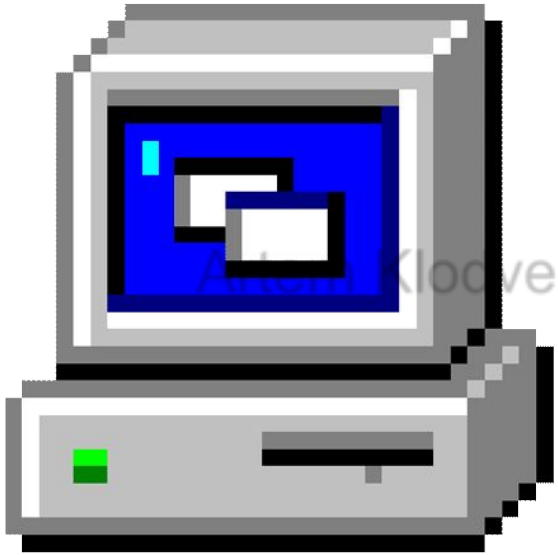
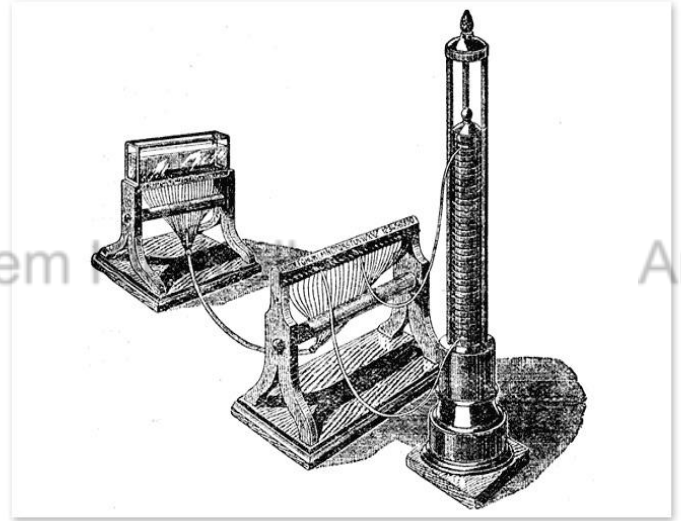
THE EVOLUTION OF MODERN COMPUTER NETWORKS

Introduction

The history of the Internet has its origin in the efforts to build and interconnect computer networks that arose from research and development in the United States and involved international collaboration, particularly with researchers in the United Kingdom and France.



Precursors



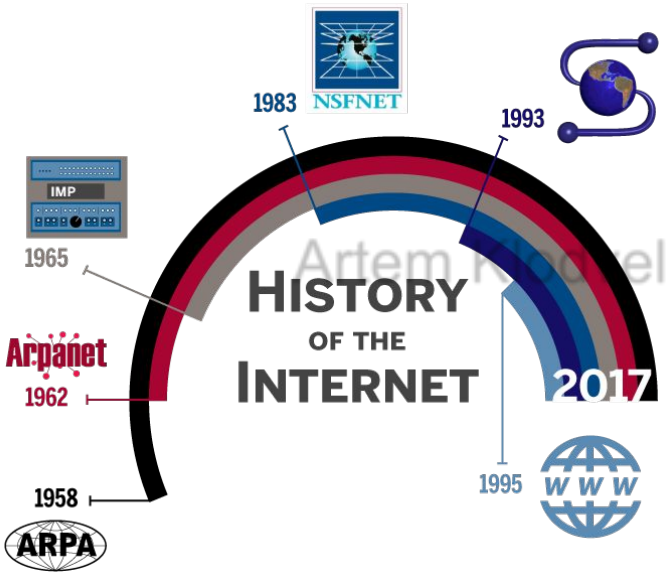
the telegraph

The concept of data communication – transmitting data between two different places through an electromagnetic medium such as radio or an electric wire – pre-dates the introduction of the first computers. Such communication systems were typically limited to point to point communication between two end devices. Semaphore lines, telegraph systems and telex machines can be considered early precursors of this kind of communication. The telegraph in the late 19th century was the first fully digital communication system.

ARPANET

February 7, 1958 was the day Secretary of Defense Neil McElroy signed Department of Defense Directive 5105.15. His signature launched the Defense Advanced Research Projects Agency (DARPA). The creation of the agency is an important moment in science history because it led to the creation of the internet we recognize today.

