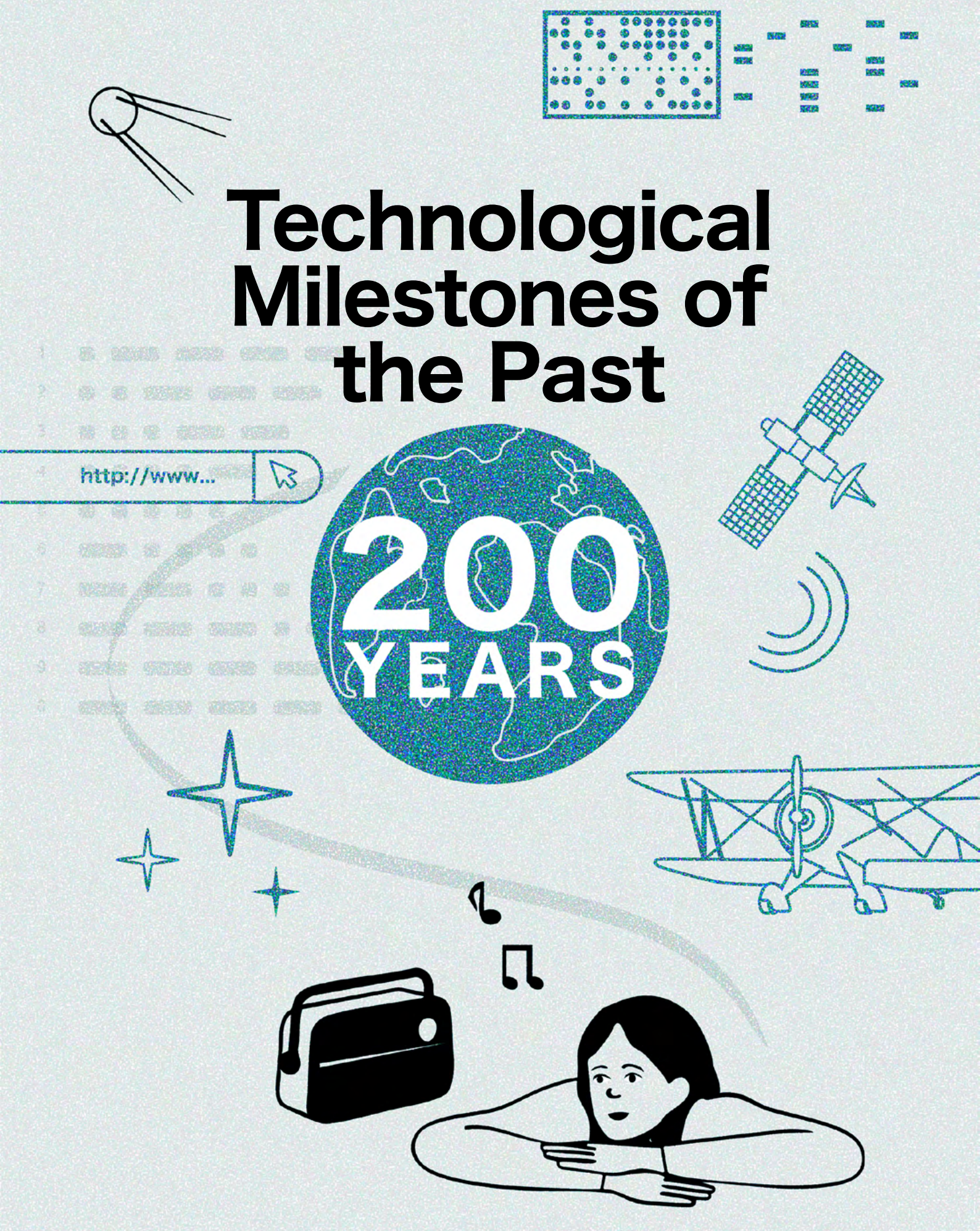
Technological Milestones of the Past



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Technological Milestones of the Past 200 Years

This document was created in support of a **personal** research project with the intent of collecting data and information regarding the major technological milestones of the past 200 years. These milestones include, but are not limited to, data, data storage and collection, computing, major software development, standards, and advances in communication. While collecting these milestones, I have also tried to collect the *interesting* stories that accompany them.

Technological advancements are the bedrock of human progress, fundamentally reshaping how societies operate and evolve. This document chronicles pivotal technological milestones of the past two centuries, exploring innovations that have transformed our world. By systematically documenting these breakthroughs - from advancements in computing and communication to data storage - we gain crucial insights into the enduring patterns of change and the foundational role information plays in connecting disparate elements into cohesive networks.

Understanding these historical shifts is not merely an exercise in recounting the past; it is a vital practice that illuminates the dynamics of progress and allows us to grasp how information, when openly shared and organized, can act as a powerful connector, enabling collective growth and further innovation. History is not the study of the past; it is the study of change. This compilation serves as a public record, designed to foster a deeper appreciation for the ingenuity that drives technological transformation and its profound impact on the human experience.

I foresee that people could make use of this list in different ways including, but are not limited to:

1. **Comparing Industry Adoption**: form a baseline to compare how quickly industries adopted specific technologies relative to their initial release or invention.
2. **Tracking Innovation Cycles**: analyze the time frames between foundational discoveries, practical applications, and widespread industry adoption to understand typical innovation cycles.
3. **Identifying Interdependencies**: map how advancements in one area (e.g., computing) have enabled or accelerated progress in others (e.g., communication or data storage), highlighting the interconnectedness of technological evolution.
4. **Benchmarking Historical Progress**: use the compilation as a baseline to compare the pace of current technological development against historical trends, providing context for present-day innovation.
5. **Forecasting Future Trends**: by identifying recurring patterns in technological evolution and societal integration, researchers could better anticipate emerging technologies and their potential impact.
6. **Educational Resource**: serve as a comprehensive historical overview for students and new professionals to quickly grasp the lineage and development of key technologies.

Year	Milestone
1823	Charles Babbage wrote: "*On the Theoretical Principles of the Machinery for Calculating Tables*". This paper can be thought of as the beginning of the field of computer science.[1] While he was the one who proposed the first mechanical computing device, he is also the one who proposed the use of **punch cards to store information**.[2] His first Difference Engine had 25,000 parts. The 2nd Difference Engine had the first computer memory and first printer (stamped results out in metal plates) Babbages' Analytical Engine had the basic components of modern computer; In the 1920s/30s, Vannevar Bush pioneered mechanical computers. He explicitly acknowledged the work of Charles Babbage in his efforts. The electronic computers which were eventually developed were based on models which were explicitly outlined in Babbage's Analytical Engine.[3]
1833	Denison Olmsted conducted one of the first instances of **crowdsourcing**. One 13 November 1833, one of the greatest astronomical spectacles in recorded history took place - an extreme version of an annual occurrence (now) known as the Leonid Meteor Shower - an uptick in activity with exceptionally heavy meteor showers that happens every 33 years. He took it upon himself to figure out the mystery. He gathered newspaper clippings and accounts of the event in the weeks following. He found that it was not observed in Europe, so it was not something that was global in nature. He also found that the shooting stars seemed to have originated somewhere in the constellation Leo. By January of 1834, not even two months after the event in question, he sent his findings to the American Journal of Science and Arts. He speculated that the meteors were a cloud of particles in space, and what everyone witnessed was the Earth passing through the cloud.[4] [5] His paper was the beginning of meteor science.[6]

[1] The Babbage Analytical Engine by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[2] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[3] The Babbage Analytical Engine by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[4] The Night the Stars Fell Down by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[5] *Crowdsourcing, the great meteor storm of 1833, and the founding of meteor science* by Mark Littman and Todd Suomela; Endeavour Volume 38, Issue 2; 2014; Pages 130-138; Accessed on 29 July 2024; Internet Archive; PDF of report
[6] *Observations on the meteors of November 13th 1833* by Denison Olmsted, American Journal of Science and Arts, 1834, Volume 25, pages 363-411; PDF

Year	Milestone
	The word crowdsourcing was coined in 2006.
1835	Samuel Morse, a professor of painting and sculpture, devised a system of dots and dashes to represent letters and numbers - the first version of **Morse code**.[7]
1837	Samuel Morse and Alfred Vail developed the **telegraph** and (refined) Morse code, revolutionizing long-distance communication by sending electrical signals over wires. Samuel Morse reportedly decided to invent the telegraph after hearing about the sudden death of his wife while he was away. The news reached him too late for him to say goodbye, inspiring him to develop faster communication methods.[8] Morse demonstrated his system on 24 May 1844, on a connection between Washington DC and Baltimore, Maryland. Morse was in Washington and Vail was in Baltimore, and Morse famously sent the first message which was "What hath God wrought!"[9]
1842	While collaborating with Charles Babbage and his Difference Engine, **Ada Lovelace** was asked to translate an article in French by an Italian engineer named Luigi Menabrea about the Difference Engine. She spent nine months on the translation. However, she didn't just translate the article. She did much, much more. She provided her own notes, which served as an appendix to the article, which ended up being three times longer than the article itself. In the notes, she basically set forth what would become computer science over a century later. In one of the notes she laid out a set of instructions for how the Difference Engine could calculate Bernoulli Numbers. Bernoulli Numbers were challenging to calculate, and her algorithm for how a computational machine could calculate these numbers is considered to be the **first computer program**. Her notes were republished by the English Scientist Baron Bertram Bowden in his 1955 book "*Faster Than Thought: A Symposium on Digital Computing Machines*." [10] [11]

[7] Telegraph Invention and History, Britannica; Accessed 29 July 2024; Internet Archive

[8] The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-line Pioneers by Tom Standage (1998)

[9] All About Morse Code by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[10] Ada Lovelace: The World's First Computer Programmer by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[11] Faster Than Thought: A Symposium on Digital Computing Machines, Edited by B. V. Bowden, 1953; PDF

Year	Milestone
1849	George Cayley, considered the world's first aeronautical engineer, created the world's **first glider** that could carry a human. For weight considerations, he hired a small boy to take the first flight.[12]
1856	In Philadelphia, John Mascher introduced what would become known as the "*Decimal*" or "***Philadelphia System***" for street and house numbering. The system involved numbering blocks from east to west based upon the numerical street they intersected at their eastern ends. Houses on each block would then be given addresses from one to a hundred on Biddle's odd/even principle.[13] Numbering houses was not a new idea. It was first done in the 16th century in Venice when buildings in an entire district were numbered. There was no real order to the system as it was done more for tax purposes.[14] London's municipal authorities ordered the numbering of buildings in 1768. France followed suit three years later.[15]
1857	Edouard-Léon Scott de Martinville invented **sound recording** via his phonautograph in 1857[16]. He recorded *Jeune Jouvencelle* on 17 August 1857. And recorded the French folk song "*Au Clair de la Lune*" on April 9, 1860. The results were deposited with the Académie des Sciences in 1861. In 2008, Patrick Feaster devised a way to play back these recordings.[17]
1858	On 29 July 1858, the two ships met in the middle of the Atlantic and laid a cable in opposite directions. On August 4 the cable arrived in Newfoundland, Canada and the next day it arrived in Ireland. It was only a matter of days before messages were being sent back and forth. On 16 August, the **first official telegraph message was sent across the Atlantic Ocean**.[18] [19] Way back in 1774, Georges-Louis Le Sage had created a primitive telegraph system that could communicate between rooms in his house in Geneva, Switzerland.[20]

[12] The Invention of the Airplane by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[13] Street Numbering, The Encyclopedia of Greater Philadelphia by Andrew Heath; Accessed 24 August 2024; Internet Archive
[14] Understanding ZIP Codes by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[15] Street Numbering, The Encyclopedia of Greater Philadelphia by Andrew Heath; Accessed 24 August 2024; Internet Archive
[16] Listen to the oldest known recording of a human voice by Sanjana Bhambhani, BBC; Accessed 3 July 2024; Internet Archive; Video backup
[17] The Phonautograms of Édouard-Léon Scott de Martinville, First Sounds; Accessed 3 July 2024; Internet Archive; Au Clair de la Lune MP3 (backup); Jeune Jouvencelle MP3 (backup)
[18] The First Transatlantic Cable by Everything Everywhere podcast; Accessed 19 July 2025; Internet Archive
[19] All About Morse Code by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[20] The First Transatlantic Cable by Everything Everywhere podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
1868	The **typewriter** was patented by Christopher Latham Sholes.[21] His first typewriter had only two rows, and the keys were in alphabetical and numeric order. There were no keys for 1 or 0, because it was assumed you could use an uppercase I for 1, and an O for 0. After years of tinkering and adjusting, he finally came up with an arrangement of the keys that worked. The letters on the left side of the top row were Q-W-E-R-T-Y. The QWERTY keyboard was first put into popular use with the sale of the Remington No. 2 typewriter in 1878.[22] Why QWERTY? Koichi Yasuoka and Motoko Yasuoka of Kyoto University did the seminal research paper on the subject. They found it was feedback from telegraph operators, based on their transcription of morse code, which led to the QWERTY keyboard.[23] The telegraph operators were the beta testers if you will, of the typewriter.[24]
1876	Alexander Graham Bell and Thomas Watson created the **first practical telephone**, allowing voice communication over long distances. Alexander Graham Bell's famous first words on the telephone were, "*Mr. Watson, come here, I want to see you*" after accidentally spilling acid on himself and calling for his assistant, Thomas Watson.[25] Bell came from a family involved with elocution and speech education. His father developed "Visible Speech," a phonetic system to help the deaf learn to speak. Bell became interested in transmitting speech electrically while teaching deaf students. Several others had work on transmitting sounds and telephone prototypes including Antonio Meucci, Johann Philipp Reis, Thomas Edison and, most contentiously, Elisha Gray.[26]
1884	Herman Hollerith, an American statistician, patented a **punched card system** to process data for the 1890 U.S. Census. His method used punch cards to store data that could be read and tabulated by machines, significantly speeding up data processing.[27]

