

# Invention of the internet – research paper

[Technology](#), [Internet](#)



Post-1945 History Invention of the Internet - Research Paper The Invention of the Internet Is one of the more significant events of our century. It changed the way we do business around the world, It changed the way we communicate, and It changed the way we educate and entertain ourselves. Some may bunch the invention of Internet with the overall technology advancement of our recent history, but I believe it stands on its own when it comes to significance it makes in our daily lives and variety in which it is being used.

Without the world wide web we would not have the convenience of ordering and processing products from round the globe in such a timely fashion. We would not have the convenience of talking with someone across the world with audio and video feedback as we do today. Children as well as adults wouldn't be able to play video games with people that might be sitting in a country across the ocean, or the next town over. There Is no denying that we must attribute the development of the Internet to some other relevant Inventions In the field.

The telegraph, telephone, radio, and computer set the stage for our rapid decent to the Internet and other related technological innovations. Let's briefly look at the time line of these significant inventions. In 1836 the telegraph is invented, a patent was submitted by Cooke and Wheatstone. This brought about the revolution of human communications. The telegraph used the Morse Code to communicate between two points. This is not unlike the way computers communicate today, the modern day PC's use binary code (0/1 's) to deliver data. Of course binary code is much faster.

The years between 1858 and 1866 brought us the Transatlantic cable. It allowed direct instantaneous communication across the Atlantic. Today, the cables connect all continents and are still a main hub of telecommunications. In 1876 Alexander Graham Bell exhibits the Telephone. The telephone exchanges provide the backbone of Internet connection even up to now. Modems provide Digital to Audio conversions to allow computers to connect over the telephone network. In 1957 USSR launches Sputnik which was the first artificial earth satellite. This launched the start of global telecommunications.

Satellites play an important role in transmitting all sorts of data today. In response to this U. S. Forms the Advanced Research Projects Agency, also known as ARPA, within the Department of Defense. This was done to establish U. S. Lead in science and technology applicable to the military. In the period between 1962 and 1968 Packet-switching (AS) is developed. Internet relies on packets to transfer data. The origin of AS was military based. It was developed for utmost security in transferring information of networks, meaning It had no single outage points.

The way it works is data is split into tiny packets that may take different routes to a destination, this made it hard to eavesdrop on the messages. It provided redundancy because more than one route is available, if one route goes down then another may be followed. This was also developed so that the networks can withstand large scale destruction, for example a commissioned by the DoD to research networking. In 1971 is the first year

that people communicated over a network. The collection of 15 nodes (23 hosts) on the ARPANET.

This is also the time when e-mail was invented, a program to send messages across a distributed network. E-mail is still the main way of inter-person communication on the Internet today. People will make an extensive use of E-mail for the rest of their lives in today's world. 1972 brought us the first public demonstration of ARPANET with 40 machines. This year was also when the Intertwining Working Group (OWING) was created to address the need for establishing agreed upon protocols. Telnet was developed at this time, which is still a relevant means of inter-machine connection today. (Marshall, 2011).

This is just a brief introduction to the technologies that led to the invention of the Internet that we know today. The Internet was developed and presented to the world in 1973 by an American computer scientist Vinton Cerf. It was a project sponsored by United States Department of Defense Advanced Research Projects Agency (ARPA). The Internet began as a computer network of ARPA that linked computer networks at several universities and research laboratories in the United States. The Internet concept has gone through many iterations and phases of development until in 1983 when it was rolled out for the public.

The origins of the Internet are quite fascinating. An interesting bit about its early beginning, as seen posted on a blog by Walt Howe titled "A Brief History of the Internet". The article reads: "Did Al Gore invent the Internet? According to a CNN transcript of an interview with Wolf Blitzer, Al Gore said,

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" During y service in the United States Congress, I took the initiative in creating the Internet. " AH Gore was not yet in Congress in 1969 when ARPANET started, or in 1974 when the term Internet first came into use. Gore was elected to Congress in 1976.

In fairness, Bob Kahn and Pint Cert. acknowledge in a paper titled " AH Gore and the Internet", that Gore has probably done more than any other elected official to support the growth and development of the Internet from the sass's to the present. " No one would have ever thought that what was originally developed as a DoD reject to turn into a worldwide phenomena that changed the way we live our day to day lives. Let's look at the Internet's history in its infant stages when it was Just a vivid concept in the minds of our brightest students and professors this country has seen.

Liner (2003) and his associates note that " The first recorded description of the social interactions that could be enabled through networking was a series of memos written by J. C. R. Likelier of MIT in August 1962 discussing his " Galactic Network" concept. He envisioned a globally interconnected set of computers through which everyone could quickly access data and programs from any site. " This was the first concept of the Internet we know today and it has become more than he ever envisioned. Liner goes on to reveal that " While at DARPA he O. C. R.

Likelier) convinced his successors at DARPA, Ivan Sutherland, Bob Taylor, and MIT researcher Lawrence G. Roberts, of the importance of this networking concept. " DARPA stands for Defense Advanced Research Projects Agency . This shows how an idea born within one brilliant mind and

with support of colleagues can grow to gigantic proportions. This project wouldn't otherwise be possible without the contributions of paper, he notes that " Beginning their work in 1969, Repast's (later renamed to DARPA) teams of hardware and software engineers configured four computers as an experimental network.

