

Lex Mundi Blockchain White Paper Series

Blockchain and Insurance

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For the last few years, there have been a plethora of articles about blockchain and its potential to solve many of the world's data problems. Blockchain has been linked to digital currencies, property ownership management, smart contracts, encryption key management, supply chain management, and possibly insurance. As noted below, however, the current impact of blockchain in the insurance world is relatively limited. The best approach to the technology probably is to understand what it is and to be alert to those areas where it might benefit your organization.

What is Blockchain?

Blockchain was designed as a method for people who don't trust each other to reach consensus on a shared digital history without a middle man. At its core, a blockchain is a distributed database where the data contained in the ledger is designed to be immutable or unchangeable once it is added to the blockchain. A blockchain is made up of blocks of data. The various blocks of the blockchain are distributed to multiple machines to be stored. Each machine participating in the blockchain may store copies of some or all of the blocks. By distributing copies of the data to multiple locations the database becomes decentralized so that there is no single point of failure. If one machine loses all of its data, then copies of the data from other machines may be used.

By having multiple copies of the same block stored in multiple locations, discrepancies may be resolved by comparing the different copies to determine a consensus on which is the correct block. Furthermore, different methodologies may be used to determine which data and which blocks are added to the blockchain. Since the different parties participating in the blockchain may not trust each other, various methods such as proof of work, proof of stake, permissioned blockchain, and proof of storage may be used for determining which party is responsible for generating and adding each block.

In a basic blockchain, each block contains a payload, a random number, and a hashed link to the previous block. The payload includes any data that is desired to be stored, such as transaction data, records, or any other type of data. The hashed link to the previous block is where the entire previous block (payload, random number, and hashed link) is run through a cryptographic function that generates a random number of a predetermined length.

This cryptographic hash link is what gives blockchain its security. As each block is added to the blockchain, it contains a cryptographic hash link to the previous block. These cryptographic hash links mean that anytime that a party wants to change information in a previous block, they would have to make modifications to each

other subsequent block in the blockchain. Since just changing one bit of information in a block will change the associated cryptographic hash link, this makes it virtually impossible to make these changes without it being noticed. Furthermore, as copies of the blocks are stored in multiple locations, it makes it practically impossible to modify them all or enough to make a difference, as the computing power required makes it extremely difficult and cost-prohibitive.

Blockchain in the World of Insurance

Blockchain has the potential to bring significant change to the insurance world. Vendors already are marketing the technology, touting the security of blockchain technology as a means for reducing fraud, increasing claims transparency, avoiding underwriting errors, and simplifying the secure sharing of sensitive data, such as health information.

One often cited example of potential for blockchain impact is the use of smart contracts. A smart contract essentially is a contract written in computer code, stored in a blockchain, that automates certain contract performance functions. The online educator, Blockgeeks (<https://blockgeeks.com/>), illustrates smart contracts this way:

Suppose you rent an apartment from me. You can do this through the blockchain by paying in cryptocurrency. You get a receipt which is held in our virtual contract; I give you the digital entry key which comes to you by a specified date. If the key doesn't come on time, the blockchain releases a refund. If I send the key before the rental date, the function holds it releasing both the fee and key to you and me respectively when the date arrives. The system works on the If-Then premise and is witnessed by hundreds of people, so you can expect a faultless delivery. If I give you the key, I'm sure to be paid. If you send a certain amount in bitcoins, you receive the key. The document is automatically canceled after the time, and the code cannot be interfered by either of us without the other knowing since all participants are simultaneously alerted.¹

In the insurance arena it is easy to imagine potential impacts from smart contracts. In a publication on the topic, the National Association of Insurance Commissioners ("NAIC") observed through smart contracts, "[c]laims processing, amongst other processes, could be almost completely automated."²

Another frequently noted example is the current use of smart contracts in connection with parametric insurance contracts. Parametric insurance is insurance that does not indemnify against a loss, but against the occurrence of an event. For example, a farmer might purchase insurance against the conditions that can cause crop failure, such as a drought or a flood. Should the condition occur, insurance benefits are paid. This type of insurance lends itself naturally to automation using blockchain technology.

However, for all its promise, the current impact of blockchain in the insurance world is relatively limited. Insurance is subject to extensive legal and regulatory oversight, all of which create hurdles for the adoption of blockchain technology. As the NAIC noted, "While the impact of blockchain technology is sure to be vast, it will likely take many years for its extensive use to take hold." Id.

For more information, contact bd@lexmundi.com.

¹ Blockgeeks (2019, Jan. 20). Smart Contracts: The Blockchain Technology That Will Replace Lawyers. Retrieved from <https://blockgeeks.com/guides/smart-contracts/>.

² NAIC (last updated 2018, Nov. 9). Blockchain Technology. Retrieved from https://www.naic.org/cipr_topics/topic_blockchain.htm