[21] Christopher Latham Sholes, Britannica; Accessed 20 July 2025; Internet Archive
[22] QWERTY keyboard by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[23] On the Prehistory of QWERTY by Koichi Yasuoka and Motoko Yasuoka, Zinbun, 2009-2010, No.42; PDF
[24] QWERTY keyboard by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[25] The Telephone Patent Conspiracy of 1876: The Elisha Gray-Alexander Bell Controversy and Its Many Players by A. Edward Evenson, 2000
[26] The Invention of the Telephone by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[27] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
1890	The **first use of punch cards to store data** was as part of the 1890 US census.[28] However, in 1725 Basile Bouchon, as a French textile worker and inventor, used a perforated paper tape to control the weaving pattern, allowing for the complex designs in textiles.[29] In 1801 another French weaver, Joseph Marie Jacquard, made the next big advancement. His loom used punch cards instead of paper tape and was designed to be read by a machine rather than used as a guide for a loom operator. The idea of punch cards as a system for storing data for machines caught on after the Jacquard loom.[30]
1896	Guglielmo Marconi, an Italian physicist, created a **wireless telegraph**. Significant skepticism remained for several years. But Marconi's cousin Jameson Davis, a practicing engineer, financed Marconi's patent and helped in the formation of the Wireless Telegraph and Signal Company, Ltd.[31] Guglielmo Marconi sent the first transatlantic radio signal in 1901, and some of his contemporaries doubted it because they believed the curvature of the Earth would prevent it. Marconi reportedly responded with a simple, "I do not know how, but it did."[32]
1896	Tabulating Machine Company was formed and instituted a host of innovations with respect to card reading and manipulation. In 1911, it merged with other companies to become the Computing-Tabulating-Recording Company. In 1924, it was renamed to International Business Machines Corporation, or more commonly known as IBM.[33]
1903	In 1900, 1901, and 1902, the Wright Brothers developed generations of gliders that had progressively longer wingspans. Moreover, they also used very early wind tunnel tests to conduct experiments for optimal wing design, testing over 200 models. Everything they learned over years of testing and designing gliders was finally put together in the development of the **Wright Flyer** in 1903. They had a custom engine built because the engines used in early automobiles were considered to be too heavy.

[28] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[29] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[30] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[31] Guglielmo Marconi, Britannica; Accessed on 19 July 2024; Internet Archive
[32] Marconi: The Man Who Networked the World by Marc Raboy, 2016
[33] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	The first flight was flown by Orville, and it flew for 12 seconds for a total distance of 120 feet.[34] It took another 4 years before someone else could fly a heavier-than-air machine longer than a minute.[35]
1904	John Ambrose Fleming invented the **first true vacuum tube** in 1904 - called the Fleming valve - which acted as a diode and was used to detect radio signals.[36] During one of his experiments, Fleming wired an old vacuum tube into a radio receiving circuit, and was able to rectify high-frequency oscillations and thus allow detection of the rectified signals by a galvanometer. After the patent was issued, the Fleming valve found immediate utility in detecting messages sent by Morse code. The vacuum tube is considered one of the most important developments in the history of electronics.
1906	The **first use of amplitude modulation** (aka **AM radio**) was a broadcast by Reginald Fessenden when he sent a message from Ocean Bluff-Brant Rock, Massachusetts to ships at sea. The broadcast was a version of *O Holy Night* on the violin.[37]
1917	The first pilotless vehicle (aka **drone**) was tested in Britain. It was called Aerial Target and was a small radio-controlled aircraft.[38] It is believed the name *'drone'* comes from the 1935 radio-controlled *DH.82B Queen Bee*[39] given the drone bee connection[40].
1920s	Pulse-code modulation: takes pulses of an analog signal and measures each pulse so the wave can be broken apart and transported. The first systems were designed for facsimile systems that could **send simple images over telegraph and telephone lines**.[41]
1925	Bell Labs was created on 1 January. Its very existence connects back to the prize money Alexander Graham Bell won in 1880 as part of The Volta Prize from the French Government for the invention of the telephone.

[34] The Invention of the Airplane by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[35] Invention and Innovation - A Brief History of Hype and Failure by Vaclav Smil, 2023, page 93
[36] The History of Transistors by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[37] The History of AM/FM Radio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[38] A Brief History of Drones, Imperial War Museums; Accessed 24 August 2024; Internet Archive
[39] A Brief History of Drones, Imperial War Museums; Accessed 24 August 2024; Internet Archive
[40] The Role of the Drone Bee by Mark Williams, PerfectBee, 16 May 2025; Accessed 24 August 2024; Internet Archive
[41] A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	They were responsible for A LOT of technological innovation and were issued over 17,000 patents. Such things as (in chrono order): • synching sound with motion pictures • statistical process control (used in Sigma Six) • one-time pad cipher → an uncrackable form of cryptography • long-distant television transmission • radio astronomy • stereo audio recording • stereo radio transmissions • first speech synthesizer • first photovoltaic cell (solar power) • transistor (1947) • first transatlantic telephone cable • theoretical foundations for the creation of the laser • first gas laser • helped design Telstar → the first telecommunications satellite • first version of the UNIX operating system • first charged coupled device (basis for digital cameras) • C and C++ programing languages • first 32-bit microprocessor • CDMA and TDMA which was the basis for all digital cell phone signals before 4G • helped deploy the first transatlantic fiber-optic telephone cable. • first 56k modem • new type of electron lithography for printing computer chips[42]
1927	John Logie Baird and Philo Farnsworth independently developed technologies that enabled the **electronic transmission of moving images**, resulting in the invention of television.[43] **Electronic television** was first successfully demonstrated in San Francisco in September. The system was designed by Philo Taylor Farnsworth, a 21-year-old inventor who had lived in a house without electricity until he was 14. The first image he transmitted on it was a simple line. Soon he aimed his primitive camera at a dollar sign because an investor had asked, "*When are we going to see some dollars in this thing, Farnsworth?*"[44]

[42] Bell Labs: The Greatest Innovation Engine of the 20th Century by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[43] The General: David Sarnoff and the Rise of the Communications Industry by Kenneth Bilby, 1986

[44] History of television by Mitchell Stephens, Grolier Encyclopedia) Accessed on 28 July 2024; Internet Archive

Year	Milestone
1927	Though it is an inescapable part of our modern world, **video calls** were not immediately popular after their 1927 public debut. The first one way video call was publicly demonstrated in New York City in 07 April 1927 between Secretary of Commerce Herbert Hoover and American Telephone and Telegraph Company (AT&T). From Washington D.C., Hoover told spectators in NYC that "human genius has now destroyed the impediment of distance in a new respect, and in a manner hitherto unknown."[45] Ultimately the technology flopped. It was expensive and impractical compared to a normal telephone call. It wasn't until the invention of the webcam that allowed for video calls to be conducted online that the technology started to take off.[46]
1928	**The IBM Card** is introduced. Based on earlier punched cards, IBM changes the format of punched cards allowing for storage of larger amounts of data. At the turn of the twentieth century, punched cards had been used to record the US 1890 census and proved to be a successful way to record and store large amounts of data. By the 1920s the public began demanding a way to store even larger amounts of data on each card.[47] IBM tasked two top inventors to innovate the punched card. Inventor Clarice Lake proposed changing the shape of the holes from circles to rectangles, allowing for more holes per card, effectively doubling the amount of data stored on one card. Each hole represented a piece of data and was known as a "bit," meaning each card could hold up to 960 bits of data.[48]
1932	**Magnetic Drum Memory** was developed in Austria by Gustav Tauschek. Magnetic Drum Memory was a common method of storing data for computers in the 1950s and 1960s. During this time, punch cards didn't die out. In fact, they increased in popularity due to the increased use of computers.[49]
1933	Edwin Armstrong developed frequency modulation (aka **FM radio**). Instead of increasing amplitude, it would vary the frequency of the signal. This proved to be a far better way to transmit sound than AM. It also allowed for multiplexing signals, which allowed for music to be broadcast in stereo.

[45] The Long History of Video Chats Accessed 27 May 2024; Internet Archive
[46] The Long History of Video Chats Accessed 27 May 2024; Internet Archive
[47] The Smithsonian- Punch Cards for Data Processing Accessed 27 May 2024; Internet Archive
[48] The IBM Punched Card Accessed 27 May 2024; Internet Archive
[49] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	FM radio only passed AM radio in terms of total listeners, in the United States, in 1978. Part of that reason was because, in the late 1960s, album-oriented rock became popular.[50]
1935	What is meant by "**computer**" begins to change. Before 1935, a computer was a person who performs arithmetic calculations. Between 1935 and 1945 the definition referred to a machine, rather than a person.[51] The first known written reference to the word computer was actually in 1613. A computer was nothing more than a person who computes, in the same way, that a baker is someone who bakes and a cleaner is someone who cleans.[52] Being a computer was often an introductory position that someone would take before becoming a full-blown scientist. Industry started using women as they could get more "*computing power*" for less money. In the second half of the 19th century, computing was not a physically demanding job, and women tended to command lower wages than men at the time. By hiring women, companies could get more computing done for the same amount of money. Women eventually became some of the earliest programmers as they used electronic computers to do calculations. They built algorithms![53]
1937	Pulse-code modulation was used for the first time on voice signals by a British engineer named Alec Reeves. Even though he received patents for his invention, there was no real practical use for it at the time.[54] This was the **first time sound was made digital**.[55]
1939	The US Navy began using the term **RADAR** as an acronym for "**RA**dio **D**etection **A**nd **R**anging.[56] Fun fact: In 1945, Percy Spencer, an employee of the Raytheon Corporation, was working on a radar installation and was standing in front of a magnetron (the heart of a radar system) - which converts electricity to electromagnetic radio waves - and noticed the chocolate bar in his pocket had melted. He immediately tested popcorn and it popped all over the place. He the focused the waves coming out of the magnetron into a metal box. Voila, the first microwave oven.

[50] The History of AM/FM Radio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[51] History of Computing by Virginia Montecino, George Mason University, 2010; Accessed 29 July 2024; Internet Archive
[52] NASA's Human Computers by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[53] NASA's Human Computers by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[54] A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[55] A Podcast About Podcasting by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[56] The History of RADAR by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	For all his efforts for creating one of the most popular cooking appliances in the world, Percy Spencer received a $2 from Raytheon.[57]
1939	**Skunkworks**. The United States Army came to Lockheed and asked them if they could develop a jet aircraft that could counter the threat of the German jet fighters. • An engineer named Clarence "Kelly" Johnson took a team of hand-picked engineers and separated themselves from the rest of the company and went to work. They were working in a **rented circus tent** because there was no space elsewhere in the Lockheed facilities. • In just 143 days, they had completely designed and built the first versions of the XP-80 Shooting Star. They did almost all of the project **without a contract, on a handshake deal** with the government. Skunkwork name: There was an engineer working on the XP-80 team named Irv Culver. He was a fan of the Lil' Abner comic strip. • In the comic, there was a hidden place deep in the woods called the "skonk works" which was where they brewed a strong alcoholic beverage. • During the program, it was so secret that everyone was careful how they answered the phone. Culver would answer the phone by saying, "*Skonk Works, inside man Culver speaking.*" • Soon, everyone began using the name "skonk works" to describe where they worked and overtime "skonk works" simply became "skunkworks".[58]
1943	The United States Postal Service introduced **postal zone codes**. The top 124 urban areas in the United States were given postal codes for zones of the city. For example, if you were sending a letter to New York, you would use "*New York 16*" to delineate which zone in New York, and to which post office the letter should be sent.[59]
1944	**Harvard Mark 1-** Also known as the Automatic Sequence Controlled Calculator (ASCC), it was the first mainframe computer and was completed through a collaboration between Harvard University and IBM. Howard Aiken started drafting the concept for his dream of a machine that could handle a large amount of complex math in a short amount of time with reliable results in 1937. The project was completed

[57] The History of the Microwave Oven by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[58] The History of Skunkworks by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[59] Understanding ZIP Codes by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	by IBM in 1943 and shipped to Harvard in February 1944.[60][61]
1945	Theorizing **satellite communication**: the British science fiction author Arthur C. Clarke had been a proponent of the idea of space travel since the 1930s. In 1945 he wrote an article for Wireless World magazine titled "*Extra-Terrestrial Relays – Can Rocket Stations Give World-Wide Radio Coverage?*"[62][63]
1945	In his paper "***As We May Think***"[64], Vannevar Bush laid out a vision of a personal knowledge machine that he called "**Memex**" - a desk-sized device for filing, linking, and retrieving one's own documents using associative "trails." While he did not describe a microprocessor or a GUI, he did hit-the-mark on the idea of a privately owned interactive information appliance that augments an individual's memory and creativity.[65] Douglas Engelbart, drawing inspiration from Bush's paper, pioneered a vision for a personal computer connected to an electronic visual display and a mouse pointing device (see 1962 and 1969).
1946	**ENIAC**- Electronic Numerical Integrator And Computer (ENIAC) is first introduced to the public. Though its status as the first computer is debated, its impact on the computing industry is indisputable.[66] While it was initially built to calculate artillery trajectories, it was also the first programmable general use computer, allowing it to have a wide range of applications.[67] It had a power of approximately 500 FLOPS.[68] [69] This innovation led directly to the first computer meant for commercial use, the UNIVAC (UNIVersal Automatic Computer). UNIVAC was built by the same inventors of ENIAC with business application in mind. It was commercially available beginning in 1951. The last UNIVAC machine was in operation until 1970.[70]

[60] Harvard IBM Mark I - About, Harvard University; Accessed on 19 July 2025; Internet Archive

[61] Computer History: The First Mainframe Computer by linuxhint, The WayBack Machine; Accessed 24 August 2024; Internet Archive

[62] Satellite Communications by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[63] *Extra-Terrestrial Relays – Can Rocket Stations Give World-Wide Radio Coverage?* by Arthur C. Clarke, October 1945; PDF

[64] As We May Think, by Vannevar Bush, 1945; Accessed 11 October 2025; Internet Archive

[65] The History of Personal Computing by Everything Everywhere Daily podcast; Accessed 11 October 2025; Internet Archive

[66] ENIAC at 75: A Computing Pioneer by Dan Swinhoe, Data Center Dynamics, 17 August 2021; Accessed 19 July 2025; Internet Archive

[67] ENIAC, Britannica; Accessed 19 July 2025; Internet Archive

[68] FLOPS - Floating Point Operations Per Second - is the number of mathematical calculations a computer can perform each second, regardless of the number of transistors, cores, or clock speed.

