DISRUPTING INSURANCE WITH BLOCKCHAIN

Abstract

Blockchain has the potential to redefine the way the insurance business is currently conducted. In the context of a growing push for the adoption of this emerging technology, this paper discusses the challenges and opportunities it presents.

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Blockchain decoded

The insurance industry is all set to be disrupted with the advent of Blockchain technology. Also called a distributed ledger, a blockchain is a ledger of digital transactions that is distributed geographically across multiple entities or nodes in a network. All participants in the network maintain a copy of the entire ledger that everyone can inspect, but no single user controls it.
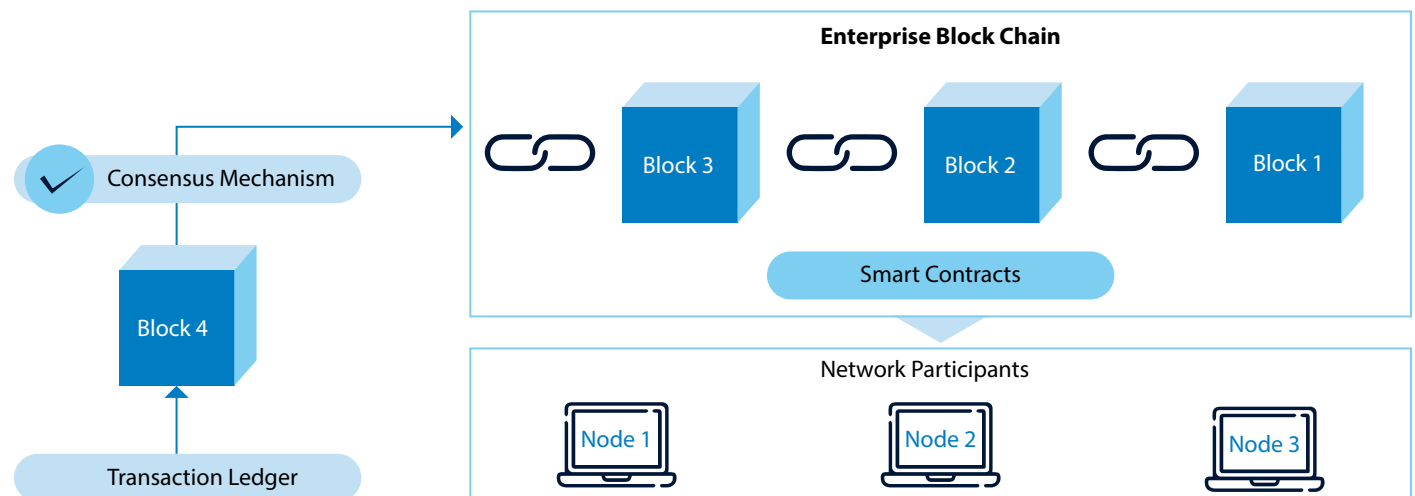
Traditionally, a contract is a legally binding document that recognizes and governs the rights and duties of the parties to the agreement. In a blockchain, transaction agreements between network participants can be programmed into self-executing smart contracts that are automatically triggered when the set of conditions defined in the agreements are met. Once executed, the participant entities are instantly bound by the terms of the contract.

Once smart contracts are executed in the network, the transactions are authenticated and verified by peers through a consensus mechanism and cryptographically locked. New blocks containing these locked transactions are added to the blockchain which is replicated to all the nodes in the network.

Inherent advantages

The use of cryptography makes a blockchain ledger an 'append only' database and the unprecedented level of security makes no provision for erasing or modifying existing blocks of records. Other benefits include a dramatic reduction in the amount of time needed for transaction settlement from days to mere seconds.

These, along with the fundamental principles depicted in the graphic below, make Blockchain highly disruptive for financial transactions.

Decentralized	• Data is replicated to all nodes in the network regularly. • Eliminates the dominance of centralized database authority.
Secured	• Data is written to a blockchain with digital finger prints using hash functions making it impossible to tamper.
Immutable	• Once data is written to a blockchain, not even the system administrator, can alter it.

