



Article from

Reinsurance News

March 2018

Issue 90

Unblocking Blockchain

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When technology is baked into a device we rarely give it much thought. We buy a smartphone for its utility not its operating system. Sometimes a new technology changes dramatically how everyone does things; the internet is a good example. Some plausibly great innovations, say 3-D television, just never gain traction. Which of these is blockchain?

Recently, blockchain has emerged as a technology that potentially will transform industries in a similar way the internet did a couple of decades ago. Still a nascent technology, many of the use cases and applications have not yet been discovered and explored.

Most people know a little about blockchain: that it lets multiple parties agree on a common record of data and control who has access to it; that its platform makes cryptocurrencies like bitcoin possible; that movement of cryptocurrency verified by blockchain allows peer-to-peer cash transfers without involving banks; and that blockchain is a permanent, auditable record and any tampering with it obvious.

Some people hold the view it will transform security in financial services, and fundamentally reshape how we deal with and trust complex transactions. This could be a response to hype or a fear of missing out because many other people are asking why and how they should use it.

On the face of it, using a shared ledger to process multiple transactions doesn't seem so revolutionary. Blockchain is essentially a recordkeeping system. Perhaps it's cryptocurrency like bitcoin that lends it a darker, more enigmatic edge than the software used traditionally? One way or another insurers face pressure to update antique systems with new ones that can compete with the demands of a digital world.

A DISTRIBUTED, SECURE AND IMMUTABLE LEDGER OF TRANSACTIONS

A blockchain can be seen as an ever-growing list of data records, or blocks, which can be easily verified since each block is linked to the previous one, forming a chain. This chain of transactions is stored on a network of computers. In order for a record to be

added to the chain, it typically needs to be validated by a majority of the computers in the network. Importantly, no single entity either runs the network or stores the data. Blockchain may be used in any form of asset registry, inventory and exchange. This includes transactions of finance, money, physical property and intangible assets, including health information.

Since the blockchain networks consist of thousands of computers it makes it extremely difficult to add invalid records. Every transaction is secured using a random cryptographic hash, a digital fingerprint that prevents them being misused. Every participant has a complete history of the transactions, helping reduce the chance of them being corrupted. Simply put then, a blockchain is a resilient, tamper-proof and decentralized store of transactions.

COMPLEX PROCESSING AND AUTOMATION WITH SMART CONTRACTS

Blockchain ecosystems enable large numbers of organizations to come together as peers to offer services, data or transactions that serve specific customers or complex transaction workflows transparently. It can automatically process and settle transactions via smart contracts that encapsulate the logic for the terms and triggers that enable a transaction.

Smart contracts are created on the blockchain and are immutably recorded on the network to execute transactions based on the software-encoded logic. Transparency through workflows recorded on the blockchain facilitates auditability. Peers and partners within a blockchain ecosystem independently control their business models and the economics without the need to use intermediaries.

Self-executing smart contracts can be used to automate insurance policies with the potential to reduce friction and fraud at claim stage. A policy could be coded to pay when the conditions are undeniably reached and verified by decentralized data feeds as an event that has certainly occurred. Blockchain offers enhanced transparency and measurable risk to this scenario.

Parametric insurance through smart contracts with triggers based on measurable events can facilitate immediate payments while decreasing the administrative efforts and time. Effectively the decision to pay a claim is taken out of the insurer's hands. Other possible models are completely technology-based without the need for an actual insurance company. The decentralized blockchain model lends itself well to crowdsourced types of insurance where premiums and claims are managed with smart contracts.

BLOCKCHAIN-BASED INSURANCE

New insurers using blockchain are emerging to offer increased transparency and faster claims resolution. Peer-to-peer property



and casualty insurer Lemonade uses an algorithm to pay claims when conditions in blockchain-based smart contracts are met. Start-up Teambrella also leverages blockchain in a peer-to-peer concept that allows insured members to vote on claims and then settles amounts with bitcoin. Dynamis provides unemployment insurance on a blockchain-based smart contract platform. Travel delay insurer insurETH automatically pays claims when delays are detected and verified in a blockchain data ledger. Etherisc is another new company building decentralized insurance applications on blockchain that can pay valid claims autonomously.

Traditional insurance companies, such as AXA and Generali, have also begun investment in blockchain applications. Allianz has announced the successful pilot of a blockchain-based smart contract solution to simplify annual renewals, premium payments and claims submission and settlement.

Blockchain has potential to improve premium, claim and policy processing between multiple parties. The consultancy EY and data security firm Guardtime announced a blockchain platform to transact marine insurance. It pulls together the numerous transactional actions required within a highly complex global trade made up of shipping companies, brokers, insurers and other suppliers.

A consortium of insurers and reinsurers, the Blockchain Insurance Industry Initiative (B3i), has piloted distributed ledger technology to develop standards and procedures for risk transfer that are cross-market compatible. Whether or not the outcome is adopted industry-wide, it seems important for digital solutions to be created with this transparency and inclusiveness in mind.

There is clear potential for blockchain in reinsurance where large amounts of data are moved between reinsurers, brokers

and clients, which requires multiple data entry and individual reconciliation. Evaluating alternative ways of conducting business is one reason for the collaboration of Gen Re with iXledger, which can explore ideas while remaining independent.

HANDLING OF MEDICAL DATA AND OTHER PRIVATE OR SENSITIVE INFORMATION

Individuals generate increasing amounts of personal data, actively and passively, from using phones and “internet of things” devices, and processing digital health care solutions. Increasingly consumers will want control of this scattered mass of digital data and share it with whomever they choose in exchange for services. This move aligns perfectly with the concept of a “personal data economy.” Think information as currency and using blockchain to secure private data and reveal it in a secure and trusted manner to selected parties, in exchange for something.