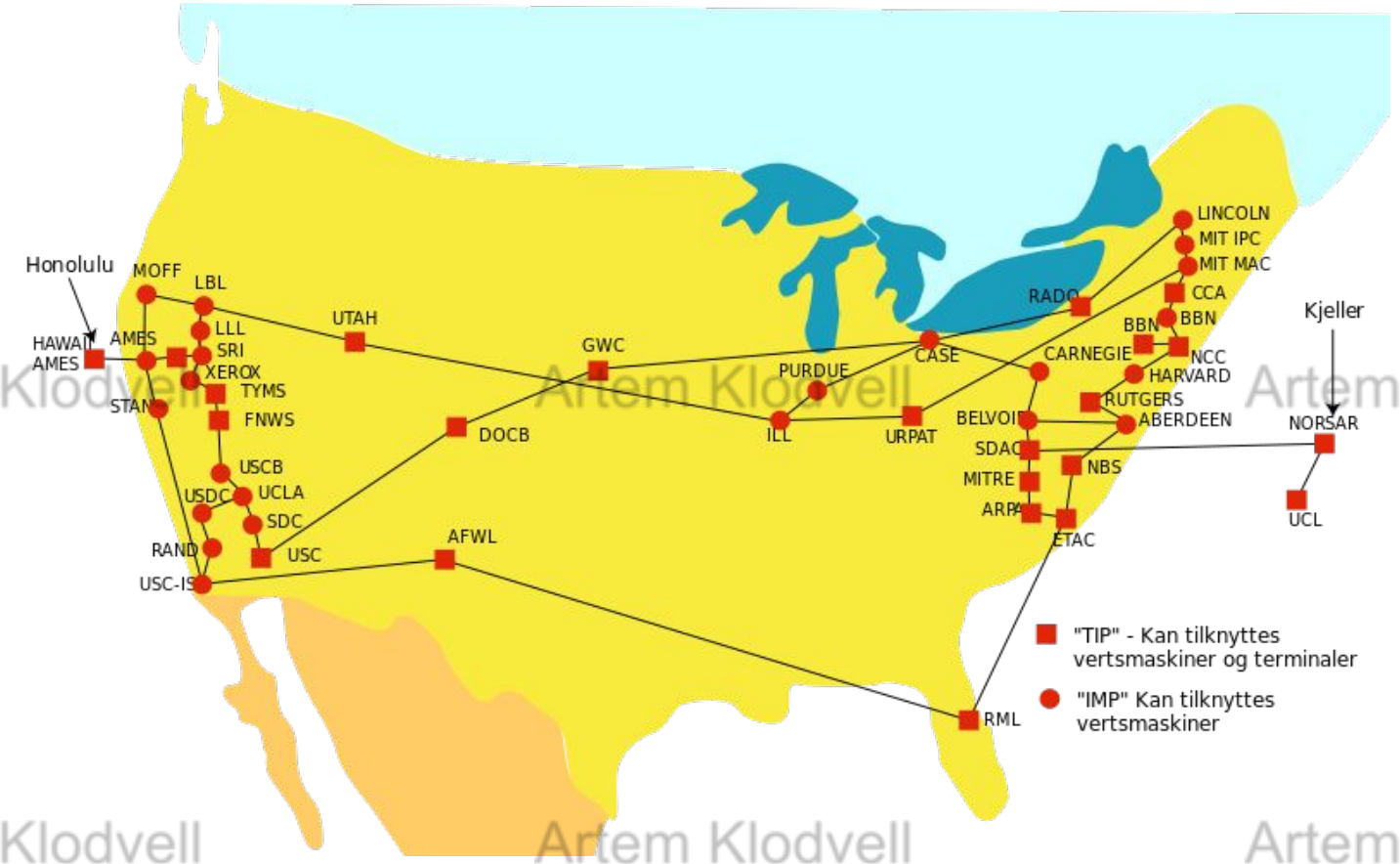
The Cold War was in full swing and the US was worried about the Soviet Union's growing scientific prowess. Because of Sputnik 1 the US military was concerned about the Soviet Union attacking from space and destroying the US long-distance communications network.



The existing national defense network relied on telephone lines and wires that were susceptible to damage. In 1962, J.C.R. Licklider, a scientist from ARPA and MIT, suggested connecting computers to keep a communications network active in the US in the event of a nuclear attack.

This network came to be known as the ARPA Network, or ARPAnet. Packet switching made data transmission possible in 1965, and by 1969, military contractor Bolt, Beranek, and Newman (BBN) developed an early form of routing devices known as interface message processors, which revolutionized data transmission.

The map of ARPAnet



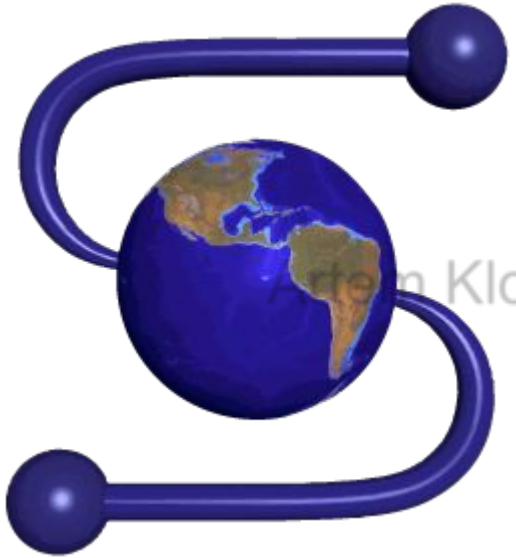
NSFNET

The Stanford University Network was the first local area network connecting distant workstations. In 1981, the NSF expanded ARPAnet to national computer science researchers when it funded the Computer Science Network (CSnet). BBN assumed CSnet operation management in three years later.

The NSFnet eventually became a linked resource for the five supercomputing centers across the US, connecting researchers to regional networks, and then on to nearly 200 subsidiary networks. NSFnet took on the role of internet backbone across the US.

The Mosaic web browser, created in 1993 at the National Center for Supercomputing Applications, was a key development that emerged from the NSFnet. Mosaic was the first to show images in line with text, and it offered many other graphical user interface norms we've come to expect today (like the browser's URL address bar and back/forward/reload options for viewing web-pages.)

Eventually the NSFnet modified its acceptable use policy for commercial use, and by 1995, it was decommissioned. Soon, the internet provider model created network access points that allowed the for-profit, commercial side of the internet to be developed.



Conclusion

The internet went from being an obscure research idea to a technology that is used by over 3.2 billion people in less than sixty years.

Computer science has moved fast, but hold on tight, you can be sure it’s not done evolving.