Emberly Clark's Blockchain for the Supply Chain

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1.0 What is Blockchain?

Blockchain is a technology that first came into prominence as the backbone of a "Cryptocurrency" named "Bitcoin."

In the above context, Blockchain Technology is used to implement the "Distributed Ledger" of Bitcoin transactions.

One advantage of Distributed Ledgers is that they don't have a single point of failure, making them more robust than Centralized Ledgers.

Another advantage is that each node/computer comprising the distributed ledger has a read-only copy of the blockchain as proof of every transaction ever executed. Because of the read only and distributed nature of the ledger, its history is incorruptible.

In the case of public Blockchains like Bitcoin, one of the biggest challenges is to prevent the addition of untrustworthy/invalid data to the existing ledger history. The solution to this problem is to employ a "consensus algorithm" that ensures the integrity of the data. In the case of Bitcoin, the consensus algorithm is called "Proof of Work" (AKA POW).

At a high level, Proof of Work algorithms incentivize "miners" to compete to add the next block (a set of transactions) to the Blockchain. The goal of a miner in the competition is to be the first to solve an extremely difficult and related cryptographic puzzle. As a reward, the winning miner receives (as of April 2017) 12.5 newly minted Bitcoins – and a small transaction fee. In this context, malicious attacks (e.g. double spending) are disincentivized due to the cost of such attacks.

On the downside, Proof of Work Consensus algorithms limit the scalability of Blockchain Applications to between 3 (Bitcoin) and 15 (Ethereum) per second.

2.0 Why Is Blockchain Technology Attracting Business Interest?

The answer is simple: Blockchain Technology can greatly enhance profitability for a significant number of business types.

The key enabling features for this are Blockchain's distributed nature, its visibility, its incorruptibility, and its enablement of "Smart Contracts" *.

* Smart Contracts enable businesses to exchange money, property, shares, or anything of value in a transparent, conflict-free way while avoiding the services of a middleman.

3.0 Corporate and Executive Imperatives

- Blockchain's business value-add will surge to more than $3.1 trillion by 2030 (Gartner).
- Blockchain has been the No. 1 search term on Gartner.com since January 2017*.

- Large companies are currently looking to Blockchain technology for potential solutions to business challenges and to explore new disruptive business opportunities (Gartner).

- Given the above, for CIOs it is necessary to understand what blockchain is, how it works, and more importantly, how the technology can be utilized to further mission-critical business priorities*.

- CIOs can (and should) now begin considering blockchain to avoid the risk of being left behind*.

  * Source: Gartner.com

4.0 Emberly Clark's Blockchain Solutions for Supply Chains

Emberly Clark's Blockchain Solutions for Supply Chains will improve the efficiency and profitability of Supply Chains* by minimizing delivery costs, minimizing errors, identifying problems more quickly, reducing/eliminating the need for audits, reducing fraud, and reducing delays deriving from paperwork (note that the processing of documents and information for a container shipment is estimated to cost from between 25% to more than 200% of the actual cost of physical transportation).

With an eye to the future, our solutions are built using a separation of concerns, where the “consensus” layer is completely decoupled from the blockchain itself. This allows us to quickly integrate new innovations into our solutions to optimize scalability and agility.

Using this approach, our solutions will immediately scale to 400 to several thousand transactions per second (depending on use case) as opposed to the 15 transactions per second realized via a monolithic Ethereum based solution. We expect the scalability of our solutions to increase significantly in the future.

* a Supply Chain is the sequence of processes involved in the production and distribution of a commodity. Supply chain activities typically involve the transformation of natural resources, raw materials, and components into a finished product that is delivered to the end customer.

Conclusion

Blockchain technologies are poised to deliver more than $3.1 trillion in business value. Further, due to rapid and diverse innovation, the application of Blockchain technology to the Supply Chain is now a reality.

Given this, and to apply emerging technologies as they arise, Emberly Clark's Blockchain Solutions apply a Separation of Concerns: regardless of where the innovation applies, we can quickly integrate it within new or existing solutions.

For more information, call us today at 800-314-9503 (select options 1 then 3).