[69] Supercomputers and the Evolution of Computing Power by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[70] Innovations and Economic Growth: Lessons from the Story of ENIAC by Rocco L. Martino, The Foreign Policy Institute, 29 April 2009; Accessed 19 July 2025; Internet Archive

Year	Milestone
	ENIAC and UNIVAC had their limitations. They were not practical. One computer weighed 30 tons, required its own air conditioning to avoid bringing the room's temperature up to 50C, and potentially took days to program.[71] This could be why at the end of the decade there were still only a few devices. Early in the decade IBM's president, Thomas J. Watson, had allegedly (and notoriously) said, "*I think there is a world market for about five computers.*"[72] Despite these limitations, it was an integral part of computing history.
1946	Lin Yutang patented the **MingKwai typewriter**. At the time, typing Chinese was a monumental challenge. Chinese has no alphabet. Instead, it uses tens of thousands of pictographs. When Lin started his work, there was no standardized version of Mandarin Chinese. Instead, people spoke hundreds of dialects and languages, meaning there was no singular phonetic spelling of the sound of each word. The typewriter's ingenuity comes from the way Lin decided to break down Chinese pictographs: by their shapes, not sounds. The typist can search for certain combinations of shapes by pressing down on the ergonomic keyboard. Then, a small screen above the keyboard (Lin called it his "*magic eye*") offers the typist up to eight possible characters that might match. In this way, the typewriter boasts the ability to retrieve up to 90,000 characters. The concepts used in the MingKwai typewriter underlie how we type Chinese, Japanese and Korean today Only one known prototype was ever crafted. It was created by Mergenthaler Linotype.[73] [74]
1946	The first true **car telephone** - a mobile radio telephone - was developed by Bell System and first used in St. Louis, Missouri on 17 June 1946. When officially launched in Chicago in October, there were only three radio frequencies available and the service quickly reached capacity. The technology required a handset, a transmitter and sometimes an external antenna to work. The original

[71] ENIAC at 75: A Computing Pioneer by Dan Swinhoe, Data Center Dynamics, 17 August 2021; Accessed 19 July 2025; Internet Archive

[72] The Coming Wave: Technology, Power, and the 21st Century by Mustafa Suleyman and Michael Bhaskar, September 2023; Accessed electronically through Kindle 02 Oct 2023

[73] How this long-lost Chinese typewriter from the 1940s changed modern computing by Emily Feng, NPR.org, 5 July 2025; Accessed 18 July 2025; Internet Archive

[74] The discovery of Lin Yutang's Mingkwai Chinese typewriter, The Typewriter Revolution, 5 February 2025; Accessed 18 July 2025; Internet Archive

Year	Milestone
	equipment weighed 80 pounds (36 kg).[75] Urban legend claims that, in 1910, Lars Magnus Ericsson, the founder of the Ericsson company, built a phone into his car that was used by parking his car and connecting it to phone lines with tall poles with hooks. The Ericsson company has formally denied this story. Axel Boström, the CEO succeeding Lars, did carry a phone and a stick that he could use to connect to a phone line. His stick is preserved at the Technical Museum in Stockholm.[76]
1947	The term **debugging** originated when engineers working on the Harvard Mark II computer found a moth stuck in a relay, causing a malfunction. The team logged the incident labeling it as the "*first actual case of bug being found.*" and even taped the insect in the logbook[77] [78]. The team is also credited with the term debugging.[79]
1947	Bell Labs created the **first point-contact transistor** when they were investigating semiconductors in search of a replacement for vacuum tubes. They placed two gold contacts very close together on a germanium crystal, with the crystal mounted on a metal base. When they applied voltage to one contact, they discovered they could control a much larger current flowing between the other contact and the base. The first commercial transistor applications appeared in hearing aids around 1952.[80]
1949	Norman Woodland came up with the modern **barcode** while drawing lines in the sand at Miami Beach. He had been at Drexel University, in Philadelphia, when Bernard Silver overheard the president of a chain of grocery stores talking to one of the deans at the college about developing a system to read product information at checkout (1948). They tried to come up with a solution, but nothing worked. Woodland later moved to Miami to live in his Grandfather's apartment. Woodland's pattern was circular in nature. He later worked on the IBM team which came up with the rectangular pattern (1973) we know today.[81]

[75] The first car phones, CockPit Accros of Cars, 29 March 2024; Accessed 23 August 2025; Internet Archive

[76] The Curious Case of the 103-Year-Old Car Phone, by Daniela Hernandez, Wired, 20 September 2013; Accessed 23 August 2025; Internet Archive

[77] Photo of the log book: PDF

[78] First actual case of bug being found by Delvis Echeverria, Medium, 21 August 2022; Accessed on 9 September 2024; Internet Archive

[79] Turing's Cathedral: The Origins of the Digital Universe by George Dyson, 2012

[80] The History of Transistors by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[81] Everything You Ever Wanted to Know About Barcodes by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
1949	The inspiration for **credit cards** happened at the Majors Cabin Grill in New York. Frank McNamara was having dinner at the Majors Cabin Grill where he was entertaining clients. He had forgotten his wallet, so his wife paid the bill. He thought that a multipurpose charge card that would be accepted at any merchant, would solve this problem. He talked about it with the restaurant owner and with his lawyer, Ralph Schneider. One year later they had another meal at the Majors Cabin Grill and this time paid for it with a paper card and a signature. This became known as "***The First Supper***" and it was the beginning of the first multipurpose card: **Diners Club**. It was a charge card (paid in full each month) versus a credit card.[82]
1950	The **first game on an electronic computer** was Birdie the Brain. Its sole purpose was to play Tic-tac-toe. The 13 foot tall machine was built in Toronto by Josef Kates for the 1950 Canadian National Exhibition. The main purpose was to show off new type vacuum tubes and it was taken apart after 2 weeks.[83] [84]
1951	The world's **first videotape** demonstration was given on November 11, 1951, by Bing Crosby Enterprises, the company owned by singer Bing Crosby.[85]
1951	Jay Forrester applied for a patent on three-dimensional magnetic-core memory (granted 1956). It is the the predominant form of random-access computer memory (**RAM**)[86] as part of Project WhirlWind at MIT[87] [88]
1953	Ted Fujita, aka "Mister Tornado", pioneered the technique of using **aerial overflights after tornadoes to assess damage** while at the University of Chicago.[89]
1955	Douglas Engelbart coined the term ***augmented intelligence***.
1955	The SHARE user group was formed in 1955 as **one of the first computer user groups** in history. It was established by a collection of IBM mainframe customers who were using

[82] The History of Credit Cards by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[83] A History of Computer Games by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[84] Bertie the Brain (1950) on YouTube; Accessed 24 August 2024
[85] Betamax vs. VHS Videotape Wars by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[86] Jay Forrester Invents Three-Dimensional Magnetic-Core Memory for Installation on the Whirlwind I, HistoryofInformation.com; Accessed 19 July 2025 | Internet Archive | Patent PDF
[87] The Rise and Fall of Project Whirlwind by Meesue Kim, Computation Archives; Accessed 9 September 2024; Internet Archive
[88] *The Age of Heretics: A History of the Radical Thinkers Who Reinvented Corporate Management* by Art Kleiner, 2008
[89] All About Tornadoes by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	IBM's 704 scientific computing system. SHARE's name was not an acronym, but rather reflected its core purpose: to share information, software, and resources among its members. At a time when computers were enormously expensive and software was not viewed as a separate commercial product, SHARE provided a formal structure for collaboration. The SHARE user group still exists today.[90]
1955	**U2 plane** had its first test flight[91]
1956	The first commercial **videotape recorder**, that was good enough to replace a kinescope, was sold by the AMPEX corporation out of Chicago in April 1956.[92] In the early days of television, recordings of broadcasts were made on a device known as a kinescope, which literally was a film camera pointed at a video screen.
1956	The first **Artificial Intelligence** conference - simply called Dartmouth Workshop - was held at Dartmouth College in Hanover, New Hampshire[93] The conference came about from a 1955 proposal entitled *A Proposal For The Dartmouth Summer Research Project On Artificial Intelligence* by: • J. McCarthy, Dartmouth College • M. L. Minsky, Harvard University • N. Rochester, I.B.M. Corporation, and • C.E. Shannon, Bell Telephone Laboratories[94]
1956	The **first hard disk drives** were introduced by IBM in 1956. The first hard disk drive was the IBM RAMAC (Random Access Method of Accounting and Control) 350 disk storage unit. The 350 was the size of multiple large filing cabinets and could store 3.75 MB of data.[95] It had 50 24" disks spinning at 1,200 RPM holding 5 million characters (about 3.75 MB) of information.

[90] Open Source Software by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[91] The History of Skunkworks by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[92] Betamax vs. VHS Videotape Wars by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[93] The Dartmouth Conference - 1956 and its Lasting Influence on Artificial Intelligence by Arthur W, LinkedIn, 28 September 2023; Accessed 20 July 2025; Internet Archive
[94] A Proposal For The Dartmouth Summer Research Project On Artificial Intelligence, 31 August 1955; Accessed on 29 July 2024; Internet Archive
[95] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
1957	A black and white photo of a baby became the **first digital image** in 1957. The baby that launched a thousand images, became the computer science icon he is because his father Robert Kirsch asked a simple question, "*what if computers could read images?*" He created a rotating drum scanner and program that allowed images to be fed into a computer. The first digital image was of his 3 month old son and was only 176 pixels on one side. This breakthrough lead to satellite imaging, barcodes, CAT scans, digital photograph, and a long list of other digital image technology.[96]
1958	The vacuum tubes of the first computers made them incredibly large and cumbersome. Early on, it became clear to engineers that **transistors** could replace the burden of the vacuum tube. While transistors had been around since at least 1947, it wasn't until the **planar transistor** of 1958 that important steps towards the first integrated circuit were taken.[97][98] This revolutionary transistor, though not used in most modern technology, was produced by Fairchild Semiconductor. Originally it sold for $150 USD per transistor. Today, transistors are produced in tens of trillions per second at billionths of a dollar per transistor. This gives it the title of the fastest and most extensive proliferation in history.[99]
1958	The **first** thing that could even be called a **communications satellite** was the SCORE satellite, launched in December. SCORE stood for Signal Communications by Orbiting Relay Equipment. All it was was a tape recorder that could receive, record, and transmit voice messages. It was the largest object put into orbit at the time - 24 meters long. It was only in orbit for a month.[100]
1958	The **first real video game** - *Tennis for Two* - was created by William Higinbotham at the Brookhaven National Laboratory. What made it special and the first? It was built for two players, was on a type of video monitor (oscilloscope which had a cathode ray tube), and two custom controllers.[101]
1958	American Express, a 100-year-old company that was in the business of issuing money orders and traveler's checks, offered their own charge card (**AMEX**). It was so popular that a quarter-million cards were requested before the card

[96] First Digital Image, NIST.gov, 6 December 2024; Accessed 20 July 2025; Internet Archive
[97] Evolution of Transistors, PBS.org, 1999; Accessed 20 July 2025; Internet Archive
[98] Definition Planar Transistor, ComputerLanguage.com; Accessed 20 July 2025; Internet Archive
[99] The Coming Wave: Technology, Power, and the 21st Century by Mustafa Suleyman and Michael Bhaskar, September 2023; Accessed electronically through Kindle 02 Oct 2023
[100] Satellite Communications by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[101] A History of Computer Games by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	actually launched.[102]
1958	Bank of America launched the **first credit card** - BankAmericard - tying a card to a revolving line of credit that could be widely accepted. No credit checks were required. On 18 September, the bank mailed 60,000 Fresno residents a BankAmericard. There was no application process. The card simply arrived in the mailbox, ready to use. It became known as the *Fresno Drop.* Within 10 months, over a million cards had been mailed out.[103] The launch was a disaster. But they were making money by 1961. The card eventually became known as VISA.[104]
1961	One of the **first televised use of weather radar** occurred in 1961 when a young local Texas reporter by the name of Dan Rather went to a weather radar facility in Galveston, Texas to cover Hurricane Carla. He got permission to broadcast live from the site and got the managers of the facility to **draw a rough outline of the Gulf of Mexico on a transparent sheet of plastic. He then held the sheet over the radar display to show viewers the size and location of the storm**. Thanks to his efforts in displaying the scope of the storm to viewers, hundreds of thousands fled, and there were only 35 deaths, compared to the 12,000 dead from a similar hurricane in 1900.[105]
1962	Douglas Engelbart published "***Augmenting Human Intellect****: A Conceptual Framework*" with a central theme that computers are not to replace the brain, but be leveraged by our brains for their processing abilities.[106] One of the big themes of the paper was using **networked computers** to allow humans to work on collaborative problem-solving.[107] Most of the innovations/ideas associated with what we think of as a personal computer were developed by one man and the researchers at his laboratory: Douglas Engelbart. He set up the Augmentation Research Center (ARC) within the Stanford Research Institute. He and his team began work on

[102] The History of Credit Cards by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[103] The Fresno Drop, Episode 196 by 99% Invisible; Accessed 20 July 2025; Internet Archive
[104] The History of Credit Cards by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[105] A History of Weather Forecasting by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[106] Augmenting Human Intellect: A Conceptual Framework by Douglas Engelbart, October 1962; Accessed 20 July 2025; Internet Archive; PDF of original report
[107] The Mother of All Demos: 90-Minutes That Revolutionized Computing by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive

