

THE BLOCKCHAIN ENERGIZER

July 13, 2017

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K&L Gates Blockchain Energizer - Volume 8

A bi-weekly update on applications of blockchain technology in the energy industry

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There is a lot of buzz around blockchain technology and its potential to revolutionize a wide range of industries from finance and healthcare to real estate and supply chain management. Reports estimate that over \$1.4 billion was invested in blockchain startups in 2016 alone, and many institutions and companies are forming partnerships to explore how blockchain ledgers and smart contracts can be deployed to manage and share data, create transactional efficiencies, and reduce costs.

While virtual currencies and blockchain technology in the financial services industry have been the subject of significant debate and discussion, blockchain applications that could transform the energy industry have received comparatively less attention. Every other week, the K&L Gates' Blockchain Energizer will highlight emerging issues or stories relating to the use of blockchain technology in the energy space. To subscribe to the Blockchain Energizer newsletter, please click [here](#).

Investment in Energy Blockchain Applications is Heating Up

- Tokyo Electric Power Company Holdings, Inc. ("TEPCO") [recently announced](#) a €3 million Series A investment in Conjoule GmbH, a Germany-based start-up that is developing peer-to-peer energy markets powered by blockchain technology. Conjoule raised a total of €4.5 million in the round.
- According to the [company's website](#), Conjoule has developed a blockchain-powered platform which connects owners of rooftop solar photovoltaic solar installations with local customers who wish to purchase green power. The platform provides owners with a list of local public institutions and businesses who wish to purchase the power and allows the owners to choose who they wish to supply. Several pilot programs using the platform have been operating in Germany since October 2016.
- This is not TEPCO's first investment in energy blockchain applications. The company is also one of the backers of Rocky Mountain Institute's Energy Web Foundation, which was [formed earlier this year](#) to "accelerate the commercial deployment of blockchain technology in the energy sector."
- While investment in blockchain energy applications continues to multiply, blockchain developers and market participants will need to work together to ensure that platforms are developed with an eye towards interoperability in order to ensure that the energy industry can realize the large scale network effects of the technology.

New Forms of Consensus Being Developed to Meet the Needs of Business Blockchains

- Blockchain developer AMIS [recently announced](#) that it has developed a new consensus algorithm that will be used in connection with the Ethereum platform to speed up the processing time for verifying data and transactions stored in Ethereum-based blockchains.
- The new consensus mechanism, dubbed the “Istanbul Byzantine fault tolerant consensus protocol” (“Istanbul BFT”) is designed for use on private blockchains where the parties to the network are known to one another, reducing the need for the rigorous and resource-heavy consensus protocol used by public blockchains such as Bitcoin.
- Unlike traditional “Proof of Work” consensus, where all of the parties to the network engage in resource-intensive “mining” to verify transactions, verification through the Istanbul BFT Protocol is conducted by a select group of pre-approved nodes, which are deemed to have “proof of authority.” The development of the Istanbul BFT Protocol represents an important step towards developing blockchain applications that are specifically tailored for business applications where the identities of parties to any transaction are known and anonymity is not a desirable feature.
- The Istanbul BFT consensus mechanism can also [reportedly](#) reduce the verification and settlement time for a blockchain network to less than one second and reduce energy consumption. Higher speed and capacity makes it more attractive for financial institutions and possibly the energy industry, which need to process high volumes of transactions on a regular basis. Reducing energy consumption also addresses a common criticism of Bitcoin network’s energy-intensive “proof of work” consensus mechanism.
- As blockchain technology continues to gain ground, it is likely that further forms of consensus mechanisms will evolve to meet the specific requirements and functions of the particular industries adopting the technology.

Blockchain Being Deployed to Optimize Shipping Container Management

- The Port of Antwerp (the “Port”) [announced](#) that it has partnered with blockchain developer T-Mining in order to develop a blockchain-based software to streamline and optimize shipping container handling.
- According to the Port, the existing processes for moving a shipping container from one location to another require more than thirty different parties, with an average of two hundred different interactions between them carried out via e-mail, phone, and fax. These processes account for up to half the cost of container transport. Additionally, there are security concerns because the PIN code associated with each container is shared among a large number of parties.
- Using T-Mining’s blockchain network, the Port hopes to overcome many of the costs and security concerns associated with conventional shipping container management. In particular, the platform will provide for a streamlined process to ensure that only authorized parties receive information about a particular container, without any possibility of the information being intercepted. Additionally, the use of a shared distributed ledger will ensure that shipping transactions will only go ahead if there is consensus among all participating parties to the transaction, reducing the risk of fraud.
- The pilot project, which involves a limited number of parties, is currently underway, and the goal is to implement the pilot program to serve paying customers by the end of 2017. Like so many of the other pilot projects announced so far this year, if this pilot achieves its objectives, similar applications could be rolled out to other shipping-intensive industries.

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