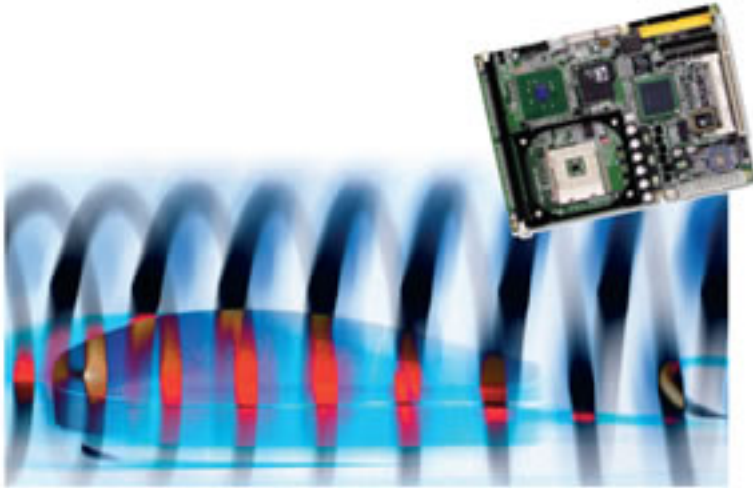


Patents

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Over recent years, debate has been rife regarding the appropriateness or otherwise of the patenting of IT-related ideas and inventions. The balance between the legitimate protection of intellectual property and the potential to stifle the development of the industry as a whole is difficult to strike but the history of computers and communications has been supported by a number of milestone patents which provide an interesting insight.

Today, we interact with computers using a keyboard and mouse. The keyboard can be traced back to an early British patent granted to Henry Mill in 1714 'An artificial machine or method for the impressing or transcribing of letters singly or progressively one after another, as in writing, whereby all writing whatever may be engrossed in paper or parchment so neat and exact as not to be distinguished from print'. The mouse, in turn, was patented by Douglas Engelbart in 1970 'X-Y Position Indicator for a Display System' (US 3,541,541). Engelbart's vision was that the user would take the mouse in one hand, and five-keyed keyboard in the other on which characters would be entered by playing 'chords'.

The electronics industry depends on integrated circuits, which miniaturize and combine thousands of transistors, which were in turn a replacement for the bulky and inefficient thermionic valve. The valve in question was patented in 1908 by L De Forest (US 879,532). Although the title of his patent, 'Space Telegraphy' sounds like a creation from science fiction, there is no doubt that it encapsulated the principles required to set in motion an important chain of development.

The Transistor came along in 1950 (US 2,524,035) as 'Three-electrode circuit element utilizing semiconductor materials'. John Bardeen, Walter Brattain and William Shockley were working at Bell Labs at the time which boasts over 26,000 patents and eleven Nobel Prize winners.

For computing applications, many thousands of transistors are required. The discrete transistors of the early 1950s were themselves bulky and impractical for complex applications. In order to provide scale, miniaturization was required and miniaturization in turn required revolutionary manufacturing processes. In 1959, Fairchild Semiconductors patented 'A Planar Process for Manufacturing Transistors'. This not only allows the process to be more easily automated, but also led the way to integrating multiple transistors into a single device. Hence, the Integrated Circuit was born cue the 1964 Texas Instruments Patent 'Miniaturized Electronic Circuits' (US 3,138,743). Initially, such devices had four, then eight, then sixteen transistors in a single integrated device compare this with recent Pentium 4 processors which encompass 125 million. The microprocessor was patented by Gary Boone in 1973 (US 3,757,306), and a previously unknown company Integrated Electronics patented the memor chip in 1973. In search of a more catchy brand, they purchased the name 'Intel' from a chain of roadside hotels.

Although IBM successfully patented the floppy disk drive in 1972 (US 3,678,481) the principle can be traced back to 1900 when Valdemar Poulsen patented a device which used magnetism to encoded information (US 661,619).

Today, the telecommunications and IT worlds have significantly converged and a significant stream of patents have facilitated this. Some of the patents which relate to what we consider to be contemporary inventions are surprisingly old. For example, in 1849 Alexander Bain patented the 'Electrochemical Telegraph' (US 6,839) essentially, a primitive fax machine. This was followed in 1876 by Alexander Graham Bell's legendary 'Improvement in Telegraphy' patent (US 174,465) - the telephone was born.

Early communications technologies relied on electrical transmission fine to carry moderate amounts of information for short distances, but requiring complex repeaters and other gadgetry to cover longer distances and to simultaneously carry multiple signals. Such complexities proved to be unreliable and costly especially given that they needed to be cited in remote locations along the route of the cable. A reasonably recent patent, granted in January 1973, heralded the arrival of the Optical Fibre (US 3,711,262) which now allows terabits of information to be carried in a single second. Putting that into perspective, such bandwidth can be used to deliver an entire high definition movie in less than one hundredth of a second.

I have selected only a small number of the many patents which have brought us to where we are today and if you want to study the details, many online search engines provide free access to the original documents (for example, www.pat2pdf.org). While you are there browsing the genius which has helped to shape the modern world - don't miss US 4,233,942 - a device for protecting the ears of a long-haired dog from becoming soiled by food while it is eating, and US 4,429,685 a method of growing unicorns. Where would we be without them!