Electronic health records are now common. Several countries use blockchain to secure patient data held digitally. This helps counter legitimate concerns about how sensitive personal data can be kept secure from theft or cyberattack. Code representing each digital entry to the patient record is added to the blockchain, validated and time-stamped. A consortium of insurers in India is using blockchain to cut the costs of medical tests and evaluations, and to ensure the data collected is kept secure, with other benefits including identification of potential claims fraud.

Innovative engagement insurance propositions that look to leverage the data economy will rely on shared data, but people may be put off fearing a loss of control over their personal information. This poses a huge challenge for an industry seeking to improve its reputation for trust. Blockchain may help insurers to reassure customers the digital data they share with them is safe.

VERIFICATION OF DOCUMENTS

Verification of the existence and purpose documents in banks and insurance companies relies on storage, retrieval and access to data. Blockchain simplifies these with its open ledger, cryptographic hash keys and date-stamped transactions. Actual copies of documents are not stored but instead the hash represents the exact content in a form of scrambled letters and numbers. If a document is changed these will not match. The effect is an immutability that proves the status of the data at an exact moment and beyond doubt.

Blockchain is a “trustless” system since the network of users acts together to vouch for the accuracy of the record. Examples of blockchain protecting patient records demonstrate its potential to implement other trusted and secure transactions with less bureaucracy.

Other opportunities are open to transition insurers to a digitized paradigm and catalyze efficiency gains. Blockchain need not be reserved for cross-industry platforms or useful only in multiparty markets with high transaction volumes and significant levels of reconciliation. Smaller-scale solutions can bring benefit, too.

It's not just about driving efficiencies either. Agreed standards for data care also make sense to reduce vulnerabilities. Digital connectivity creates a mass of sensitive data all very fallible to security breaches. Blockchain has other features that enhance privacy and data security. Transactions are not directly associated with the individual, and personal information is not stored in a centralized database vulnerable to cyberattack. Technology companies are accountable to their users for the security of their devices, services and software. Insurers are accountable, too, and hackers are more likely to target enterprises with lax security.

MULTIPLE PARTICIPANTS AND THE REMOVAL OF A CENTRAL AUTHORITY

Transparency, auditability and speed are standard requirements for any organization to successfully compete and transact in an increasingly complex global economy. Data is a valuable key catalyst, and is complemented by blockchain's ability to organize, access and transact efficiently and compliantly.

Trusted transactions require access to valuable data, and blockchain facilitates efficient access across multiple organizations. The economics for data usage will drive new business models fueled by micropayments, which will require efficiencies to scale. Business models based on data aggregation by third parties in centralized repositories, with total control and limited transparency, will be replaced by distributed blockchain-enabled data exchanges where data providers are peers within the ecosystem.

Decentralized peer organizations can utilize the blockchain for permission access and to facilitate payments to provide total control of their economic models without a centralized authority. Data access and transactions are controlled directly by each member of the ecosystem with complete transparency and immediate compensation.

TOKEN ECONOMIES

Ecosystems supporting peer organizations that transact or share data will require an effective mechanism for micropayments. These business models require efficiency, with less overhead than traditional account-payable and account-receivable workflows. Event triggers, cryptlets and oracles will execute based on predetermined criteria as token payments occur simultaneously. Counterparty agreements may initially define the relationships between parties on the network, but payments are executed within the smart contract transactions.

The elimination of a time delay in payments acts as a stimulant for economies since tokens earned can immediately be spent, therefore increasing the speed at which organizations will earn and spend. Traditional delays and fees that occur throughout accounting workflows and through intermediary banks that process payments can be eliminated.

CROSS-BORDER PROCESSING

Global payments involving foreign exchange introduce complexities in addition to time delays. Economic indicators and political events dramatically affect the exchange rates and profitability of transactions. Cross-border payments require access to the required currencies by intermediary banks, which can cause additional delays beyond the internal accounting workflows.

Utilizing a token-enabled economic layer simplifies the payments to support micropayment efficiencies. Participants on the network will be able to efficiently utilize the preferred fiat currencies to acquire or sell tokens without utilizing intermediaries' banks or currencies.

MERGING BLOCKCHAIN AND DATA

Today, there are more connected internet of things devices than there are people on the planet, and the data generated is growing at an exponential rate. Various sources have predicted that the number of internet of things connected devices will grow to over 70 billion by 2025; the numbers are almost irrelevant.

Internet of things devices are used in homes, transportation, communities, urban planning, environment, consumer packaged goods, services and soon in human bodies. A number of insurance companies use these devices to assess driver habits and usage. Autonomous cars and changing ownership and usage models are

creating a new generation of insurance products that can be facilitated through internet of things data. Home devices can detect leaks, theft and fire damage, which reduce risk. Shipping companies use internet of things for fuel and cargo management, which offers operating efficiencies, transparency and loss prevention.

Merging the mass of internet of things data with the blockchain is not without challenges, but this is a combination that can provide a completely new way of creating an insurance model that is far more efficient and faster where data flows directly from policyholders to the insurer.

SUMMARY

Interest in the trinity of bitcoin, blockchain and distributed ledger technology has significant momentum. However, the technology is not magic or a panacea for every corporate woe. It has disadvantages and limitations, and there are situations where

it would even be the wrong solution. Yet there is enough about it to merit continued closer investigation—the many emerging use cases bear testament to that—but in place of hype we still need answers. ■



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