



Smart Contracts and the Capital Markets

The New Year is still in its infancy and this week's article focuses on an area that can be categorised as being in a similar state: Smart Contracts. More specifically, what exactly are Smart Contracts and do they have any place in the global securities markets? This is a burgeoning area that is capturing the attention of investors and regulators. Smart Contracts are an inextricable component of the Fintech Revolution and will impact local and regional capital markets.

In their 2020 article, “An overview on smart contracts: Challenges, advances and platforms”; Zheng et al. argued that Smart Contract technology is reshaping conventional industry and business processes. Pioneering global technology giant, IBM, defined them as *“programs (i.e. computer) stored on a blockchain that run when predetermined conditions are met. They typically are used to automate the execution of an agreement so that all participants can be immediately certain of the outcome, without any intermediary’s involvement or time loss.”* IBM further iterated that smart contracts can also be used to automate a workflow which triggers the next action when conditions are met.

There are two broad categories of smart contracts as identified in **Figure 1** below: Smart Contract Code and Smart Legal Contract. They both must have a defined start as well as defined events which signal the end of the contract. The main difference between the two, as discussed in the Payments Journal newsletter, is that while the former relates to the computer programming code, the latter is *“a legally binding agreement that is digital and able to connect its terms and the performance of its obligations to external sources of data and software systems”* (see <https://www.paymentsjournal.com/the-difference-between-a-smart-contract-and-a-smart-legal-contract-explained/#:~:text=While%20a%20smart%20contract%20is,and%20software%20systems.%E2%80%9D8%20The>). Another key feature of smart legal contracts is that the natural language contract will prevail when there is inconsistency with the code. As a legally binding contract, all the usual dispute resolution mechanisms (e.g. courts and arbitration) will be available should an issue arise. This however, is not available for smart contract code.

Smart contracts: realizing true benefits of blockchain

Blockchain is a cryptographic or encoded ledger (database) of transactions in the form of blocks arranged in a chain

Smart contract, a complex set of software codes with components designed to automate execution and settlement, is the application layer that makes much of the benefits of blockchain technology a reality

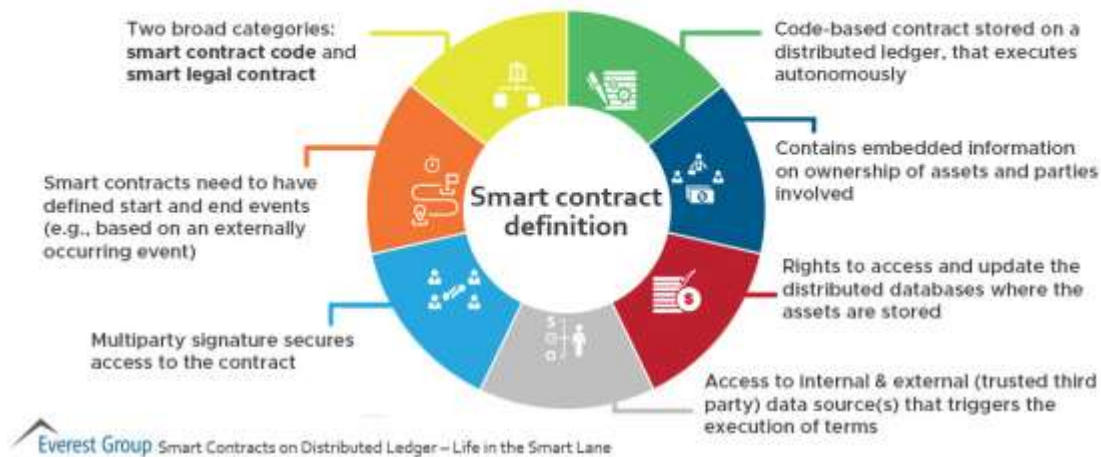


Figure 1: Source: <https://www.thedigitalenterprise.com/op-ed/smart-contracts-the-business-process-enablers-for-blockchain/>

The reader must be asking, why would the average investor be affected by this phenomenon? The simple fact is that Blockchain technology and its smart contract component can disrupt established industries such as Banking/Payments and Capital Markets (especially its Trading/Clearing/Settlement processes). **Figure 2** below represents what current Clearing & Settlement looks like. With the use of Blockchain technology, most of these processes and intermediaries may be repurposed or eliminated.

What is Blockchain Technology?

Blockchain technology is a decentralized, distributed ledger that records the history of a digital asset.



Figure 2 - Current Clearing & Settlement ecosystem: Source: <https://www.gsllab.com/blogs/blockchain-capital-markets>

Much discussion is required before these types of entities make the switch to Blockchain. As outlined by GS Labs (see <https://www.gsllab.com/blogs/blockchain-capital-markets>), there are some questions market actors should consider if they should seek to adopt blockchain in their clearing and settlement processes:

- Would clearing be faster, thus allowing more trades in a shorter time?

- Would the blockchain lower counterparty risks (i.e. the likelihood that the other party in the transaction may not fulfill its obligations under the agreement)?
- Would it reduce or eliminate the clearing fees for trading parties?
- Would settlement be faster?
- Would the blockchain reduce the collateral requirements?
- Would the collateral be released faster, achieving optimisation of capital?

One of the main drawbacks for Clearing and Settlement firms considering changing to blockchain implementation, would be the possible incurrence of a heavy increase in computation infrastructure and computation cost. Despite this, the benefit gained is that the upgrade will enable the faster clearing of trades. Furthermore, the blockchain for Clearing and Settlement would have to be permission-based¹ as it cannot be opened to the public.

This would thus require the network be restricted to the key entities: Clearing Firms, Brokers, Clearing Houses, and Custodians. The Trinidad and Tobago Securities and Exchange Commission (TTSEC) looks forward to its registrants finding innovative ways to improve internal processes and enhancing services provided to investors.

The TTSEC encourages local investors to keep abreast of developing trends within the global capital markets. We welcome any innovation that enables fairness, efficiency and transparency in the markets under our regulatory remit.

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¹ Permissioned blockchains maintain an access control layer to allow certain actions to be performed only by certain identifiable participants.