tion·al adjective

Excerpts from The Microsoft Press® Computer Dictionary

• information The meaning of data as it is intended to be interpreted by people. Data consists of facts, which become information when they are seen in context and convey meaning to people.

• data Plural of the Latin datum, meaning an item of information. In practice, data is often used for the singular as well as the plural form of the noun.

Related technological contexts

• information processing The acquisition, storage, manipulation, and presentation of data, particularly by electronic means.

• information science The study of how information is collected, organized, handled, and communicated.

• information theory A mathematical discipline founded in 1948 that deals with the characteristics and the transmission of information. Information theory was originally applied to communications engineering but has proved relevant to other fields, including computing. It focuses on such aspects of communication as amount of data, transmission rate, channel capacity, and accuracy of transmission, whether over cables or within society.
Oxford English Dictionary

• **information†** (obsolete) The action of 'informing' with some active or essential quality; the giving of a form or character to something; inspiration, animation (e.g. of the body by the soul).

• **datum** A thing given or granted; something known or assumed as fact, and made the basis of reasoning or calculation; an assumption or premiss from which inferences are drawn.

More from the OED

**inform**, v.

I. To give form to, put into form or shape.
II. To give 'form' or formative principle to:

• **form**, n.
  - Shape, arrangement of parts.
  - Denoting various material objects.

III. To give form to the mind, to discipline, instruct, teach (a person), to furnish with knowledge.
IV. To instruct in (a thing), impart the knowledge of, make known.

In-formation

• **Bit**: the smallest quantized unit of information, thought of as the answer to a yes/no question.
• Is this the way we really think of it?
• The ultraviolet catastrophe was resolved by the photon, quantizing energy. Was there a similar paradox resolved by the atomic hypothesis, quantizing matter?
• More importantly, like mass/energy, information (properly interpreted) might be a conserved quantity. Resolution of the "information paradox".

What makes it informative?

• Random collections of zeros and ones are not informative: only when those symbols are organized do distinct patterns emerge. Data is only the vehicle – information provides the meaning.
• In CS, a symbol is an undefined term (like a point in geometry) even though we know from ordinary experience that symbols themselves are a kind of form which result from distinct patterns of points, usually black on white. They (should) have recognizable shapes irrespective of font, typeface, size or style.
• 0 and 1 are sort of atomic symbols, both in appearance and what they represent.