Modeling the Blockchain for Business Use
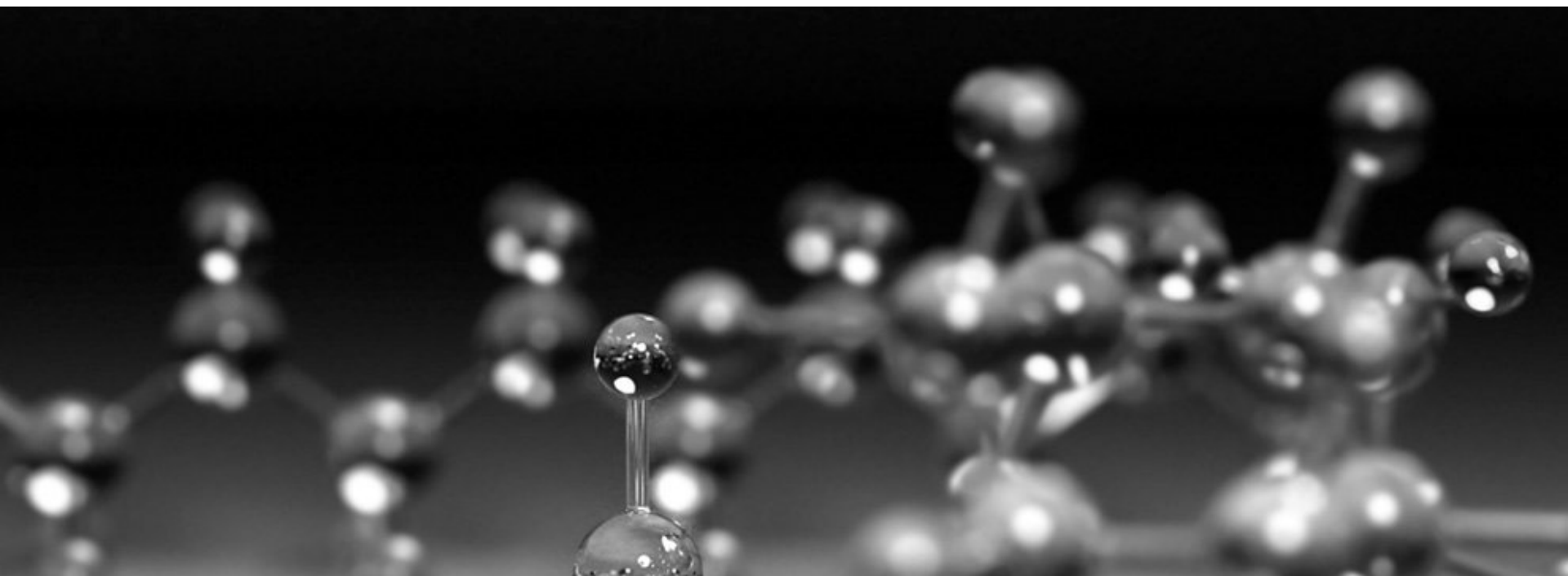
by Bitcoin Magazine

12:28 PM CST
January 22nd, 2016

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This is a guest post by Senthil Radhakrishnan, the Vice President and Head of Capital Market Solutions Group at Virtusa. Senthil has 16+ years' experience focused in capital markets technology with investment banks such as UBS, JPMC, Barclays, and others.

As one of the hottest technological developments making the rounds in financial circles, the blockchain has a lot of people hooked. But there is not yet much clarity on how blockchain technology will impact private business, given that it is so unlike traditional IT architectures.

Private blockchain applications are amalgams of cryptography, immutable transaction log/ledgers, federated transaction approval mechanisms, distributed databases and peer-to-peer software. Since any proprietary business function using blockchain technology is by definition private, the network is only accessible to a limited audience. That's why it is a good idea to consider the following elements when deciding to test processes on a blockchain model.

- Not all functions should be made on the blockchain. High volume non-transactional data attributes (like trading instrument data) are stored in platforms like reference data systems. Such systems can sit outside the blockchain. Avoid the redundancy of duplicating a large data island – like reference data – across many nodes.

- Blockchain systems will run along those in the non-blockchain world. To enable this, there has to be free flow of assets between the two ecosystems. Some issues to consider:

    - How does one control the quantity of assets to be issued?
    - Assets may have to enter and exit the blockchain system; how can this be tracked?

- The life cycle of an asset.

- Protect against user mistakes. The nodes/wallets in a blockchain are referenced by public key hash. This makes the system susceptible to mistakes. On the Internet, domain name services make it easy to remember names instead of numeric IP addresses (e.g. 192.168.2.33). A similar paradigm is required here.

- Keep it lightweight. The blockchain ledger replicates itself on every node as new blocks get added.In a business model, there could be a need to store a lot of information, but items such as documents can make the blockchain heavy. Linking it to an external data storage system solves this problem. The downside of an external data source, however, is lessened reliability given that the data is not all in one specific place.

- Managing a private key can be unwieldy. In a large organization with processes and policies this can slow things down. Some critical questions to ask: What happens if the key file is lost or is corrupted? Who will have access to the key file? It needs to be both secure and available for extensive use.

- Blockchain as a database is still limiting. Private blockchain applications are being used like databases by some businesses who benefit from blockchain features such as replication and immutability. But limiting data storage to the blockchain for any large-scale application may not be practical. Most businesses also need typical database features, including querying, reporting, triggers and mapped relationships between entities. This could add to the complexity of building large-scale systems.

- Allow realistic timelines. A typical private blockchain use involves a set of organizations agreeing to use the same software. It's common to see organizations communicating or interfacing with each other using a common protocol/data format. Getting an agreement on common protocol between organizations takes several iterations and time. Convincing organizations to use the same blockchain software stack is an even bigger challenge.

- Choose wisely between the Bitcoin blockchain and custom blockchain software. Extending the existing Bitcoin blockchain software to serve business purposes is a logical first thought. Bitcoin has evolved over time and is tested, robust and stable. But Bitcoin's

thought. Bitcoin has evolved over time and is tested, robust and stable. But Bitcoin's blockchain has features like public read access which may not be suitable for certain business needs. Too much customization or redevelopment of the original blockchain introduces the risk of an untested complex technology platform. So give due consideration to the pros and cons of Bitcoin workarounds vs. untested custom blockchain software before selecting a model.

The greatest features of the blockchain – its openness, democratic nature and potential efficiencies – have endeared it to everyone. One can only hope that a future blockchain-driven world retains these principles. Focusing on closed-door startups will in effect transfer the centralist nature of existing business models (like government, banks, etc.) to private software entities. We've seen this already as banks pour money into blockchain startups whose software isn't in the public domain. A more open and crowdsourced approach to address the business challenges in mass blockchain adoption is the better long-term option for leveraging the tremendous potential of blockchain technology.

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