

Microsoft Office 2003 Thesaurus

**technology:** skill, knowledge, expertise, know-how, equipment, machinery, tools

**engineering:** manufacturing, business, commerce, trade, production

**technique:** method, system, practice, modus operandi, procedure, performance, skill

<http://en.wikipedia.org/>

## The Technology Portal

**Technology** (Gr. *technologia* (τεχνολογία) < *techne* (τέχνη) "craft" + *logos* (λόγος); "reason") Technology predates both science and engineering. It may be defined as: "Solutions for real human problems by the development and application of tools, machines, materials, goods, or information in the form of skills, knowledge, processes, blueprints, plans, diagrams, models, formulae, tables, engineering designs, specifications, manuals, or instructions."

**Technology** is a broad concept that deals with a species' usage and knowledge of tools and crafts, and how it affects a species' ability to control and adapt to its environment. In human society, it is a consequence of science and engineering, although several technological advances predate the two concepts. Technology is a term with origins in the Greek "*technologia*", "*τεχνολογία*" — "*techne*", "*τέχνη*" ("craft") and "*logia*", "*λογία*" ("saying").<sup>[1]</sup> However, a strict definition is elusive; "technology" can refer to material objects of use to humanity, such as machines, hardware or utensils, but the concept can also encompass broader themes, including systems, methods of organization, and techniques. The term can either be applied generally or to specific areas: examples include "construction technology", "medical technology", or "state-of-the-art technology".

The human race's use of technology began with the conversion of plentiful natural resources into simple tools. The prehistorical discovery of the ability to control fire, increased the available sources of food, and the invention of the wheel helped humans in travelling in and controlling their environment. Recent technological developments, including the printing press and the Internet, have lessened physical barriers to communication and allowed humans to interact on a global scale. However, not all technology has been used for peaceful purposes; the development of weapons of ever-increasing destructive power has progressed throughout history, from clubs to nuclear weapons.

Technology has affected society and its surroundings in a number of ways. In many societies, technology has helped develop more advanced economies (including today's global economy) and has allowed the rise of a leisure class. However, many technological processes produce unwanted by-products, known as pollution, and deplete natural resources, to the detriment of the Earth and its environment. Various implementations of technology influence the values of a society and new technology raises new ethical questions. Examples include the rise of the notion of efficiency in terms of human productivity, a term originally applied only to machines, and the challenge of traditional norms.

Philosophical debates have arisen over the present and future use of technology in society, with disagreements over whether technology improves the human condition or worsens it. Neo-luddism and similar movements criticise the pervasiveness of technology in the modern world, claiming that it alienates people and destroys culture; proponents of ideologies such as transhumanism and techno-progressivism view continued technological progress as beneficial to society and the human condition. Indeed, until recently, it was believed that the development of technology was a concept akin and restricted only to human beings, but recent scientific studies indicate that other primates and certain dolphin communities have developed simple tools and learned to pass their knowledge to other generations.

In general, "technology" is the relationship that society has with its tools and crafts, and to what extent society can control its environment. The Merriam-Webster dictionary offers a definition of the term: "the practical application of knowledge especially in a particular area" and "a capability given by the practical application of knowledge".[1] Ursula Franklin, in her 1989 "Real World of Technology" lecture, gave another possible definition of the concept; it is "practice, the way we do things around here".[2] The term is often used to imply a specific field of technology; the media uses "technology" to refer to high technology, rather than technology as a whole.[3] However, the term is mostly used in three different contexts: when referring to a tool (or machine), a technique, the cultural force, or a combination of the three.

Technology can be most broadly defined as the entities, both material and immaterial, created by the application of mental and physical effort in order to achieve some value. In this usage, technology refers to tools and machines that may be used to solve real-world problems. It is a far-reaching term that may include simple tools, such as a crowbar or wooden spoon, and more complex machines, such as a space station or particle accelerator. Tools and machines need not be material; virtual technology, such as software and virtual machines, fall under this definition of technology.

The word "technology" can also be used to refer to a collection of techniques. In this context, it is the current state of humanity's knowledge, either in a particular field or in general, of how to combine resources to produce desired products, to solve problems, fulfil needs, or satisfy wants; it includes technical methods, skills, processes, techniques, tools and raw materials. Terms such as "medical technology", "space technology" and "state-of-the-art technology"[4] refer to the state of the respective field's knowledge (as well as the tools used).

"Technology" can be viewed as an activity that forms or changes culture.[5] A modern example is the rise of communication technology, which has lessened barriers to human interaction and, as a result, has helped spawn new subcultures; the rise of cyberculture has, at its basis, the development of the Internet and the computer. Not all technology enhances culture in a creative way; technology can also help facilitate political oppression and war via tools such as guns. As a cultural activity, technology predates both science and engineering, each of which formalize some aspects of technological endeavor.

The distinction between science, engineering and technology is not always clear. Generally, science is the reasoned investigation or study of nature, aimed at discovering enduring principles among elements of the phenomenal world by employing formal techniques such as the scientific method. [6] However, technologies are not usually direct products of science, because they have to satisfy requirements such as utility, usability and safety; therefore the application of scientific knowledge to concrete purposes requires the contribution of engineering research. Engineering is the goal-oriented process of designing and building tools and systems to exploit natural phenomena for practical human means, using results and techniques from science.

The development of technology broadly involves the use and application of knowledge, such as scientific, engineering, mathematical, linguistic, and historical knowledge, to achieve some practical result. It is usually a consequence of science and engineering — although technology as a human activity has preceded the two fields. For example, science might study the flow of electrons in electrical conductors, by utilising already-existing specialist technology and knowledge. This new-found knowledge may then be used by engineers to create new tools and machines, such as semiconductors, computers, and other forms of advanced technology. In this sense, scientists and engineers may both be considered technologists; the three fields are often considered together for the purposes of research and reference.[7]