Year	Milestone
	what he called the **oNLine System** or NLS.[108]
1962	Usually considered the **first true communications satellite** was Telstar which was created by Bell Labs. Several things made Telstar different from previous satellites - it was solar-powered with the ability to produce 14 watts of power and it contained a new electronic device called a **transponder**.[109]
1962	Groups at General Electric, IBM, and MIT all, almost simultaneously, developed a **semiconductor laser**, which is a type that is used in many electronics.[110] • LASER: Light Amplification by Stimulated Emission of Radiation
1962	The **first open-source video game** - *SpaceWar!* game - was created by computer scientist Steve Russell at MIT. It was the first video game that was designed to run as software on any PDP-1 minicomputer. It was not hardwired to a single device.[111]
1963	**Hypertext** was named by Ted Nelson in 1963 as part of his (never realized) project called **Xanadu** which aimed to have all pieces of information be published with two-way hypertext links to and from related information.[112] Ted Nelson named his hypertextual idea "Project Xanadu" after the poem by Coleridge, because he believed that Xanadu was "*a magical place where memories are never forgotten*."
1963	Joseph Licklider joined ARPRA and wrote a paper on something he called the **Intergalactic Computer Network**. It was a visionary concept, imagining a globally interconnected set of computers through which anyone, anywhere, could quickly access data and programs from any site. Licklider envisioned a network that would allow widespread information sharing, collaboration among distant researchers, and even real-time communication—in essence, an early sketch of what would later become the Internet. He outlined the concept in a memo addressed to the "*Members and Affiliates of the Intergalactic Computer Network*"[113] The network ideas of Licklider and the packet-switching ideas of Paul Baran (packets) were combined in an actual proposal

[108] The Mother of All Demos: 90-Minutes That Revolutionized Computing by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[109] Satellite Communications by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[110] All About Lasers episode by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive
[111] A History of Computer Games by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[112] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution, Walter Isaacson, 2014, page 410-411
[113] MEMORANDUM FOR: Members and Affiliates of the Intergalactic Computer Network from J. C. R. Licklider on 23 April 1963; PDF

Year	Milestone
	known as ARPAnet.[114]
1963	The **first home Video Tape Recorder** (VTR) system was called Telcan, short for Television in a Can. It was released in 1963 by the Nottingham Electronic Valve Company in the UK. The device was incredibly expensive, costing over £30,000 inflation-adjusted pounds.[115]
1963	The US Postal Service instituted the **Zoning Improvement Plan or ZIP**. The ZIP divided the entire country into zones with each zone having a five-digit code. These ZIP codes would be assigned to every address to greatly ease mail delivery.[116]
1963	The first satellite to be put into **geosynchronous orbit** was Syncom 2.[117]
1963	**GIS** (Geographic Information System) has a long history. The father of GIS is thought to be Roger Tomlinson who directed the Canadian Geographic System (CGIS). Tomilson had the idea of digitizing geographical information to better analyze Canada's massive land resources. While this project started in 1963, it was not fully operational until 1971.[118] The term geo-information system or Geo-IS first appears in the 1967 paper by Tomlinson entitled *An Introduction to the Geo-Information System of The Canada Land Inventory*[119] Meanwhile, in 1965, The Harvard Laboratory began work on SYSMAP. Howard Fisher had a vision of a computer mapping software that could be compatible with any machine. The work at "The Lab" gave way to a company named ESRI, who released the **first commercially available GIS** in 1981 with **ARC/INFO**.[120][121]
1964	Syncom 3 became the first satellite to be put into **geostationary orbit**.[122]

[114] Origins of the Internet by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[115] Betamax vs. VHS Videotape Wars by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[116] Understanding ZIP Codes by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[117] Satellite Communications by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[118] The Remarkable History of GIS, GISGeography.com; Accessed 20 July 2025; Internet Archive
[119] An Introduction to the Geo-Information System of The Canada Land Inventory, R.F. Tomlison, 1967; PDF
[120] History of GIS, ESRI.com; Accessed 20 July 2025; Internet Archive
[121] Charting the Unknown: How Computer Mapping at Harvard Became GIS, ArcNews Winter 2006/2007 on ESRI.com; Accessed 20 July 2015; Internet Archive
[122] Satellite Communications by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
1964	The first version of **BASIC**, aka Dartmouth BASIC, was released. It was created by John G. Kemeney and Thomas E. Kurtz at Dartmouth College. The two started working for quite some time to create a simplified programming language. Their first effort ended up with the Darsimco or Dartmouth Simplified Code which did not attract much interest. Their second attempt was the Dartmouth Oversimplified Programming Experiment but it got even less attention. Nevertheless, they kept working and it eventually resulted in the **Beginner's All-purpose Symbolic Instruction Code (BASIC)**. They did not patent nor protect their invention in any way as they said they wanted their language to be in the public domain. This made possible the growth and differentiation of BASIC.[123]
1964	The first computer to be called a **supercomputer** was released by the Control Data Corporation - the CDC 6600. It had a computing power of 3 MEGA FLOPS The supercomputer used in the Apollo Program was the Apollo Guidance Computer and had a total computing power of 85 KILO FLOPS. The first Apple iPhone, released in 2007, had a power of 5 MEGA FLOPS. The Apple iPhone 15 Pro Max has a computing power of 2.15 TERA FLOPS. So, yes, your smartphone has more computing power than the computer used to land people on the moon![124]
1965	The **first commercial communications satellite** - INTELSAT 1 - was built by Hughes Aircraft Corporation and launched by NASA.[125]
1965	James Russell conceptualized and patented an idea for a **digital optical storage system** that encoded information in microscopic pits on a disc and used a laser beam to read the data without physical contact. He got patents in 1966[126] and 1969. He had a working version by 1973. He pitched his idea to over 100 companies including Sony and Phillips.[127] • See 1978 laserdisc for first commercial usage
1966	British physicist George Kao and his team determined how to **send information via laser across fiber optic cables**. He was awarded the 2009 Nobel Prize for his work on fiber optic communications.[128] [129]

[123] History of the BASIC Programming Language by Andrea M. Marconi; Accessed on 27 July 2024; PDF

[124] Supercomputers and the Evolution of Computing Power by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive

[125] Satellite Communications by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[126] Patent US3501586 - Analog to digital to optical photographic recording and playback system - James Russell, 1970; PDF

[127] CDs, DVDs, and Blu Ray by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive

[128] All About Lasers by Everything Everywhere podcast; Accessed 20 July 2015; Internet Archive

[129] Dielectric-fibre surface waveguides for optical frequencies by George Hockham and Charles Kao, 1966; PDF

Year	Milestone
1967	Japan's national broadcasting company, NHK, developed the **first pulse-code modulation (PCM) recorder** - a 30 kHz, 12-bit device that could encode an audio signal and store it on videotape. It sampled a sound wave 30,000 times a second and saved each sample as a number with 12 1's and 0's.[130] The work was led by Dr. Heitaro Nakajima who later left to join Sony where he lead the development of Sony's first PCM digital audio recorder, the X-12DTC.[131]
1968	The Federal Communications Commission, in what was known as the **Carterfone case**, ruled that non-Bell equipment could be attached to the telephone system.[132] • This ruling enabled the development and use of modems in personal computers
1968	In December 1968, Douglas Engelbart delivered a 90-minute keynote presentation at the annual computer science conference of the Association for Computing Machinery and the Institute of Electrical and Electronics Engineers. It is referred to as the **Mother of All Demos**. • He demonstrated the **first graphical user interface**. He showed working **hyperlinks**. He demonstrated the concept of a **floating window**. • He showed the world's **first word processor** and the ability to edit and delete text in real-time. He showed how he could copy and paste text and move it around on the screen. • He and a colleague back in Menlo Park jointly worked on a single document in different locations on the same computer. • He was able to move around on the screen because of a device he and his team created which allowed you to manipulate objects on a screen with your hand. They called it a **mouse**. The first model was made from mahogany ○ The idea for the mouse came to him while he was day dreaming at a conference in October 1961.[133] His team had tested all the other screen interaction devices, but were looking for a better solution

[130] A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[131] Sony History - Chapter7 - Making Digital Audio a Reality, Sony.com; Accessed 20 July 2025; Internet Archive
[132] The Man Who Beat A.T.&T. by Andrew Pollack, New York Times, 14 July 1982; Accessed on 20 July 2025; Internet Archive
[133] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 277

Year	Milestone
	• He also announced that in a few months (1969), SRI was going to become the second node in a new network called **ARPANet**.[134][135]
1969	**ARPANET** made its first permanent connection in late 1969. It established many of the protocols used by modern computer networks today and is considered the forerunner to the internet*. The Advanced Research Projects Agency Network (ARPANET) came about as part of an overlapping desire from academia and the US military to share information remotely even if portions of a network were removed or if a connection was unstable. Computers of the age were large and complicated machines. They were expensive, only available at a few select locations, and required a dedicated terminal in order to use them. The US military wanted a way for computer terminals to communicate remotely with each other, even if part of a network was unavailable due to a nuclear strike. Universities wanted a stable way of remote information sharing that was more fault tolerant over unreliable connections. Development of a network to meet these requirements started in 1966. ARPANET was coined in October 1967 by Larry Roberts at an ARPA conference (to discuss ARPANET).[136] The **first message sent over ARPANET** was supposed to be "LOGIN," but the system crashed after sending just "LO." So, the first successful message was an accidental "LO."[137] **Packets**: Roger Scantlebury presented a paper to that same conference describing the work of his boss - Donald Davies. It was a method of breaking messages into small units called “packets” - everyone was interested and they discussed it in the bar late into the night.[138] Network Control Program handled communication between hosts and could support first commands, Telnet and File Transfer Protocol (FTP). Interface Message Processor was developed to pass messages between hosts. It is considered the first packet gateway or router. **Modems** were designed

[134] The Mother of All Demos: 90-Minutes That Revolutionized Computing by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[135] The Mother of All Demos, presented by Douglas Engelbart (1968) on YouTube; Accessed 24 August 2024
[136] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 237
[137] Where Wizards Stay Up Late: The Origins of the Internet by Katie Hafner and Matthew Lyon, 1996
[138] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 237

Year	Milestone
	and sent out to participants. The first message was sent over ARPANET in October 1969 by a student at UCLA. It crashed on the first attempt, but worked later that day.[139] * The internet was originally called the **internetwork**.[140] In 1974, Vint Cerf at Stanford University and Bob Kahn at DARPA published a proposal for "*A Protocol for Packet Network Intercommunication*". They used the term internet as a shorthand for internetwork and the shortened name caught on.[141]
1969	**Digital display:** Hewlett Packard introduced the HP5082-7000. It was a series of LED lights connected to an integrated circuit and could display simple letters or numbers. It was the world's first digital display.[142]
1971	**Kubak 1-** Regarded as the first stored program personal computer (PC), the Kubak 1 was designed by John Blakenbaker in 1971. It was completed before the microprocessor was available and clocked in at 1 MHZ. It was designed with the idea that it would be good for education, however it did not do well commercially.[143] Only 40 were ever sold, mainly to schools, and it was discontinued in 1973. [144]
1971	Intel released the 4004 - the **first microprocessor** - which contained approximately 2,300 transistors on a single chip. This device could perform the same calculations as room-sized computers from the 1940s.[145]
1971	As a side project developed by a desire to 'send messages to people' instead of computers, Ray Tomlinson, an MIT engineer, sent the **first email** ever in 1971. While working for ARPANET, Tomilson wanted to send messages to people, not mailboxes. Electronic communication was possible, but it wasn't possible to simply 'leave' a message for someone. Mail had to be sent to numbered mailboxes where it would then be printed out and accessible to whoever needed to pick it up. Using the format we're all familiar with today, user @host email address, it became a quick way to message other researchers. It raised the usefulness of a computer to a

[139] What is ARPANET and What's Its Significance by Gavin Wright, TechTarget, 01 November 2021; Accessed 20 July 2025; Internet Archive

[140] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 257

[141] Specification of Internet Transmission Control Program (RFC 675) by Vint Cerf and Bob Kahn, ETF Datatracker, December 1974; Accessed on 20 July 2025; Internet Archive

[142] LEDs: Light Emitting Diodes by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive

[143] Kenbak-1 Explained – Everything You Need To Know, History-computer.com; Accessed 20 July 2025; Internet Archive

[144] What Was the First PC?, Computerhistory.org; Accessed 20 July 2025; Internet Archive

[145] The History of Transistors by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	new level and was shortly released to the public.[146] [147]He did this with a program called SNDMSG and an experimental file transfer program called CPYNET.[148]
1971	**UNIX** is officially launched by Bell Labs. Development had started two years earlier.[149] AT&T (Bell Labs) was prohibited from entering the computer business by a 1956 consent decree. This led them to license UNIX to universities for minimal fees, including source code. Academic institutions, particularly the University of California, Berkeley, received, studied, and modified the code. Computer science students learned programming by reading actual production code. This created a generation of programmers who expected to be able to see and modify source code, establishing a culture that valued openness and knowledge sharing.[150]
1971	The **first commercial digital audio** recording was Nippon Columbia NCB-7003, "*Something*" by Steve Marcus. It was released in January 1971.[151] In the late 1970s, Sony and 3M created prototype digital recording systems and released the first commercial Pulse-code modulation system.[152]
1971	The **first commercial video game** was released by Nutting Associates. It was an arcade game called *Computer Space* and was based on *SpaceWar!*[153]
1971	**ALOHAnet** - developed at the University of Hawaii under the leadership of Dr. Norman Abramson and Dr. Franklin Kuo - began providing inter-island access to computing facilities in June 1971 using large-scale packet radio. This system was the first to demonstrate that a shared communication channel could be effectively used by multiple computers via a "*random access protocol*". The ALOHA protocol became a foundational concept that later influenced the design of Ethernet and other networking technologies.