These computers were located at: Stanford Research Institute, University of California at Los Angeles, University of California at Santa Barbara and University of Utah. Bolt, Breaker, and Newman Inc. [BIN] coordinated the experiment and was awarded several contracts by the DoD. BIN built the first Interface Message Processors [IMP]. The IMP is the mother of the often heard Internet Jargon, " File Transfer Protocol. " Monsoon goes on to reveal that " On September 2, 1969, IMPs were first used with intermittent success to transfer information among these major research institutions. Monsoon (1997) writes the following about the first public presentation of the " barely" working network; " October 1972 in Washington, DC, the first International Conference on Computers and Communities was convened. Here, over 1, 000 attendees witnessed the first public display of ARPANET (Bolt, Breaker ; Newman, 1981). Tollhouse et al. (1994) described the demonstration as flawless, but the behind the scenes preparations bordered on comical. The network was not operational until seconds prior to the presentation.

Yet, every observer was profoundly impressed with the demonstration. Some thought it has been fully functional for years! " The flawless demonstration so impressed the attendees that they returned to their research centers with a vision of the promise of greater things to come" (p. 29). Tollhouse et al.

(1994) is accurate, but the science behind the development of the Internet was sloppy! Yet, any professor of research methods knows that the mother of cutting edge research is unleashed and sometimes undisciplined creativity.

Above is a perfect example of what it takes to have a successful breakthrough in technology. The invention might not be perfect, or may not be working as you might have intended, but one thing is certain, you absolutely must get the community to see the potential of your invention. That may be all you for it to take off ground and be developed to its full potential. The collective Internet consists of many parts, its protocols and languages working together to bring us a whole and complete system. There were three major advances that aided the evolution of the Internet.

First, the development of the TCP/IP Transmission Control Protocol/Lenten Protocol) was essential in bringing a more user friendly experience to the end user (you and me), then its predecessor NC (Network Control Program). Second, was the development of Ethernet by the well known to us company Xerox. Many would never associate this company with helping to revolutionize the Internet and this is mainly due to the fact that Xerox is best known for developing/distributing printing technologies. Third, would be the establishment of contact between DARPA, BIN and University of California at Berkeley to invent a low-cost TCP/IP protocol.

This was done in effort to maximize the use of the network among institutions of higher education (Monsoon, 1997). It is easy to conclude that without the cooperation of the big three sources, government, corporations

and university researchers, we would not have wonderful and, at times, invaluable resource such as Internet today. It is widely know that the Internet is based on the key underlying technical idea, which is that of open architecture available network architecture and make it work with any other network. By the early ass's the network traffic has increased so much that it became sluggish. The result and to try to fix this problem something needed to be done. According to Maroons (1997) in 1983 ARPANET was split. MILLET was used for military sites and ARPANET was used for non-military traffic. " this however did not resolve the issue because soon after the growth of the network caused the second slow down. " To deal with the unceasing growth, standardized protocols were required by the Secretary of Defense. Unknown at the time, these standardization laid the ground work for the successful centralization of the Internet. Utilizing these standards, the National Science Foundation funded or partially funded six supercomputer centers known as NEST. These centers merged into a backbone of the Internet. " (Maroon, 1997). It seems that every hurdle that was placed in the way of development of the Internet led to some sort of a regulation or standardization that ended up growing and strengthening it as a whole. " NEST permitted an easier access in order for researchers to share their ideas in a more user-friendly environment. " This innovation was developed so that the scientists could spend more of their time sharing and developing ideas rather than figuring out the network.

A key innovation hat came around November of 1983 came from Paul Micrometers of University of Southern California. He is the one who



developed the " Domain Name System". The purpose was " To compensate for the unexpected increase of addresses, he proposed an international system which includes seven " top-level domains": com (commercial), deed (educational), gob (government), mil (military), net (networking organizations), org (non-commercial organizations), into (international organizations, like the United Nations). " (Maroon, 1997).

The Internet kept growing wildly throughout the ass's. No one company or organization could claim any authority over the Internet. The best way to describe the success of the Internet is by attributing it to the " cooperation" among its users. Perhaps the most significant innovation that came for this kind of cooperation is the World Wide Web. The World Wide Web was developed in 1989 by English computer scientist Timothy Burners-Lee for the European Organization for Nuclear Research. " The Internet is a worldwide network. As soon as Mosaic was written in 1993 by students (Marc Andresen and Eric Bin) at the National Center for Supercomputing Applications (University of Illinois at Urbana-Champaign), a new computer milestone emerged. The WWW exploded into popularity because Mosaic is a user-friendly and intuitive software that could be adapted for non-UNIX computers. " (Maroon, 1997). Following Mosaic there emerged the Web browser many may still remember as Netscape, which was shortly followed by Internet Explorer. In 1993 the number of hosts was over 2 million and over 600 www sites populated the Internet.

This year the business and media corporations really take notice of the Internet. The US White House and United Nations Come online. 1994 brought

with it a centralization like never seen before. Internet celebrates 25 years in service. Local communities begin to be wired up to the Internet. Shopping malls, and banks come online. The WWW edges out Telnet to become the 2nd most popular service on the Net, behind FTP years after the public distribution of the Internet passes by. The Internet becomes bigger and more complicated at breakneck speed.

But, with this rate of growth there bound to be some growing pains along the way. " First, Stool's (1989) *The Cuckoo's Egg* discusses the most cited and most exciting problem that emerged from the Internet. Stool describes how he stumbled into a ring of eastern block spies. The process of his discovery and cooperation has inspired the Internet community. On the other extreme and dark side of the Internet, we have the case of the Internet worm. Burst (1990) outlines the actions and consequences of Robert Morris, son of a scientist of the National Security Agency's Computer Security Council, and a Cornell graduate student.

He developed a computer program that could have clogged the entire Internet. Although he claimed his action was an accident and that he had no ill intentions, he received a three-year sentence. No physical damage was inflicted nor was any information lost, but many human and computer hours were spent in a network clean-up. Schmidt and Dairy (n. D. /1997) state that the effect of the worm was devastating while Burst (1990) estimates that approximately 10% of computers connected to the Internet were affected.