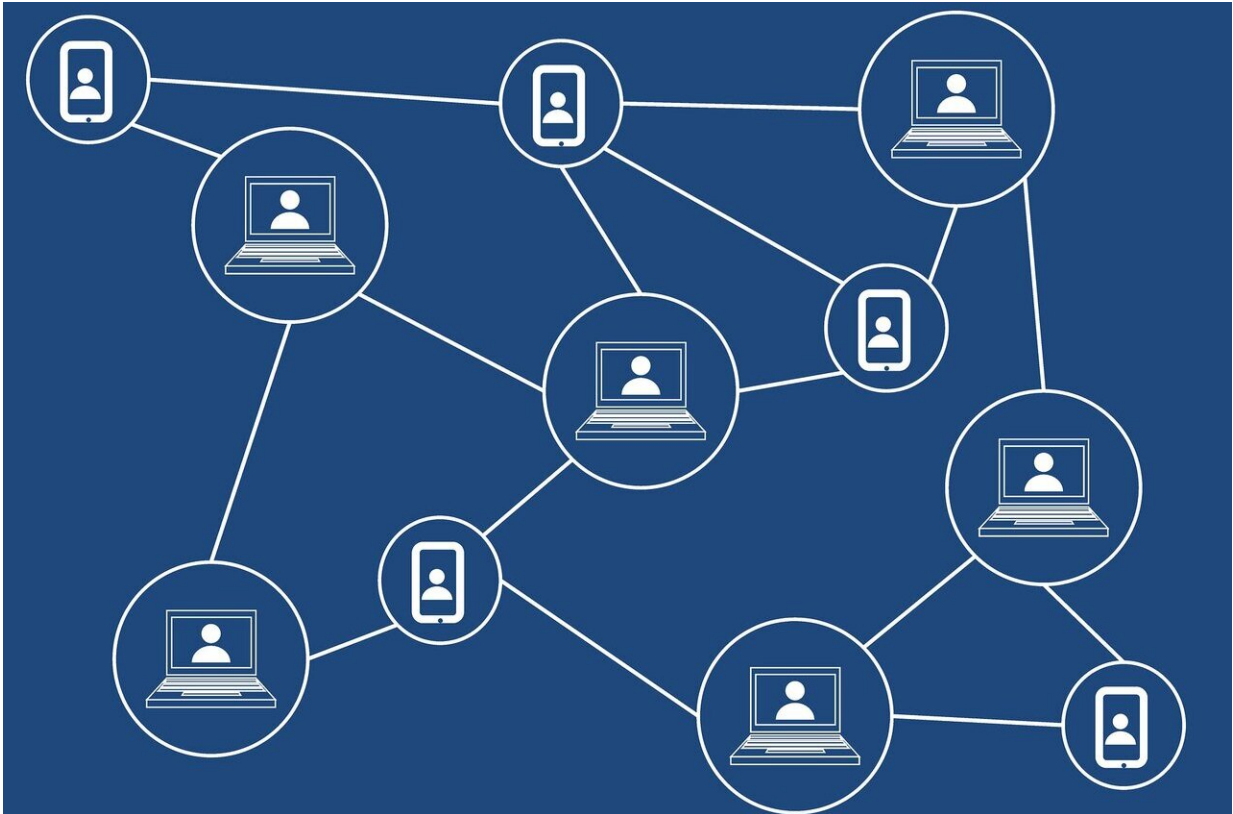


Voting on a blockchain

April 1 2020, by David Bradley



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The "blockchain" concept on which cryptocurrencies work might be extrapolated to many other areas of life, such as voting systems, where its incontrovertible chain of decisions and evidence could ensure validity in a political or other election.

Writing in the *International Journal of Web and Grid Services*, a team from Lodz University of Technology, in Łódź, Poland, explain how it was the cryptocurrency Bitcoin, introduced by an individual (or a group) under the pseudonym Satoshi Nakamoto in 2008, that revealed the blockchain concept. The blockchain concept was invented to be used to give value to a cryptocurrency but its description shows that it might be used in other areas equally as well:

A blockchain is essentially an open and distributed ledger, a growing list of records (blocks) that are linked sequentially and encrypted. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data (generally represented as a mathematical Merkle tree). The nature of a blockchain means that previous entries cannot be modified without all users seeing the modification, which makes it tamperproof.

Aneta Poniszewska-Marańda, Michał Pawlak, and Jakub Guziur of the Institute of Information Technology at LUT, explain that current [electronic voting](#) systems have their pros and cons. However, a common problem with all of the approaches used so far is that they suffer from inadequate transparency and auditability. There are four main approaches to electronic voting—dedicated voting machines, voting with optical scanning voting machines, voting with electronic ballot printers, and voting through the internet. Each has benefits, each has drawbacks. Moreover, the field is very fragmented by diverse technology and solutions to each of those main four methods.

This, the team suggests, is where blockchain would come into its own. Blockchain could underpin an existing approach to electronic voting but add the requisite ability to supervise the process and make it auditable to preclude fraud. Not only might the blockchain approach be used to prevent fraud it opens up the voting system to independent inspection beyond those holding the ballot, whether government, company board or

other organization. It opens it up to being audited and inspected without compromising voter anonymity or the integrity of the result.

In theory.

The team concedes that there are limitations to even the [blockchain](#) approach at the moment in that voter anonymity might be compromised to a limited degree by the proximity of given blocks in the system. However, they suggest this will be surmountable with additional research.

More information: Aneta Poniszewska Marańda et al. Auditable blockchain voting system - the blockchain technology toward the electronic voting process, *International Journal of Web and Grid Services* (2020). [DOI: 10.1504/IJWGS.2020.106102](https://doi.org/10.1504/IJWGS.2020.106102)

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