[146] The first email message: 52 years of email, Mail.com Blog, 25 May 2023; Accessed 20 July 2025; Internet Archive
[147] First Email, Guinness World Records; Accessed 20 July 2025; Internet Archive
[148] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 385
[149] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 372
[150] Open Source Software by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[151] The Dawn of Commercial Digital Recording by Thomas Fine, ARSC Journal Volume 39. No 1; Spring 2008; Accessed 20 July 2025; Internet Archive
[152] A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[153] A History of Computer Games by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
	All wireless communications today - including mobile, satellite, cellular, and WiFi - utilize the ALOHA protocol to establish an initial link.[154]
1972	The **first home video cassette system** was called Cartrivision. Their devices were entire televisions with a tape player built into the TV.[155]
1972	The **first floppy disks** - 8 inches in diameter - Although originally called the Type 1 Diskette, the term floppy was used almost immediately. They were created by IBM. [156] The United States Air Force was using these 8-inch floppy drives to manage its nuclear arsenal up until 2019.[157]
1972	The **first barcode prototype solution** was developed by RCA and tested in Kroger foods in Cincinnati.[158]
1973	In collaboration with Motorola, Martin Cooper used his hand made cellphone to make the **first mobile cell phone** call in April 1973 on the streets of New York City. He used the phone to call their competitors, AT&T, right before a press conference[159] famously saying "I'm calling you from a real cellular telephone - a handheld unit."[160] However, the cell phone was not ready for mass production yet. It would be another 10 years, in September 1983, when the Dyna Tac 8000 would be commercially available at the price of 4,000 USD.[161]
1973	"Community Memory," the **First Public Computerized Bulletin Board System** was launched by Efrem Lipkin, Mark Szpakowski, and Lee Felsenstein in Berkeley, California at the top of the stairs leading to Leopold's Records.[162] The first terminal was a Teletype Model 33 connected to the SDS 940 computer by telephone, using a 10 character per second acoustic coupled modem. It was located right next to a busy conventional bulletin board. The Teletype machine was noisy, so it was encased in a cardboard box, with a

[154] ALOHAnet, College of Engineering at University of Hawai'i at Mānoa; Accessed 22 August 2025; Internet Archive
[155] Betamax vs. VHS Videotape Wars by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[156] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[157] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[158] Everything You Ever Wanted to Know About Barcodes by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[159] The Man Who Placed the First Mobile Call 50 Years Ago Talks Phones of the Future by Michael J. Miller, PCMag.com, 3 April 2023; Accessed 20 July 2025; Internet Archive
[160] 50 years ago, the first cellphone call was made, Utah Public Radio interview, 3 April 2023; Accessed 20 July 2025; Internet Archive
[161] The Man Who Placed the First Mobile Call 50 Years Ago Talks Phones of the Future by Michael J. Miller, PCMag.com, 3 April 2023; Accessed 20 July 2025; Internet Archive
[162] "Community Memory," the First Public Computerized Bulletin Board System, HistoryofInformation.com; Accessed on 20 July 2025; Internet Archive

Year	Milestone
	transparent plastic top so what was being printed out could be seen, and with holes for one's hands while typing. This was the first time many individuals who were not studying a scientific subject had the opportunity to be able to use a computer.
1973	The Pennywhistle **modem** was designed by Lee Felsenstein.[163] It was only commercialized in 1976
1973	In March, Xerox released the first computer designed with a graphical user interface: The Xerox Alto. It could be considered the world's **first personal computer**.[164] It was built from a concept Alan Kay had conceived that he called Dynabook. He called the Xerox Alto "*the interim Dynabook*".[165]
1973	Building on ALOHAnet (1971), the U.S. Defense Advanced Research Projects Agency (DARPA) initiated the **Packet Radio Network (PRNET)** project. This research aimed to create a mobile ad-hoc data network as well as to see if they could get packet radio to work with ARPANET. The experiment was successful and marked one of the first successful examples of "*internetworking*".[166] PRNET was one of the key networks (along with ARPANET and SATNET) used in the first successful public demonstration of internetworking in 1977. Its node was in a silver van.[167]
1974	On a computer at Stanford, Elizabeth Feinler maintained a master list of every Internet-connected computer in a text file called HOSTS.TXT[168] which mapped host names with all entries in the **Assigned Numbers List**.[169] [170] This was a direct precursor to **DNS** (see 1983) It was Feinler and her team that developed the idea of **domains**. She believed in associating computers with the type of organization they were located in. At the time, this would have mostly been done by educational institutions,

[163] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014

[164] The Mother of All Demos: 90-Minutes That Revolutionized Computing by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive

[165] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 291

[166] Modern Introduction to Packet Radio, AX25, APRS and TCP/IP, The Modern Ham, 19 March 2024; Accessed 22 August 2025; Internet Archive

[167] Born in a van: Happy 40th birthday to the Internet! by Mark Weber, 22 November 2017, Computer History Museum, Access 22 August 2025; Internet Archive

[168] ASCII TEXT FILE OF HOSTNAMES by RFC Network Working Group, 25 March 1974; Accessed 20 July 2025; Internet Archive

[169] What is DNS and How does it Work by Rahul Jasrotia, LinkedIn, 27 August 2020; Accessed 29 May 2024; PDF

[170] About DNS (Rewrite) by Ethan Caine, Daily Tech News Show, 5 October 2023; Accessed 20 July 2025; Internet Archive

Year	Milestone
	government agencies, and research organizations.[171]
1974	The **first purchase using a UPC code and a (laser[172]) barcode scanner** was conducted at Marsh's Supermarket in Troy, Ohio. The purchase was a 10-pack of Wrigley's Juicy Fruit gum. Both the gum and the receipt are on display at the Smithsonian Institute.[173] A packet of Wrigley's Juicy Fruit gum was deliberately chosen to demonstrate that barcodes could be printed on small items.[174]
1975	**Altair 8800** - the first real, working personal computer for home consumers was launched in January 1975. It used an Intel 8080 CPU running at about 2 MHz, with a base memory of 256 bytes expandable up to 64 KB. It had no keyboard, no screen, and came as a kit requiring assembly. Users programmed it by flipping switches on the front panel and received output through blinking lights. As MITS (Micro Instrumentation and Telemetry Systems, Inc.) were rushing the article in Popular Electronics, they still did not have a name. Les Solomon's daughter, a Star Trek junkie, suggested it be named after the star that the spaceship Enterprise was visiting that night, Altair.[175] Bill Gates and Paul Allen developed a version of the BASIC programming language for the machine. This marked the beginning of their company, which they named after the microcomputer software: Microsoft.[176]
1975	Steve Wozniak sketched out what would become the **Apple I**, in the evening, after the first meeting of the **Homebrew Computer Club** in March 1975.[177] Working in the evenings at his office at HP, Steve Wozniak designed the **first keyboard & monitors that were integrated with a personal computer** for hobbyists - 29 June 1975.[178]

[171] The Domain Name System by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[172] All About Lasers episode by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive
[173] Everything You Ever Wanted to Know About Barcodes by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[174] UPC barcode first used in supermarkets, About Barcode Technology; Accessed 20 July 2025; Internet Archive
[175] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 237
[176] The History of Personal Computing by Everything Everywhere Daily podcast; Accessed 11 October 2025; Internet Archive
[177] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 350-351
[178] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 351

Year	Milestone
1975	Sony released the **Betamax** cassette format[179]
1976	JVC corporation released their cassette format called **VHS** (Video Home System)[180]
1976	Shugart Associates introduced the **5¼-inch disk**. It became the standard format.[181] Jim Adkisson, a Shugart engineer, sat down for lunch with a customer who complained that the 8-inch drive was too big for the personal computers then emerging in the nascent market. When Adkisson asked what the size should be, the customer pointed to a napkin on the table and said, "*About that size.*" Adkisson returned to the Shugart lab with the napkin and designed the 5.25-inch minifloppy drive.[182]
1977	Three cryptographers from MIT - Ron Rivest, Adi Shamir, and Leonard Adleman - announced a new algorithm called **RSA**. This was the birth of public-key **cryptography**. The heart of the system was multiplying two large prime numbers together.[183]
1977	In April 1977, **Apple II** was introduced to the public. After the release of the Apple I in 1976, Steve Wozniac and Steve Jobs quickly began the design improvements necessary to make the Apple II a success. It was one of the first PCs to be released as a full kit (with a keyboard, monitor, and plastic casing).The Apple II was able to sell 2 million units in 7 years. This is in part because it came with 4 KB expandable RAM, BASIC interpreter, and support for color graphics[184]. Its commercial success came in part because of software that was released later, and contributed greatly to the success of PCs overall. Within 2 years of its release, spreadsheet and word processing software was released and could be used on the Apple II. Thanks to its ease of use, and ability to handle multiple tasks from word processing to gaming, it was a commercial success and known as "*The People's Computer.*"[185]
1978	Though the idea of tracking the position of military equipment with satellites had been around since the 1960s, the modern Global Positioning System (**GPS)** came into use starting in

[179] Betamax vs. VHS Videotape Wars by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[180] Betamax vs. VHS Videotape Wars by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[181] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[182] Shugart Associates, Fact-Index.com; Accessed 20 July 2025; Internet Archive
[183] Prime Numbers by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[184] Apple II Microcomputer, National Museum of American History in Smithsonian; Accessed 20 July 2025; Internet Archive
[185] The Apple II, Computer History Museum; Accessed 20 July 2025; Internet Archive

Year	Milestone
	1978 by the US Department of Defense (DoD). The DoD wanted a stable and reliable navigational system which led to the launch of its first Navigation System with Timing and Ranging (NAVSTAR) satellite in 1978. The 24 satellite system was completed in 1993.[186]
1978	Ward Christensen and Randy Seuss created the first **Bulletin Board System** when they were snowed in by a large blizzard in Chicago.[187] It was called the CBBS ("Computerized Bulletin Board System").
1978	Phillips, along with MCA and Pioneer, commercially released the **LaserDisc**. It was an optical storage format, but it was not digital.[188] The first LaserDisc title marketed in North America was the MCA DiscoVision release of Jaws on 15 December, 1978.[189]
1979	The **first major mailing** list was *SF-lovers*, for science fiction fans. The ARPA managers wanted to shut it down in case some senators may not be amused by the use of military money to support it. But the moderators successfully argued that it was a valuable training exercise in juggling large information exchanges.[190]
1979	In mid-1979, WordStar was released to the public. It was the first **word processing software** to offer full word processing power to PCs and was available on the popular Apple II and other PCs.[191] Wordstar was a powerful early word processing tool as it allowed for "cut and paste," spell check, and grammar check.[192] Wordstar was a significant step forward for PCs as, until its release, word processing software and capabilities were only available on expensive, specialized equipment.
1979	In October 1979, Visicorp launched the first **spreadsheet software** for personal computers. The program, called VisiCalc (short for visible calculator) was available for Apple II and was made to replace manual spreadsheet management. The program made it possible to change one cell in a spreadsheet and have all necessary changes to following cells happen automatically and allowed for data sorting.The

[186] Global Positioning System History by Jermaine Walker, NASA.org, 27 October 2012 ; Accessed 20 July 2025; Internet Archive
[187] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 385
[188] CDs, DVDs, and Blu Ray by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive
[189] MCA DiscoVision Introduces the LaserDisc Format with the Movie "Jaws", HistoryofInformation.com; Accessed on 07 June 2025; Internet Archive
[190] SF LOVERS Digest Vol 01, Internet Archive; Accessed 07 June 2025; Internet Archive
[191] Wordstar, PCMag.com Encyclopedia; Accessed 20 July 2025; Internet Archive
[192] WordStar Word Processor: Everything You Need to Know, History-Computer.com, 23 May 2025; Accessed 20 July 2025; Internet Archive

Year	Milestone
	program was considered revolutionary and known as a "killer app" for Apple, playing a significant role in its commercial success.[193] Dan Bricklin conceived VisiCalc when he watched his Harvard Business School professor draw columns & rows on a chalkboard and have to erase everything if a mistake was discovered.[194]
1979	Steve Jobs and the Apple team visited Xerox the first time in December 1979. Apple was allowed to study their technology in return for allowing Xerox to make a million-dollar investment in Apple.[195] [196] At that time, Xerox had three innovations: 1. Graphical User Interface (**GUI**) 2. **Ethernet** 3. **Object Oriented Programming**. Jobs was only interested in the GUI.[197]
1979	The Source was launched by William von Meister. It linked home computers via telephone lines into a network that offered bulletin boards, message exchanges, news stories, horoscopes, restaurant guides, wine rankings, shopping, weather, airline schedules, and stock quotes. When launched at Manhattan's Plaza Hotel, the sci-fi writer Isaac Asimov proclaimed "**This is the beginning of the Information Age!**"[198] Short demo of The Source on the Bits and Bytes program.[199]
1979	Students at Duke University and the University of North Carolina created **USENET**. It was hosted on personal computers and featured threaded message-and-reply discussion forums.[200] Inspired by the idea of ARPANET but without access to its

[193] VisiCalc of Dan Bricklin and Bob Frankston Guide: History, Origin, and More, History-Computer.com, 23 May 2025; Accessed 20 July 2025; Internet Archive
[194] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 354
[195] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 363
[196] The Legend of Apple and Xerox PARC and the Truth About Innovation by Irving Wladawsky-Berger on his personal blog, 16 January 2012; Accessed 20 July 2025; Internet Archive
[197] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 364
[198] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 392-393
[199] Bits and Bytes TVO - Episode 5: Communication Between Computers - includes demo of The Source on YouTube at 10:39; Accessed 07 June 2025
[200] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 386

