

RADICAL KNOWLEDGE

Radical Moments in the Recent History of Communication and Distribution of Knowledge
- a Compressed Timeline of Milestones and Events, Some Thoughts on the
Future of the Internet and the Potential Freedom that Technology Provides

Jan Christensen, 2022-03-25

ARPAnet is often mentioned as the very origin of the Internet, which was developed between 1967-1971 by a number of researchers from Massachusetts Institute of Technology (MIT) and the Advanced Research Projects Agency (DARPA) of the United States Department of Defense. Almost twenty years of tinkering with networks and various standards of communication would speed by, before Tim Berners-Lee introduced the Hypertext Transfer Protocol (HTTP) and what we know as the World Wide Web while working at CERN in Switzerland in 1989.

In the early 1990s, with 8-bit and 16-bit computing, coders pushed the limits of the hardware with artistically advanced intro demos of only very few kilobytes for cracked computer games and software. Because the dial-up computer bulletin board services were not widely available, content was distributed as cassette tapes or disks by postal service through physical networks of various acquaintances. The point being made is how this represented the early stages of sharing, research, knowledge and technological progress.

By 1999 Napster, by Shawn Fanning and Sean Parker, exploded online with the sharing of music having the most detrimental effect on the music industry at the time. Napster could also be said to introduce the real-time online community aspect to the mainstream through its integrated chat service, although IRC (Internet Relay Chat) had existed since 1988, developed by Jarkko Oikarinen, at the University of Oulu in Finland. That was similar to some aspects of what is known as social media today, which might not have become such an all encompassing phenomenon without the arrival of the smart phone in 2002 and the touchscreen of Apple's iPhone in 2007, which soon proved to be an extension of the human body.

As Napster got shut down rather quickly, the BitTorrent protocol by Bram Cohen became the preferred way to share data already in 2001, and there is very a specific concept of BitTorrent which would later come to play an important role in what is known as the blockchain today, namely the decentralized aspect of Satoshi Nakamoto's Bitcoin in 2009. Soon other cryptocurrencies would follow.

BitTorrent technology and the original blockchain have vastly different needs: The former is meant to enable file sharing with a highly efficient download mechanism, while the latter is an infrastructure meant to facilitate collaboration while maintaining authenticity. Both share the feature of implementing cryptography without relying on any central authority.

Ethereum, which was created by Vitalik Buterin, Gavin Wood and other crypto enthusiasts in 2015, is considered a second generation blockchain because it introduced the so-called smart contract, which could be described as programs stored on a blockchain that run when predetermined conditions are met, also described as a global settlement layer.

A blockchain which runs executable instructions is essentially the technology that is necessary in order to facilitate the existence of non-fungible tokens, known as NFTs. This technology is also assumed to be fundamental to the the framework of the future of the Internet, also popularized and coined by certain companies as the Metaverse or Web3 as of 2022. The blockchain already influences the use of financial services, data processing, entertainment and artistic expressions.

The carbon footprint of decentralized blockchains is a challenging environmental obstacle with regards to the fundamentals of security, as the costs of maintaining operations and interacting with the nodes represent financial considerations. Solving this will probably allow the use of such technology on a much more wide-spread level of society. Some of the candidates in line are Ethereum as it adds a consensus layer to the existing execution layer, the Polygon scalability platform for Ethereum and completely different blockchains such as Algorand and Avalanche.

Ultimately, the growing interest in these open, free technologies happen as we also see brooding awareness of the power of the dominating companies that have ruled the Internet by scrambling users' information, blasting personalized advertisements back at them with every click they make. Meta Platforms, the company previously known as Facebook which also owns Instagram and WhatsApp, reported declining numbers of users for the first time in February 2022. They also shut down their own attempt at creating a centralized payment system, Diem (originally known as Libra), because of regulatory backlash. The road ahead seems even brighter for new inventions and projects that reboot the current condition of the Internet outside of the traditional business of data harvesting and advertisements.

Companies with centralized blockchains like Ripple (XRP) face regulatory difficulties. Because the original decentralized blockchains such as Bitcoin and Ethereum were developed outside of the

financial establishment, they've proved more resilient to governmental control and regulations. The new organizational definition, DAO (Decentralized Autonomous Organization), provides a new structure for management and ownership of projects that are connected to the blockchain. The DAO challenges the existing legal definitions in many countries while providing freedom across borders and secures democratic processes based on the owners' stake in a project. Still, it is important to note that there might be situations that require legal commitment and actual representation. Also, mainstream adaptation will only happen when there are universally accepted rules on crypto matters, such as reporting the users' holdings to authorities, taxes levied and public fees. The financial aspect of crypto technology and non-fungible tokens to investors, collectors and technology enthusiasts easily distract the conversation, but also ensures a certain focus and connection to the real world, as it touches upon laws and regulations, finance and politics.

The big technology companies are prevented from participating directly in parts of this development because of their listings as public companies. Amazon, Microsoft, Google and IBM provide infrastructure and certain services such as data processing and security. Facebook and Google keep collecting information based on old ideas of advertising. Intel, Apple and Samsung produce physical products which stay essential however abstract the future will ever be. Steam, Nintendo, Microsoft, Electronic Arts and Sony face the legal problems of incorporating money-like tokens to their worlds of games. None of these companies are able to participate directly in the development of cryptocurrencies because the governments around the world are not going to allow any of them to literally print money themselves, undermining central banks and their existing national currencies. New business ideas and technological approaches might suddenly give rise and dwarf the dominating players of today, including Google and Meta Platforms, who have grown too big to adjust to the new situation, especially as the future users get even more concerned with privacy and have conscious attitudes to social media and the use of digital services.

What used to be simple bits and bytes in the pioneering days of the Internet - occasionally hacked, cracked and freely copied and distributed in the 90s - became unique data and valuable information thanks to the invention of the blockchain. It secures the imprint of authenticity, documents the ownership and solves several problems related to piracy and distribution. The fact that the invention of blockchain and smart contracts happened partly outside of the establishment and the universities, the big technology companies or the military research complex (which were admittedly deeply involved in the development of the Internet at large as well as cryptography), is another fascinating aspect of this story and in line with fundamental notions of personal freedom and democracy – essentially the cyberpunk's ultimate dream.