Trust	• Smart Contracts are self executing in nature. • Promotes trust between parties in the network.
Efficiency	• P2P transactions eliminates the need of intermediaries. • Less human errors and processing delays
Collaboration	• Multiple Parties in the network share information. • Automatic Reconcialation of data

Fig: Fundamental principles of Blockchain

Especially for the insurance sector, Blockchain smart contracts are highly relevant for parametric products such as flight delay insurance and crop insurance.
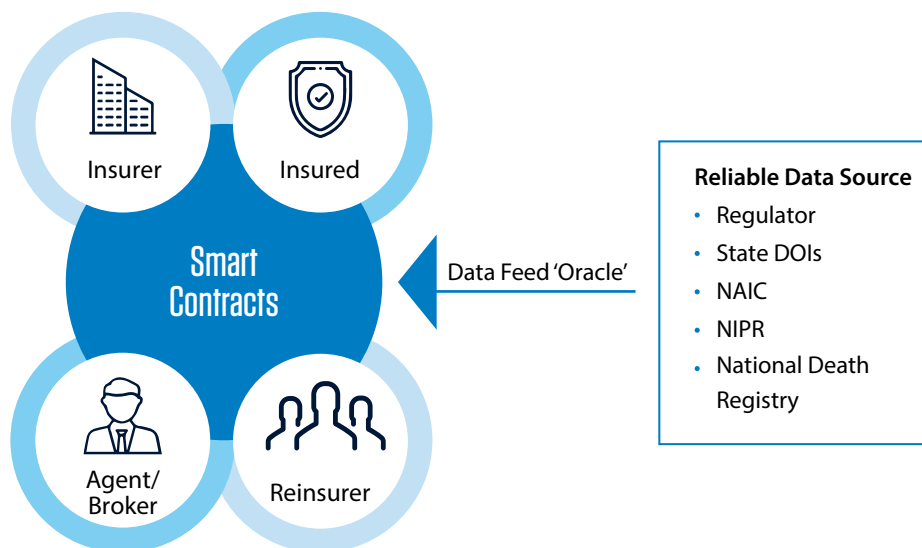
Using feeds of real-time information from reliable third party sources — such as global air traffic databases for flight delay insurance, and national weather databases for crop insurance — smart contracts can automatically trigger compensation payouts when the claim event occurs.

Through eliminating lengthy and expensive manual claim processes, smart contracts enable the economic feasibility of low-cost micro insurance products that are not viable through conventional methods.

Insurance industry initiatives and use cases

Around 50% of potential blockchain applications are in the financial services industry, out of which 20%-25% are in the insurance sector. Blockchain innovations in insurance broadly either optimize, or improve existing processes such as customer identification (KYC), customer onboarding, securities management, and others. However, futuristic game changing scenarios include collecting and analyzing health information from consumer wearables for 'health fingerprints' which can be stored on a blockchain and incorporated by insurers into actuarial models.

Blockchain platforms that would be deployed in insurance industry are in private or permissioned networks and are not open to anyone to participate.

Blockchain platform	Access	Examples
Public or Permission-less	Anyone can participate in, maintain, and secure the network.	Bitcoin, Ethereum
Private or Permissioned	Only authorized entities can participate in the network with various degrees of read-write-validate access.	Corda, Hyperledger Fabric, Ripple, Libra

Several blockchain consortiums in the insurance industry with collaboration from insurers, reinsurers and brokers around the world are exploring potential use cases and are trying to conceptualize market ready applications.

B3i - Blockchain Insurance Industry Initiative	RiskBlock Alliance	Indian Life insurers' consortium
Group of leading insurers, Reinsurers and Brokers around the world	Identified 40 potential use cases of blockchain within the insurance industry	Thirteen Indian Life insurers banded together

*Fig: Blockchain consortiums in the Insurance Industry*

Here are a few blockchain use cases for the insurance industry.

1 Strengthened reinsurance

Even though the global reinsurance market is growing annually at 1.2% increase in premiums, high expense ratios and operational inefficiencies remain a real challenge. Many of these inefficiencies are attributed to manual processing of records for bordereaux and for reconciliation of data among insurers, brokers and reinsurers, which causes data duplication and data management issues, further leading to processing delays.

Imagine however, if insurers, reinsurers and brokers were connected in a Blockchain ecosystem. Each counterparty would then have a copy of their relevant data, namely through a distributed ledger.