Year	Milestone
	restricted network, they designed Usenet to work over simple dial-up telephone connections using the Unix-to-Unix Copy Protocol (UUCP). The system allowed users to post and read messages in organized categories called newsgroups, effectively creating one of the world's first large-scale online communities.[201]
1979	Philips corporation unveiled the prototype of their **compact disk player** in March. The first prototype CD was a recording of Antonio Vivaldi's *The Four Seasons*. In July, Warner Brothers released the first digitally recorded record, *Bop Till You Drop* by guitarist Ry Cooder. Making a standard: The length of a CD was eventually set at 74 minutes (and 120mm disc). The commonly held story is because the wife of the then Sony CEO Akio Morita feld that an entire recording of Beethoven's 9th symphony should be able to fit on a single disk, and the longest version they could find was 74 minutes (by Wilhelm Furtwängler at the 1951 Bayreuth Festival).[202] This story has been declared by some to be apocryphal, but others who worked at Sony at the time claim it was true - but that it had nothing to do with Beethoven. It had to do with the fact that Phillips had a plant ready to produce 115mm discs, and Sony did not. By forcing the larger disc, it required Phillips to retool its plant, giving Sony time to catch up.[203] ***Book standards***[204] • The partnership led to creation of the Red Book standard in 1980, which defined the technical specifications for Compact Digital Audio Discs. • In 1983, they released the Yellow Book standard, which set forth the standards for compact disc read-only memory, or CD-ROM. • In 1990, the Orange Book was released, which set the standard for both CD-R and CD-RW. • The Blu-ray Disc Association released the standards for 4K Blu-ray in 2015.
1980	Q**DOS** (Quick and Dirty Operating System) was created by Tim Paterson after he became frustrated that Gary Kildall's CP/M would not work on Intel processors. Microsoft bought the company in order to provide an OS to IBM. When licensed to IBM, it was called PC-DOS. Others licensed it under the

[201] Origins of the Internet by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[202] The History of Recorded Sound by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[203] A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[204] CDs, DVDs, and Blu Ray by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive

Year	Milestone
	name **MS-DOS**[205]
1980	**Enquire**, a precursor to the World Wide Web, was developed by Tim Berners-Lee as a consultant at CERN. At the end of his consultancy, he left his computer and eight-inch floppy disk containing all the code. It was promptly erased and forgotten. He later returned in 1984 and reconstructed his Enquire program but with loftier visions.[206] [207]
1980	American physicist Paul Benioff published the first-ever description of a **quantum computer**. He proposed a quantum version of a "Turing machine" — a theoretical model of a computer that is capable of implementing any algorithm[208]. By showing that such a device could be described using the equations of quantum mechanics, Benioff laid the foundations for the new field of quantum computing.[209] Paul's quantum explorations were not part of his job at Argonne National Laboratory - he did the research in his spare time.[210]
1981	Lawrence Landweber, at the University of Wisconsin, pulled together a consortium of universities that were not connected to ARPANET to create another network based on TCP/IP protocols - called **CSNET** (Computer Science Network)[211]. It became the forerunner of a network funded by the National Science Foundation, NSFNET. **Weaving all these together formed the Internet in the early 1980s**.[212]
1981	The Hayes Smart lauded their **Smartmodem** into the market. It could be plugged directly into a phone line and connected to a computer.[213] It introduced a control language for operating the functions of the modem via the serial interface.
1981	SONY developed the **3½ inch floppy disk** which could hold 1.44 megabytes of data. Although it was encased in a hard plastic container, it was still called a floppy disk. Production only ceased in 2011.[214]

[205] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 358

[206] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 409

[207] Enquire Manual - In HyperText, W3.org; Accessed 07 June 2025; Internet Archive

[208] The Computer as a Physical System: A Microscopic Quantum Mechanical Hamiltonian Model of Computers as Represented by Turing Machines by Paul Benioff, Journal of Statistical Physics, Vol.22, No.5, 1980

[209] History of quantum computing: 12 key moments that shaped the future of computers, Live Science, by Edd Gent, 30 September 2024; Accessed 09 August 2025; Internet Archive

[210] Remembering Paul Benioff, renowned scientist and quantum computing pioneer, Argonne National Laboratory, 11 May 2022; Accessed 09 August 2025; Internet Archive

[211] CSNET Bulletin No. 1, RFC-Editor.org; Accessed 07 June 2025; Internet Archive

[212] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 383

[213] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 386-387

[214] The History of Data Storage by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

Year	Milestone
1981	The **CD-ROM** was introduced to the world and the first discs were commercially available in October 1982.[215] CD-ROMs were one of the very **first commercial uses of lasers**, and the one which gave most people a personal exposure to them[216]
1983	As the New Year rings in, take a moment to say happy birthday to the **internet**. Though computers have had the ability to transfer information with each other remotely since the 1960s, there was no standardized language for data transfer until the adaptation of the new communication protocol called Transfer Control Protocol/Internetwork Protocol (TCP/IP) in 1983.[217] Starting in the 1960s, computers could share information if they had the same communication protocol. Otherwise, you would need to visit the site of the computer or store data on magnetic computer tapes that could be shipped through the mail. However, the Cold War and the threat of nuclear war made it necessary for government actors to share information much more quickly. Thus, on 1 January 1983, the day the Defense Data Network officially switched to TCP/IP, is considered the official birthday of the internet. [218] The transition went smoothly, and everyone got a button for their hard work stating "*I survived the TCP/IP transition*".[219] In 1983, the original version of the internet had a mere 562 computers online. Today, as everyone's computer, phones, and multiple devices are now online, there are an estimated 14 billion devices connected to the internet.[220]
1983	Tragedy led US President Ronald Regan to make **GPS available to civilians** in 1983. After flight KAL-007 was shot down for accidentally straying into prohibited (Soviet) airspace, it was determined GPS should be treated as a common good available for civilian use as such an accident could have been avoided if the aircraft had accurate navigation information. The signal was purposefully degraded for security purposes, but was still strong enough to keep airliners safe and allow for the first handheld device to come

[215] A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
[216] All About Lasers episode by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive
[217] A Brief History of the Internet - Sharing resources, Online Library Learning Center website of the University System of Georgia; Accessed 20 July 2025; Internet Archive
[218] A Brief History of the Internet - Sharing resources, Online Library Learning Center website of the University System of Georgia; Accessed 20 July 2025; Internet Archive
[219] Marking the birth of the modern-day Internet by Vint Cerf, Google Blog, 1 January 2013; Accessed 20 July 2025; Internet Archive
[220] The Coming Wave: Technology, Power, and the 21st Century by Mustafa Suleyman and Michael Bhaskar, September 2023; Accessed electronically through Kindle 02 Oct 2023

Year	Milestone
	onto the market in 1989.[221] [222]
1983	By 1983 the domain matching by Stanford had become untenable. In 1983, Paul Mockapetris, a researcher at University of Southern California, was tasked with coming up with a compromise among multiple suggestions for dealing with the problem. He basically ignored them all and developed his own system, which he dubbed **Domain Name Service (DNS)**.[223] [224] [225] Jon Postel, Paul Mockapetris, and Craig Partridge published RFC 882[226] in November, effectively creating the fundamentals of DNS as they exist today. Eleven months later, RFC 920[227] created seven generic top-level domains (TLDs), laying the groundwork for the "dot-blank" format (.com, edu, .gov, .org, mil, etc.) and establishing the domain landscape for corporations, non-profits, schools, networks, government offices, and the military.[228] The first working domain name server was called "Jeeves".[229]
1983	The **GNU Project** was launched in September 1983 by Richard Stallman, a programmer at MIT's Artificial Intelligence Laboratory.[230] The project name is a recursive acronym for "GNU's Not Unix" – a humorous acknowledgment that while GNU was designed to be Unix-compatible, it would contain no Unix code. GNU lacked a kernel, but that was solved in 1991 by a Finnish computer science student named Linus Torvalds (see 1991).[231]
1983	Microsoft **Windows** was officially announced in November. During the launch event, Bill Gates predicted that by the end of 1984, Windows 1.0 would be installed on 90% of PCs. However, the first release of Windows was beset by several delays, and did not ship until 2 years later, on 20th November

[221] History of GPS Program, American Institute of Aeronautics and Astronautics; Accessed 22 July 2024; Internet Archive
[222] Everything You Ever Wanted to Know About The Global Positioning System by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive
[223] What is DNS and How does it Work by Rahul Jasrotia, LinkedIn, 27 August 2020; Accessed 29 May 2024; PDF
[224] About DNS (Rewrite) by Ethan Caine, Daily Tech News Show, 5 October 2023; Accessed 20 July 2025; Internet Archive
[225] The Domain Name System by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[226] Request for Comments 882: Domain Names - Concepts and Facilities, Network Working Group; Accessed 11 October 2025; Internet Archive
[227] Request for Comments 920: Domain Requirements, Network Working Group; Accessed 11 October 2025; Internet Archive
[228] The Versatility of DNS—A Deployment for Every Use Case by Griff Shelley, F5, 24 September 2024; Internet Archive
[229] A Brief History of the DNS and BIND, BIND9, 2022; Accessed 20 July 2025; Internet Archive
[230] Initial Announcement, GNU Operating System; Accessed 20 July 2025; Internet Archive
[231] Open Source Software by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive

Year	Milestone
	1985.[232] Apple secretly contracted Microsoft to build application software for the Macintosh which had been scheduled for a 1982 release. The contract forbade Microsoft from building any other software that "*utilizes a mouse or tracking ball*" or had a point-and-click graphical interface. However, they set a specific date (end of 1983) and the Mac did not launch until Jan 1984. It turned out that Microsoft had started secretly designing a new OS to replace DOS - Windows.[233]
1984	The **Macintosh** was unveiled in 1984 along with Apple's iconic 1984 commercial[234]
1985	The **WELL** - the Whole Earth 'Lectronic Link was set up in 1985 as an online community. It is one of the oldest continuously operating **virtual community**.[235] Apple cofounder Steve Jobs called it "*one of the bibles of my generation*". In 1965, Stewart Brand launched the Whole Earth Catalog. It was Larry Brilliant who worked with him, putting up the money and technology to create the online version - the WELL. The WELL was populated by a diverse group of conversationalists - journalists, computer enthusiasts and other prominent figures in a culture centred on Silicon Valley-style experimentation and forward thinking. The WELL emphasised independence and ownership: the login screen told users "*You own your own words*". One of the most active groups were fans of the Grateful Dead - Deadheads. At $2 an hour to dial in (about $6 today) along with its $8 membership fee ($23 today), the Deadheads' devotion to endless discussion of their favourite band helped fund the entire platform.[236]
1985	Richard Stallman founded the **Free Software Foundation** (FSF) to support and promote the development of free software—software that respects users' freedom to use, study, modify, and share it. As proprietary software became more common in the 1980s, the FSF provided legal, philosophical, and organizational

[232] Microsoft announces Windows, Centre for Computing History; Accessed on 20 July 2025; Internet Archive

[233] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 366-367

[234] 1984 Apple's Macintosh Commercial (HD); Accessed on 20 July 2025

[235] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 388-389

[236] How the Grateful Dead built the internet by Allegra Rosenberg, BBC, 22 June 2025; Accessed 16 July 2025; Internet Archive

Year	Milestone
	support for the free software movement, including the creation of the GNU General Public License or GPL, a license that ensured software would remain free for all users.[237]
1987	**MINIX** was developed by a professor in Amsterdam, Andrew Tanenbaum. It was a small clone on UNIX for teaching purposes. It cost $169 and came on 16 disks.[238] • See 1991 for how it led to Linux
1988	The **first transatlantic fiber optic cable**, TAT-8, was laid between the U.S., U.K., and France - spanning a seabed distance of 5,846 km. AT&T, British Telecom, and France Telecom led the consortium that built TAT-8. AT&T Bell Laboratories developed the technologies used in the cable. It had a bandwidth of 280 Mbit/s or the equivalent of 40,000 telephone circuits.[239] [240]
1989	While working at CERN in 1989, Tim Berners-Lee invented the **World Wide Web (WWW)** with the purpose of real-time information sharing between CERN scientists who were scattered all over the world.[241] See 1993. CERN's own website was the first one in the world to go online. That website, and technically the entirety of the Internet at the time, was stored on Berners-Lee's NeXT computer in his CERN office. It had a sticker on the front that read "*This machine is a server. DO NOT POWER DOWN!!*" That server is still located at CERN, for posterity.[242]
1989	The **first handheld GPS device** was the Magellan Nav 1000 which cost $3,000. Inflation-adjusted, that would have been $6,200 in 2020.[243]
1990	Tim Berners-Lee had created a suite of tools - Hypertext Transfer Protocol (**HTTP**); Hypertext Markup Language (**HTML**), a simple **browser** (only for NeXT computers though),

[237] Open Source Software by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[238] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 374
[239] Undersea Fiber Optic Cables by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive
[240] Milestones:Trans-Atlantic Telephone Fiber-Optic Submarine Cable (TAT-8) - 1988, Engineering and Technology History Wiki; Accessed 18 July 2025; Internet Archive; PDF
[241] A Short History of the Web, CERN; Accessed 20 July 2025; Internet Archive
[242] Original NeXT computer used by Sir Tim Berners-Lee to design the World Wide Web, Google Arts & Culture; Accessed 07 June 2025; Internet Archive
[243] Everything You Ever Wanted to Know About The Global Positioning System by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive

Year	Milestone
	and **server software**.[244] When launched, he intended it to be used as a collaboration tool. However, future browsers did not enable the editing of pages (ie collaboration) which greatly dismayed Tim Berner-Lee. Rather, they made people passive consumers of published content.[245]
1991	Linus Torvalds bought a copy of MINIX to use, but then started writing programs from scratch in assembly language, at the bare hardware level, so that he would not need to depend on MINIX. In October, he made his first version of Linux freely available (via FTP). He had proposed a name, but the person who ran the FTP server did not like it. So, it went by **Linux** as it was pronounced in a similar way to Linus' first name.
1991	Sony commercialized the **first rechargeable lithium-ion battery** which was a game-changer for the electronics industry, enabling the creation of smaller, lighter, and more powerful portable devices like camcorders, mobile phones, and laptops. The battery's success paved the way for the wireless revolution and, decades later, the electric vehicle revolution. Sony's battery was based on Akira Yoshino's (1985) design. His design was an improvement on John B. Goodenough's (1980) design which was itself an improvement on M. Stanley Whittingham's (1970s) design. Whittingham, Goodenough, and Yoshino were jointly awarded the 2019 Nobel Prize in Chemistry. At the age of 97, Goodenough became the oldest person ever to receive a Nobel Prize.[246]
1992	The Adobe Corporation created the **portable document format**, or **PDF** allowing text to be laid out and displayed just like it would be in print, but in an electronic format. These became known as e-books.[247]
1992	"Merry Christmas!" The **first SMS** was sent in December 1992 from a computer to a cell phone. Neil Papworth, a programmer, sent the message from his computer to his colleague. It would take another year for Nokia to add Short Messaging Services (SMS). The messages were limited to 160 characters and lead to the use of "txt spk" and

[244] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 411

[245] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 433

[246] The Nobel Prize in Chemistry 2019, The Nobel Prize; Accessed 22 August 2025; Internet Archive

[247] The History of Books by Everything Everywhere Daily; Accessed 20 July 2025; Internet Archive

Year	Milestone
	emoticons. :) [248]
1992	Until 1992, it was **illegal to connect a commercial service**, like AOL**, to the Internet**. You had to be connected to an educational or research institution. Changing this was greatly enabled through efforts by former US Vice President Al Gore.[249]
1993	CERN released the **WWW (W3) as open source,** into the public domain, on 30 April 1993.[250] [251] By 1994, the world wide web had 10 million users and 10,000 servers.[252]
1993	**Mosaic** was developed by the National Center for Supercomputing Applications (NCSA) at the University of Illinois, which had been funded by the Gore Act. Developed by Marc Andreeseen and Eric Bina in two months through programming binges of 3-4 days fueled by milk, cookies, skittles and Mountain Dew. It became popular because it could be installed easily and it enabled images to be embedded on web pages.[253]
1993	This is the tale of how a coffee pot led to the invention of the **webcam** in 1993. As most researchers can testify, caffeine can be one of the driving forces behind the long nights and early mornings of getting through any project, and the computer scientists of Cambridge University were no different in 1993. However, in this case, the aforementioned coffee pot was stationed far away and shared between many different labs. The heartache of showing up to an empty coffee pot led two researchers to hook up a camera to the fledgling world wide web. It captured 3 images per minute of the coffee and made its online debut in November 1993. The now infamous coffee pot became an international hit from the US to Japan. A decade later, the last image captured was a scientist pressing the 'off' button. The fabled coffee pot sold at an online auction for 3,350 GBP.[254]

[248] 25 years since the world's first text message, Vodafone.com, 4 December 2017; Accessed 20 July 2025; Internet Archive
[249] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 401
[250] Software release of WWW into public domain, CERN Document Server; Accessed on 20 July 2025; Internet Archive
[251] Statement Concerning CERN W3 Software Release Into Public Domain by Naomi Dinmore, CERN, 30 April 2023; Accessed on 20 July 2025; Internet Archive
[252] A Short History of the Web, CERN; Accessed 20 July 2025; Internet Archive
[253] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 415-416
[254] How the World's First Webcam Made a Coffee Pot Famous by Rebecca Kesby, BBC, 22 November 2012; Accessed 20 July 2025; Internet Archive

Year	Milestone
1993	An algorithm, developed by the Fraunhofer Institute in Germany in 1991, is released allowing the creation of MPEG-1 Audio Layer III, or as it is better known, **MP3** files[255]. It was released as the ISO/IEC 11172-3 standard. Although other formats existed, the Fraunhofer Institute released all of its intellectual property surrounding the MP3 format. The MP3 format changed……everything. Music went from being a physical object to data. When combined with the internet, it meant that everyone could have everything. It help gave rise to file sharing and podcasting. Fun fact: the song used by the engineers to test the MP3 files was Tom's Diner by Suzanne Vega[256]
1994	Originally called Universal Document Identifiers, the Internet Engineering Task Force called the use of *universal* "arrogant" which eventually resulted in the name of Uniform Resource Locator - **URLs**.[257]
1994	Before there were 'apps' or a rivalry between iPhones and Androids, there was Simon. The world's first **smartphone** was released to the public in August 1994. It weighed approximately 500g and had a green LCD screen. The IBM Simon existed before the term 'smartphone' did. However, Simon had many of the features we have come to expect from smartphones today.[258] Simon had what it called 'features.' These features included a calendar, calculator, address book, fax, filer, mail, notepad, sketch pad, time, and to-do lists. It was a touchscreen phone, but worked better with a stylus than a finger. It had rudimentary predictive typing. You could even hook it up to a conventional phone jack if your cellular service was too spotty or expensive.[259] Ultimately, Simon did not experience commercial success. The phone was only on the market for about 6 months. During that time it retailed at $900 USD if you had a contract with BellSouth. While on the market it sold around 50,000 units. Despite many of the features we'd expect from a modern cell phone, it had an estimated battery life of about an hour and was quickly overtaken by more popular flip

255 A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive
256 The History of Recorded Sound by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
257 The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 411
258 World's First Smartphone Celebrates 20 Years, BBC; Accessed 20 July 2025; Internet Archive
259 First Smartphone Turns 20: Fun Facts About Simon by Doug Aamoth, TIME, 18 August 2014; Accessed 20 July 2025; Internet Archive

Year	Milestone
	phones and Nokia.[260] Today's smartphone contains more information than the ancient Library of Alexandria and enables its owner to instantaneously connect to billions of other people throughout the world.[261]
1994	Working at Ericsson's Mobile Terminal Division, Dr. Jaap Haartsen was tasked with finding short-range radio connections to enrich the functionality of mobile phones. Haartsen came up with a way to use frequency hopping techniques to ensure that **Bluetooth** connections are reliable and tolerant to interference. Around this time, the Bluetooth Special Interest Group (SIG) was formed.[262] In 1996, Jim Kardach was reading about Viking kings, and was particularly enthralled by Harald Gormsson. Harald was nicknamed "**Bluetooth**" because he was said to have a rotting front tooth that took on a bluish color. Harald was famous for uniting Denmark and Norway, and Kardach thought that this was similar to what they were trying to accomplish by uniting PC and cellular industries with short-range wireless links. He suggested the name Bluetooth as a placeholder. The SIG group suggested PAN, for personal area network, but the lawyers advised against it after a trademark search. Running out of time, the project codename - Bluetooth - stuck.[263] In 1999, the first ever consumer Bluetooth device was launched - a hands-free mobile headset. At the same time, the Bluetooth 1.0 specifications were released. The Ericsson t36, which was the first ever mobile phone to utilize Bluetooth technology.
1994	**Yahoo!**, originally called *Jerry and David's Guide to the Web*, was launched by Jerry Yang and David Filo. It was partially built using scrappers Yang used to dig up player stats, via FTP and Gopher, to help with fantasy baseball.[264]
1994	Justin Hall launched his "web log" (later known as a **blog**) posting his personal activities, random thoughts, deep musings and intimate encounters. He often crossed the line of Too Much Information (TMI). • John Barger coined the term weblog in 1997. • Peter Merholz jokingly broke the word into two: *we blog* in 1999. The word blog caught in.[265]

[260] IBM Created World's First Smartphone 25 years ago by Rob Smith, World Economic Forum, 13 March 2018; Accessed 20 July 2025; Internet Archive

[261] Nexus - A Brief History of Information Networks from the Stone Age to AI by Yuval Noah Harari, 2024, Kindle Location 208

[262] The History of Bluetooth, Auris; Accessed on 20 July 2025; Internet Archive

[263] Brand New Name: A Proven, Step-by-Step Process to Create an Unforgettable Brand Name by Jeremey Miller, 2019

[264] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 447

[265] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 422-427

Year	Milestone
1994	*Pope's Cybercafe* was the **first Internet cafe** but only operated one weekend - 12-13 March 1994 as part of the "*Towards the Aesthetics of the Future*". It was an arts weekend at the Institute of Contemporary Arts (ICA) in London.[266] It should be noted that San Francisco's pioneering efforts saw coffee houses with slot machines for internet access, rather than a cafe with internet access from each table, earlier than *Pope's Cybercafe*.[267]
1994	Peter Shor of Bell Labs developed an algorithm that showed a quantum computer could factor large numbers exponentially faster than any known classical algorithm. This was the first "*killer application*" for quantum computing. **Shor's algorithm** showed that quantum computing was not just a theoretical curiosity, but a potential threat to modern public-key cryptography, which relies on the difficulty of factoring large numbers. Essentially a quantum computer could crack the cryptography used to secure Internet traffic from email to banking. This discovery immediately spurred significant funding and research into both building quantum computers and developing "quantum-resistant" cryptography.[268] While the algorithm is on the cutting edge of modern physics and computation, its core mathematical ideas are surprisingly old. The classical part of the algorithm, which is used to extract factors once the "period" is found by the quantum computer, relies on the Euclidean algorithm—a method for finding the greatest common divisor of two integers that dates back to ancient Greece.[269]
1994	The "Quick Response" code, more commonly known as the **QR code**, was invented by Masahiro Hara working at a Japanese company called Denso Wave, a subsidiary of the Toyota Group. It was created to help the auto manufacturing sector to become much more flexible. The traditional bar code could only store 20 alphanumeric characters. Thus parts moving around the plants often required multiple barcodes. In contrast, the QR code could store up to 7,000 numeric or 4,000 alphanumeric characters thereby streamlining

[266] The First Internet Cafe Operates (For Two Days), HistoryofInformation.com; Accessed 20 July 2025; Internet Archive

[267] Britain's first cybercafe – and thoughts on what makes for great innovation by Mark Pack on personal blog, 8 December 2010; Accessed 20 July 2025; Internet Archive

[268] Algorithms for Quantum Computation: Discrete Logarithms and Factoring, by Peter Shor, AT&T Bell Labs. Published in Proceedings, 35th Symposium on Foundations of Computer Science, 20-22 November 1994, IEEE Computer Society Press, pp. 124-134; PDF

[269] Peter Shor Broke PKI with Ancient Math, and Futuristic Quantum Computing by Satyam Tyagi, Security Boulevard, 23 December 2024; Accessed 09 August 2025; Internet Archive

Year	Milestone
	movement of parts and products.[270] The key breakthrough came from an unlikely source: the ancient Japanese board game Go. During a lunch break, as Hara observed the patterns of black and white stones on the Go board, he was inspired by the way the patterns could represent complex information within a small, gridded space. He realized that a similar two-dimensional grid could be used to store a large amount of data.[271] Denso Wave made the technology's patent rights open and free for public use. This choice allowed the QR code to be widely adopted across various industries paving the way for its global ubiquity.[272]
1995	Ward Cunningham invented **Wiki** technology when he modified Apple's HyperCard software. Apple had no idea what to do with HyperCard, but at Bill Atkinson's insistence they gave it away free on their computer. The wiki name came from Cunningham's honeymoon in Hawaii where he was told to take the "*wiki wiki*" bus between airport terminals. He asked what it mean and was told "wiki" meant quick and "wiki wiki" meant super quick.[273]
1995	The **DVD** was officially introduced in 1995 and released to the market in 1996. They were developed as a collaboration among major technology companies, including Toshiba, Sony, Panasonic, and Philips. The goal was to create a format for high-capacity storage suitable for video and data.[274]
1995	**Craigslist** was launched by a self-described "*nerd with limited social skills*" when he started emailing around to alert people to arts and tech events in San Francisco. At first they were addressed to just ten or twelve people, but more and more asked to be added to the list. People started asking if he could post the occasional job or apartment. It snowballed. In 1996, the website, with a million hits a month, connected buyers to sellers for any number of services and goods. The has remained Ad-free and no frills. Its founder, Craig Newmark, rejected advertising from the very beginning in favor of small fees on employers posting job ads in some

[270] QR Code History: A Technology That Simplifies Our Daily Lives, by Roshan Mayanglambam, QRCodeChimp, 15 January 2025; Accessed 17 August 2025; Internet Archive

[271] Bars, cars and Go: the story of the QR Code, Open:, 15 June 2021; Accesses 17 August 2025; Internet Archive

[272] QR Code History: A Technology That Simplifies Our Daily Lives, by Roshan Mayanglambam, QRCodeChimp, 15 January 2025; Accessed 17 August 2025; Internet Archive

[273] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 433-434

[274] CDs, DVDs, and Blu Ray by Everything Everywhere podcast; Accessed 20 July 2025; Internet Archive

Year	Milestone
	cities.[275]
1995	**JavaScript** was developed in just 10 days by Brendan Eich at Netscape Communications and included in Netscape Navigator 2.0. It was initially named Mocha, then briefly LiveScript, before being renamed JavaScript to capitalize on the popularity of Java even though the two languages are fundamentally different. When Brendan Eich was hired by Netscape, he was tasked with embedding a language called Scheme into the browser. Scheme is a dialect of Lisp, known for its elegant and minimalist design. But Netscape leadership, under pressure from a new alliance with Sun Microsystems, pivoted. They wanted a language that would be a "*little brother*" to the highly popular, enterprise-focused Java. This last-minute change in direction is why JavaScript has a C-style syntax (like Java) but a functional and prototype-based core (like Scheme and another language, Self). It was a forced hybrid that resulted in a language unlike anything else. In 2009, the launch of Node.js allowed JavaScript to be used for server-side development. Modern frameworks and libraries like React, Angular, and Vue have further expanded its capabilities, making it one of the most widely used programming languages in the world.[276] [277]
1996	The **PageRank** concept originally used by Google came to Larry Page in the middle of the night when he awoke from a dream. He later built his first crawler called BackRub - which was not intended as a search engine, but an annotation system and citation analysis.[278] [279]
1996	IBM's Deep Blue computer beat the reigning world chess champion, Garry Kasparov[280]
1996	The First Year in Which More Email is Sent than Paper Mail[281]

