Editorial

Blockchain technology: the 3rd information revolution?

Direct democracy is a form of democracy that was practiced in ancient times in Polis (or City-States) in Greece known as "Pure Democracy". It differs from the "Representative Democracy", the major form of modern society democracies. The main difference between the two is that the former has no "representatives", while the latter has them elected by citizens. As electing representatives has been astronomically expensive and burdensome to national budgets, people have been hoping to eliminate representatives in systems as appropriate. More than anything else, people have been hoping to participate in deliberating political issues directly by themselves, should the conditions are met, such as time and the relevant systems are available. If possible, they can catch the two birds at one stone by participating in the political issues directly as well as minimizing the election costs.

Blockchain technology might offer a solution to the issue of eliminating representatives or central organizations in the society, such as financing, networking and even governmental systems. Especially in information technologies, what if people could use a system without a central authorizing institution for financial transactions? People do not need to pay the transfer charges to intermediating banks by using virtual currencies such as Bitcoins (Nakamoto). This system also does not need to care about the Internet Corporation for Assigned Names and Numbers (ICANN) anymore, as it is not necessary to control over the internet addresses (ICANN, 1998). And this could be also a hacking free network (Ahn). On October 31, 2008, a person who identified himself as Nakamoto released a paper "A Peer-to-Peer Electronic Cash System", on The Cryptography Mailing list at www.metzdowd.com, explaining a peer-to-peer version of electronic cash. Nakamoto introduced Bitcoin that initiated the network and the first units of a cryptocurrency, now known as Bitcoins. As of December 10, 2016, Nakamoto's known addresses contain roughly one million Bitcoins equivalent of around U$922m (Nakamoto; Block chain.info/chart). As of the date, Bitcoin users were reached 484,668 members withholding 189,820,174 Bitcoins on hands. In a nutshell, Bitcoin is not only a vast success but also challenges the financial industry from its foundation.

The impact of Bitcoin to the modern society is amplified by Blockchain which is originally designed to support Bitcoins. It enables Bitcoin by effectively and successfully protecting from numerous kinds of malicious attempts of tampering and revision. It did not take long for people to realize that Blockchain could be applied in many different business aspects of modern society, such as financial transactions, business, IoT, networking, governmental systems, military and many other areas; it might bring human beings with the third information revolution in the future after the second information revolution of internet.

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Blockchain is a specific type of Distributed Ledger Technology (DLT) and a way of representing transactions in P2P networks into blocks. Distributed ledger means that no single centralized authority, as known as a trusted third party (i.e. clearinghouse, escrow service, national registry, etc.) authenticates and executes transactions. Instead, some or all participating members (or computer nodes) in a network are engaged to verify each and every transaction and to agree to it without a middleman.

The fact that DLT requires no middle man for a transaction opens up a whole new world of business: a business contract may be entered and autonomously executed with DLT. Such a business contract (also known as *Smart Contract*) may be extended to a business organization and make it to be purely algorithmic and autonomous. To make it short, Smart Contract enables a business organization with its bylaws written with a script programming language developed only for Smart Contract. A business with Smart Contract is purely autonomous and therefore called a Decentralized Autonomous Organization (DAO). There are about 330 DAOs in the world right now, sprung up in the year 2016 alone.

In this age of such rapid changes in technology, the APJIE is willing to take an initiative action in publishing the next volume of the APJIE 11, No. 3, a special issue on this topic in December 2017. The grand theme of the special issue is on the "Challenges and Changes in the Age of Smart Contracts".

The APJIE Desk, in pursuit of the goal achievement, adopted six sub-themes for the special issue including:

(1) Decentralized Automated Organizations (DAO) and Changes in Business.

(2) Decentralized Applications (DApps) and Business Development.

(3) Landscape Changes of Entrepreneurship and Business by DLT.

(4) Central Bank Issued Digital Currencies and their Effect.

(5) DLT in Capital Markets and Entrepreneurship.

(6) Challenges for Entrepreneurs in DAO and DApps.

The APJIE will organize an international conference under the grand theme of "Challenges and Changes in the Age of Smart Contracts", which will be officially announced under separate cover. The APJIE Desk sincerely wishes that the publication of the special issue and holding an international conference on the themes would contribute to the development of advanced technologies as well as many new applications of the technologies in the fields to improve the quality of human life.

Finally, the APJIE Desk is very happy to announce that Professor Benjamin Yuan, National Chiao Tung University, Taiwan, and Professor Yuli Zhang, Dean of Business School, Nankai University, China, were invited to join the board of associate editors of the APJIE.

Bong Jin Cho
PhD, Editor in Chief

Sun Young Park
PhD, Co Editor in Chief

References

Ahn, S., "Block chain", *Technology World*, IT Terminology, available at: www.bloter.net B BLOTER. NET

Block chain.info/chart, on January 7, 2017, one Bitcoin was equivalent to U$1127, while on January 22, 2017, one Bitcoin was worth equivalent to U$922.

ICANN (1998), "International groups of academia, business, technology and users with official US governmental approval", available at: https://ICANN.org

Nakamoto, S., "Bitcoin: a peer-to-peer electronic cash system", available at: https://bitcoin.org/bitcoin.pdf

Nakamoto, S., available at: http://en.wikepedia.org/wiki/Satoshi_Nakamoto, pp. 1-2.

Satoshi Nakamoto is recognized as an Australian former academic, Craig Steven Wright, however, it was never confirmed by himself. Please refer to the (http://en.wikepedia.org/wiki/Satoshi_Nakamoto), pp. 3-5.

Additional readings

DAOs, DACs, DAs and More: An Incomplete Terminology Guide – Ethereum Blog.

Decentralized Autonomous Organization to Automate Governance, Final Draft – Under Review by Christoph Jentzsch Founder & CTO Slock.it, CHRISTOPH.JENTZSCH@SLOCK.IT.

Nelson, M. (2008), The Byzantine Generals Problem, Mark Nelson, www.drdobbs.com, March 18, 2008.