Policies (Risks)	Direct Insurer	Reinsurers	Retrocessionaires
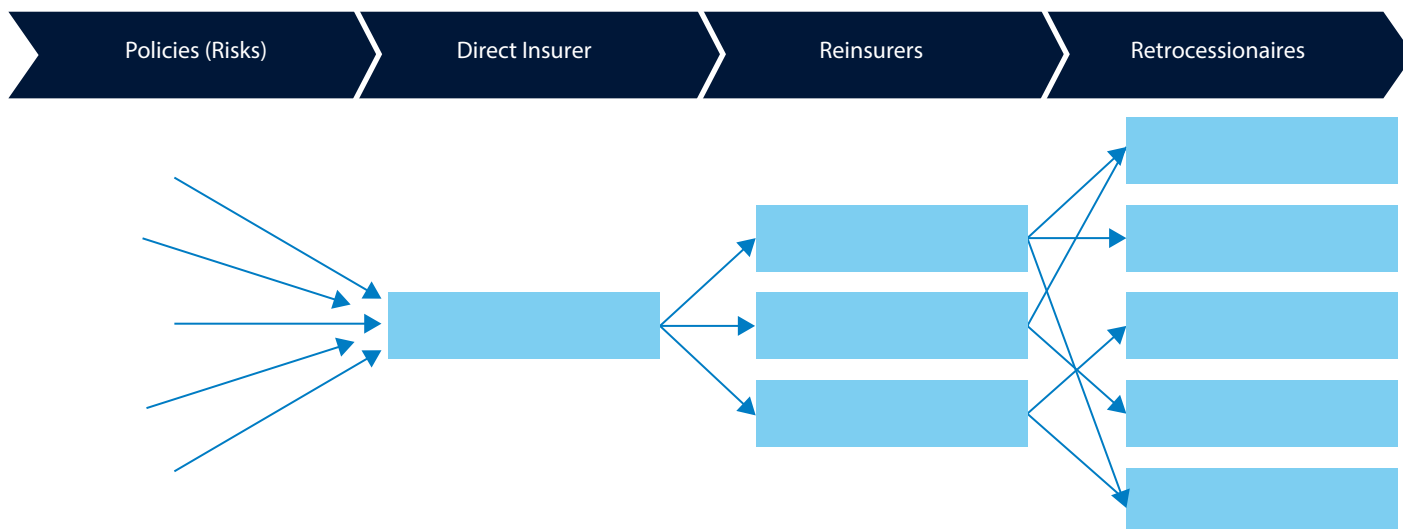
When a broker places the risk, the contract gets distributed only to the participants of the risk. New transactions on blockchain are created and associated smart contracts are invoked. Negotiations between parties are all time stamped, audited and versioned. Once the terms are agreed on, counterparties are ready to sign the contract. Relevant counterparties digitally sign the contract, and the transactions are recorded on the blockchain to achieve contract certainty.

On the policy inception date, smart contracts automatically calculate the outstanding premium installment payments and create the associated technical account for all counterparties. These technical accounts are securely communicated to the other relevant peers on the blockchain. All counterparties can see consistent information eliminating the need for data reconciliation. The settlement process aggregates all technical accounts across the contracts and creates a summarized invoice that shows the outstanding position for each counterparty. This provides a consistent view of the financial position and as a result, there is no opportunity for unmatched cash.
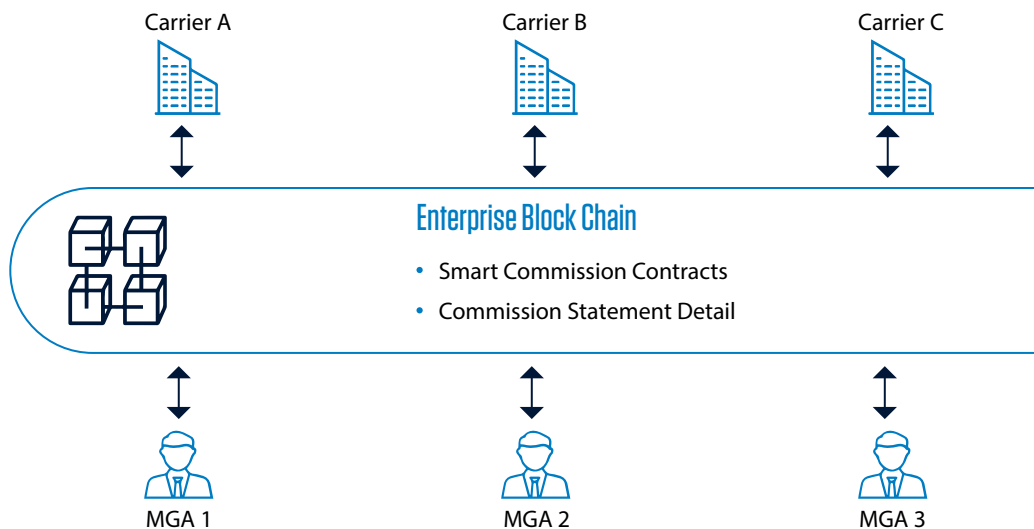
2   Commission Management