[275] Chokepoint Capitalism: How Big Tech and Big Content Captured Creative Labor Markets and How We'll Win Them Back by Rebecca Giblin and Cory Doctorow, 2023
[276] A Brief History of JavaScript, Deno, 22 May 2025; Accessed 30 August 2025; PDF capture
[277] A Brief History of JavaScript by Boateng Dickson, DEV.to, 21 May 2022; Accessed 30 August 2025; Internet Archive
[278] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 457
[279] BackRub on The Way Back Machine, 10 December 1997; Accessed 08 June 2025; Internet Archive
[280] The Mechanical Turk by Everything Everywhere Daily podcast; Accessed 20 July 2025; Internet Archive
[281] 1996: The First Year in Which More Email is Sent than Paper Mail, HistoryofInformation.com; Accessed 20 July 2025; Internet Archive

Year	Milestone
1997	The IEEE 802.11 technical standard was published, enabling wireless data transmission (**Wi-Fi**) at up to 2 Mbit/s using an unlicensed 2.4 GHz radio spectrum.[282] To find a better name than "IEEE 802.11b Direct Sequence", Interbrand was hired to find a name that was a little catchier. The name Wi-Fi was created as a pun upon the word Hi-Fi.[283]
1997	While real time instant messaging and chat were available online, the first real **social media network,** SixDegrees, came online in 1997. While it was short lived, it allowed for a basic profile upload, friends lists, and social affiliations. It was short-lived in part due to a lack of people online. It wasn't until MySpace took the internet by storm in 2003 that social media became a hit, due to the fact that personal profiles were highly customizable and could be integrated with music.[284] By 2006, MySpace had become the most visited website of the time. It wasn't until 2008 that Facebook would take the title of number one.[285]
1997	E Ink Corporation developed a new technology called **electronic paper**, which is now commonly called **e-ink**.[286]
1998	The **Iridium Network** launched its commercial service on 1 November 1998 with the first call being made by the U.S. Vice President Al Gore to Gilbert Grosvenor, the great-grandson of Alexander Graham Bell. Iridium, initially started in 1988 as a project in a Motorola research lab in Arizona, was built on technology developed for the U.S. President Ronald Reagan's abandoned "Star Wars" program. The constellation was originally thought to need 77 satellites to provide global coverage, making the name Iridium (the element with an atomic number of 77) the perfect fit, as the architecture of the network resembled that of electrons orbiting the nucleus of an atom. Later, engineers discovered only 66 satellites were necessary to cover the Earth, but the clever name stuck.[287]
1998	Isaac Chuang, leading an IBM research team, ran Grover's algorithm on a computer featuring two qubits - the quantum equivalent of bits - thus demonstrating the **first quantum**

[282] The Evolution of Wi-Fi Technology and Standards, IEEE SA Standards Association, 16 May 2023; Accessed 20 July 2025; Internet Archive
[283] The History of WiFi 1971 to Today, CableFree, 18 May 2017; Accessed 20 July 2025; Internet Archive
[284] Then and now a history of social networking sites by Chenda Ngak, CBS News, 6 July 2011; Accessed 20 July 2025; Internet Archive
[285] The Evolution of Social Media: How Did It Begin, and Where Could It Go Next?, Maryville University, 28 May 2020; Accessed 20 July 2025; Internet Archive
[286] The History of Books by Everything Everywhere Daily; Accessed 20 July 2025; Internet Archive
[287] Iridium: An Overview (Exhibit), Iridium Museum; Accessed 20 July 2025; Internet Archive

Year	Milestone
	computer[288]. • 2001: Chuang led the first implementation of Shor's algorithm (see 1994) on quantum hardware, factoring the number 15 using a seven-qubit processor. • 2011: first commercial quantum by Canadian company D-Wave costing roughly $10 million (for 128 superconducting qubits). • 2016: IBM puts quantum on the cloud • 2019: Google claims quantum supremacy - they claimed it could perform a calculation in 200 seconds that would take a supercomputer roughly 10,000 years to complete.[289]
1999	**Blogger** is launched by Ev Williams, then at Pyra. It was the first service that let people post blogs without having to know how to code. The company essentially collapsed in early 2001, but Ev bootstrapped Blogger, with some support, until Google bought it in late 2002.[290]
1999	**Napster** - a music/audio file sharing software was released by Shawn Fanning and Sean Parker which leveraged a peer-to-peer network setup.[291] [292]
1999	**RSS** (Really Simple Syndication) was introduced by Internet-browser Netscape. The major tipping point towards adoption was when *The New York Times* started offering RSS feeds on its website in 2002.[293]
2000	The first documented **Denial-of-Service** (DoS)-style attack occurred when "mafiaboy," a teenage hacker, orchestrated a series of DoS attacks against major sites including Amazon, eBay, Yahoo and CNN. The attacks crippled Internet commerce and the U.S. Federal Bureau of Investigation (FBI) estimated that the affected sites suffered $1.7 billion in damages.[294] [295]
2001	**Wikipedia** was founded in early 2001. While there are disagreements on how it came about, it was definitely two ideas coming together at the right time - Nupedia and

[288] Experimental Implementation of Fast Quantum Searching by Isaac L. Chuang, Neil Gershenfeld, and Mark Kubinec, Physical Review Letters of the The American Physical Society, Volume 80, Number 15, 13 April 1998

[289] History of quantum computing: 12 key moments that shaped the future of computers, Live Science, by Edd Gent, 30 September 2024; Accessed 09 August 2025; Internet Archive

[290] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 4429-430

[291] Napster file-sharing computer service, Britannica; Accessed on 20 July 2025; Internet Archive

[292] A Brief History of Digital Audio by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[293] RSS: A Brief Introduction by Jim Doree, Journal of Manual & Manipulative Therapy, 15(1), 57–58. 2007. Accessed 20 July 2025; Internet Archive

[294] denial of service attack, Britannica; Accessed on 20 July 2025; Internet Archive

[295] Feb. 7, 2000: Mafiaboy's Moment by Tony Long, WIRED, 7 February 2012; Accessed on 20 July 2025; Internet Archive

Year	Milestone
	Wikis.[296] [297]
2004	The term **podcasting** was first used by Ben Hammersley, who was a journalist for the British newspaper The Guardian. The term was eventually picked up by former MTV VJ Adam Curry who popularized the term. Curry has subsequently been named the godfather of podcasting, or the Podfather.[298]
2005	**Google Earth** was launched as a free application making the technology accessible to a global audience and contributed to its widespread adoption. The technology that became Google Earth was created by a company called Keyhole and was called EarthViewer. Keyhole's technology received funding from In-Q-Tel, the venture capital arm of the CIA[299] [300]. The software was used by the U.S. military and intelligence community, as well as news organizations like CNN, to visualize the battlefield during the 2003 invasion of Iraq. The core concept of a seamless zoom from a cosmic view to a close-up of a single location was inspired by the 1977 short film "Powers of Ten."[301] This film, which illustrates the scale of the universe, was a profound influence on the engineers who developed the original technology.[302]
2006	The term **crowdsourcing** was coined by journalist Jeff Howe in 2006 to describe the trend of businesses outsourcing product development and idea creation: *Crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call.*[303]
2007	Steve Jobs unveiled the **iPhone**, combining a phone, an iPod, and an Internet communicator, which revolutionized mobile computing and communication. During the first public iPhone demonstration, Steve Jobs had multiple iPhones on stage because the devices were prone to crashing. He followed a precise routine to make it appear

[296] The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution by Walter Isaacson, 2014, page 439-441

[297] Wikipedia on The Way Back Machine, 31 March 2001; Accessed on 20 July 2025; Internet Archive

[298] A Podcast About Podcasting by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[299] Google's Earth: how the tech giant is helping the state spy on us by Yasha Levine, The Guardian, 20 December 2018; Accessed 21 August 2025; Internet Archive

[300] GOOGLE ACQUIRES KEYHOLE CORPORATION, IQT News, 27 October 2004; Accessed 21 August 2025; Internet Archive

[301] Powers of Ten, Eames Office, 1977, Accessed 21 August 2025

[302] The Powers of Ten by Mickey Mellen, Google Earth Blog, 23 February 2012; Accessed 21 August 2025; Internet Archive

[303] Crowdsourcing, the great meteor storm of 1833, and the founding of meteor science by Mark Littman and Todd Suomela; Endeavour Volume 38, Issue 2; 2014, Pages 130-138; Accessed on 20 July 2025; Internet Archive; PDF

Year	Milestone
	seamless.[304]
2010	Amazon Web Services (AWS) and Microsoft Azure popularized **cloud computing**, providing scalable and on-demand computing resources over the Internet, transforming IT infrastructure and services. The idea for Amazon Web Services (AWS) came from Amazon engineers who proposed selling excess server capacity, initially intended for handling peak retail traffic, leading to the creation of the cloud computing giant.[305]
2012	Though the 'father of AI' founded the Artificial Intelligence Lab at MIT in 1959, it wouldn't be until 2012 that the breakthrough moment Marvin Minksy waited for would come with **AlexNet**. "The legendary computer science professor Marvin Minsky famously hired a summer student to work on an early vision system in 1966, thinking that significant milestones were just within reach. That was wildly optimistic." The breakthrough moment took nearly half a century, finally arriving in 2012 in the form of a system called AlexNet. AlexNet was powered by the resurgence of an old technique that has now become fundamental to AI, one that has supercharged the field and was integral to us at DeepMind: deep learning. AlexNet was built by the legendary researcher Geoffrey Hinton and two of his students, Alex Krizhevsky and Ilya Sutskever, at the University of Toronto. They entered the ImageNet Large Scale Visual Recognition Challenge, an annual competition designed by the Stanford professor Fei-Fei Li to focus the field's efforts around a simple goal: identifying the primary object in an image. Each year competing teams would test their best models against one another, often beating the previous year's submissions by no more than a single percentage point in accuracy. In 2012, AlexNet beat the previous winner by 10 percent. These systems are called transformers. Since Google researchers published the first paper on them in 2017, the pace of progress has been staggering. Soon after, OpenAI released GPT-2. (GPT stands for generative pre-trained transformer.)[306]
2016	The pseudonymous entity Satoshi Nakamoto introduced **Bitcoin**, using **blockchain** technology to enable decentralized and secure digital transactions, paving the way for

[304] Steve Jobs by Walter Isaacson, 2011

[305] Cloud Computing: Concepts, Technology & Architecture by Thomas Erl, Zaigham Mahmood, and Ricardo Puttini, 2013

[306] The Coming Wave: Technology, Power, and the 21st Century by Mustafa Suleyman and Michael Bhaskar, September 2023; Accessed electronically through Kindle 02 Oct 2023

Year	Milestone
	cryptocurrencies and distributed ledgers.[307]
2019	**Starlink** launches its first satellites.[308]
2022	OpenAI launches **ChatGPT**[309] to the public which kicks off a major AI-hype cycle partly because this is the first time such (easy) AI tools are put in the hands of everyone and anyone. Within 5 days, the platform reached 1 million users.[310]
2024	Anthropic introduces the **Model Context Protocol (MCP)** - an open standard, open-source framework to standardize the way artificial intelligence (AI) models like large language models (LLMs) integrate and share data with external tools, systems, and data sources.[311]
2024	**Bot traffic surpassed human traffic on the Internet** for the first time. Imperva's 2025 *Bad Bot Report* found that 51% of Internet traffic in 2024 was from bots. Perhaps more scary is that 37% of Internet traffic was from "bad" bots.[312]
2025	The term **vibe coding** was coined by Andrej Karpathy where he described it as "*where you fully give in to the vibes, embrace exponentials, and forget that the code even exists*". The concept is to allow the Large Language Model to produce the necessary code to build webpages or applications. When describing the work, Andrej noted *"I just see stuff, say stuff, run stuff, and copy paste stuff, and it mostly works*".[313] [314]

[307] Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World by Don Tapscott and Alex Tapscott, 2016

[308] Satellite Communications by Everything Everywhere Daily podcast; Accessed 19 July 2025; Internet Archive

[309] Introducing ChatGPT, OpenAI, 30 November 2022; Accessed 20 Jun 2025; Internet Archive

[310] The Latest ChatGPT Statistics and User Trends (2022-2025), wisernotify.com; Accessed 12 June 2025; Internet Archive

[311] Anthropic releases Model Context Protocol to standardize AI-data integration by Emilia David, VentureBeat, 25 November 2024; Accessed 20 July 2025; Internet Archive

[312] 2025 Bad Bot Report by Imperva; Accessed 15 August 2025; Internet Archive; PDF

[313] "There's a new kind of coding I call "vibe coding", where you fully give in to the vibes, embrace exponentials, and forget that the code even exists", by Andrej Karpathy (@karpathy), 02 February 2025; Accessed on 20 July 2025; PDF

[314] My first attempt at vibe coding by Tyler Shields, TechTarget, 20 July 2025; Internet Archive

Change Log

Date	Action taken
03 August 2025	Launch
23 August 2025	Additions: ● Car phone (1946) ● ALOHAnet (1971) ● Packet Radio Network - PRNET (1973) ● Quantum computer (1980, 1994, 1998) ● Rechargeable lithium-ion battery (1991) ● QR code (1994) ● Google Earth (2005) ● Bot traffic surpassed human traffic (2024)
30 August 2025	Additions: ● Javascript (1995)
11 October 2025	Additions: ● More detail in 1983 DNS entry including RFC 882 and 920 ● Added model number, specs and Microsoft connection to Altair entry in 1975 ● Memex and paper "As We May Think" by Vannevar Bush