Currently carriers have to set up commission contracts in their Commission Management Systems and complete the paperwork manually with managing general agents (MGA), agencies, and agents down in the hierarchy. There is

no process to validate the commission schedules and hierarchy levels setup in the carrier system. Since MGAs do business with multiple carriers, carrier system calculations involve hectic reconciliation processes.

Imagine that the carriers code the smart commission contracts in a blockchain network and the MGAs verify and approve them. There will be one digitized contract that carriers use to calculate commissions and MGAs use to reconcile.

Carrier A   Carrier B   Carrier C

Enterprise Block Chain

- Smart Commission Contracts
- Commission Statement Detail

MGA 1   MGA 2   MGA 3

Another current problem is the commission statements reconciliation process by MGAs. As of now, MGAs have to download commission statements from each carrier's website and do the reconciliation.

Imagine all carriers send commission

data feeds in a standard format which are validated before it gets into the blockchain. If any transaction is not in the correct format those will be sent back to carrier for correction and resubmission. The result would be that MGAs get clean data from the blockchain and use it for reconciliation and reporting purposes.

The beauty of blockchain is it eliminates fraud by taking care of privacy and data security. Only those parties who are associated with a contract and others down the line in the hierarchy have private keys to access their commission statements data.

3   Seamless Claims Processing

Blockchain can deliver real time automated processing of claims without human involvement through trusted and verifiable claims submission data and by using codified business rules in smart contracts to identify the loss liability. Claim submission process will be simplified and accelerated through digital interface

and with smart contracts. The customer experience will be enriched by the automatic determination and activation of the claims payout to the beneficiary. Thus, manual processes to verify documents and validate the loss can now be reserved only for escalation cases where human judgment is necessary.

Besides, smart contracts can potentially enhance transparency and minimize fraud. Due to the availability of reliable customer data, insurance organizations will be able to detect mistakes and outright fraud very early in the process. This is the need of the hour as an estimated 5 to 10 percent of all insurance claims are fraudulent.

4   Reducing the role of intermediaries

Many elements and abilities of blockchain enabled technologies, favor direct writers and direct carriers. Imagine a decentralized marketplace for insurers enabling insurers to interact directly with the customer and with no role for intermediaries. As customers become more informed, the demand for products with lower fees and lower commissions will keep rising. Many of the routine administrative functions that intermediaries currently perform today would no longer be required because of automation. However, a broker's primary service as the natural connection to the insurance customer would largely not be affected at all. Rather by making brokers more efficient, blockchain would liberate them to put more of their resources into enhancing their relationships with their clients.

5   Underwriting efficiency

Blockchain can deliver efficiency in information exchange, improved risk profiling, and automated issue of smart policies. Since the trusted digital identity is available on the Blockchain network, manual processes of collecting requirements will be reduced. The regular paper policy will be replaced by a smart contract on the blockchain which reflects the contractual terms and conditions.

A bright future

Blockchain is being heralded as an exciting, disruptive emerging technology that can establish trust, and bring accountability and transparency to financial transactions while easing their complexity. History reveals that while innovations are typically conceptualized for some initial purpose, they evolve to become highly useful in other use cases too.

Blockchain adoption is gaining momentum in the insurance industry with both incumbents and startups actively engaged in proofing and commercializing blockchain applications. Even as the technology continues to evolve, it is all set to create immense futuristic opportunities for the insurance industry through a growing synergy with the Internet-of-Things, machine learning and artificial intelligence.

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