IS BLOCKCHAIN TECHNOLOGY THE LATENT LOCUS FOR THE FUTURE OF INSURANCE?

Abstract

Insurance is a contract of 'utmost good faith'. Therefore, information symmetry and trust management are the core requirements for sustainability of the business. But the changes in today's demographics and the growth in digital interfaces have led to an exponential rise in service delivery expectations. New financial alternatives and the emerging gig-economy impact the industry as well. All things considered, the industry needs to reinvent itself. And fast!

Against this backdrop, blockchain technology's strengths and advantages appear to be skewed in favor of insurance. From prospecting to claims management, this emerging technology can deliver value in every vertical and function of the insurance business, potentially transforming the current need of reinvention to a positive paradigm shift for the industry.

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The emerging blockchain technology: Too big to ignore

Technological advancements are changing the way we do business. Market equilibrium is shifting more frequently than ever before. In this dynamic market, bitcoins were invented. Its underlying technology, blockchain's potential benefits attracted a lot of attention resulting in experimentation to make it usable for individual business requirements.

In simple terms, blockchain is a distributed ledger where records are replicated and stored across the network. These records are immutable and can be independently verified. These original concepts have found many different uses and benefits compared to the traditional transaction methods, and therefore, almost all industries are sprinting to reap its benefits.

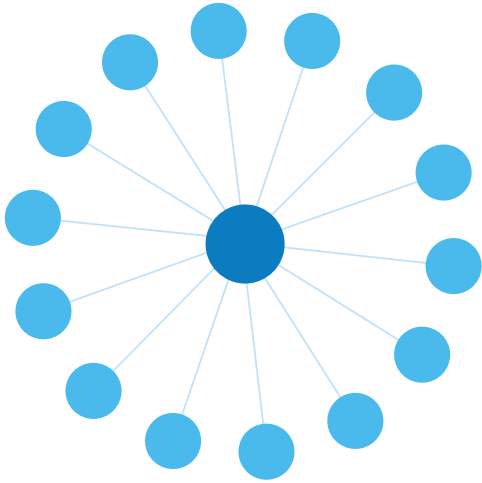## The joint future of insurance and blockchain: Bright and promising

Insurance as an industry strives to leverage blockchain technology to gain operational efficiency and improved service delivery. Our analysis finds that the industry's approach towards new technological innovation has until now been conservative and so it lags behind in delivering the experience that today's customers expect. But the emerging blockchain technology makes a strong case for adoption as the variables of the insurance business – trust management, information symmetry, disintermediation requirement, digital interface, contract management, privacy, verification, fraud control, and more – better align with the technology's potential benefits.
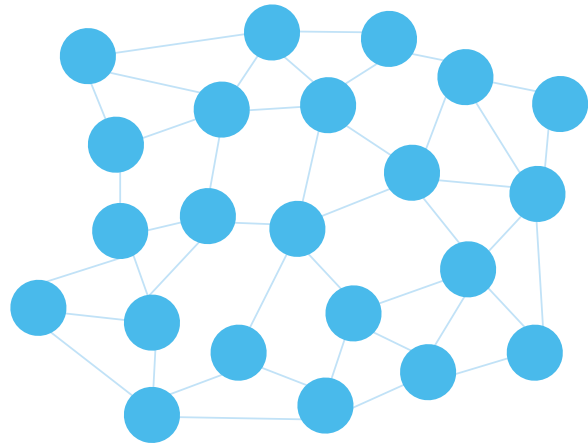
More than a buzzword

In 2009, an anonymous person or group, known as Satoshi Nakamoto created bitcoin by solving the double spending problem. The underlying technology was blockchain which provided disintermediation capabilities, i.e., the ability to verify a given 'value' over the computer network. Since then, the technology's application has spread across many industries. Moreover, advancements in digital capabilities and social media interfaces gave rise to a sharing economy and blockchain emerged as a solution to many existing problems and inefficient business operations and related transactions.

Understanding blockchain

An immutable digital distributed database, facilitating users to create, share and store their transactions in a distributed ledger format which are interlinked.
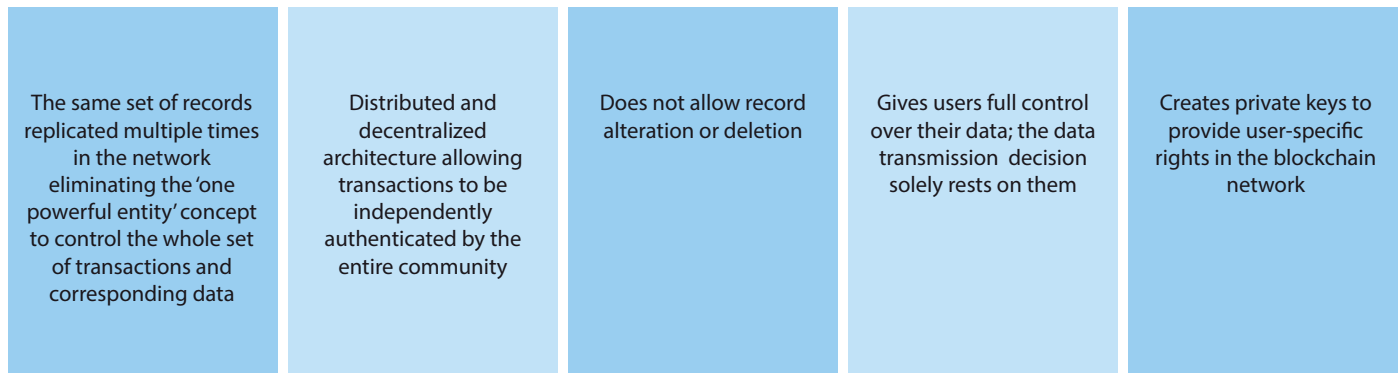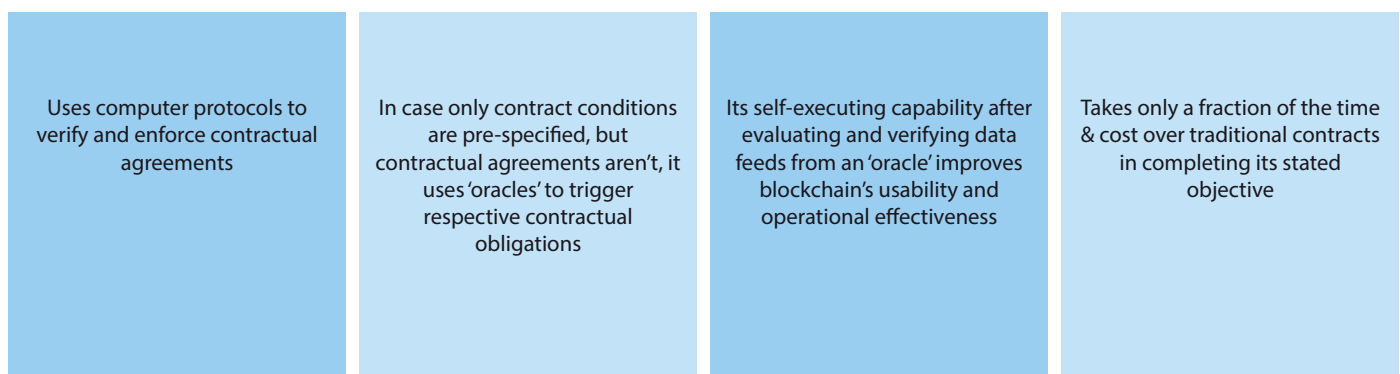
A centralized ledger

A distributed ledger

Blockchain explained

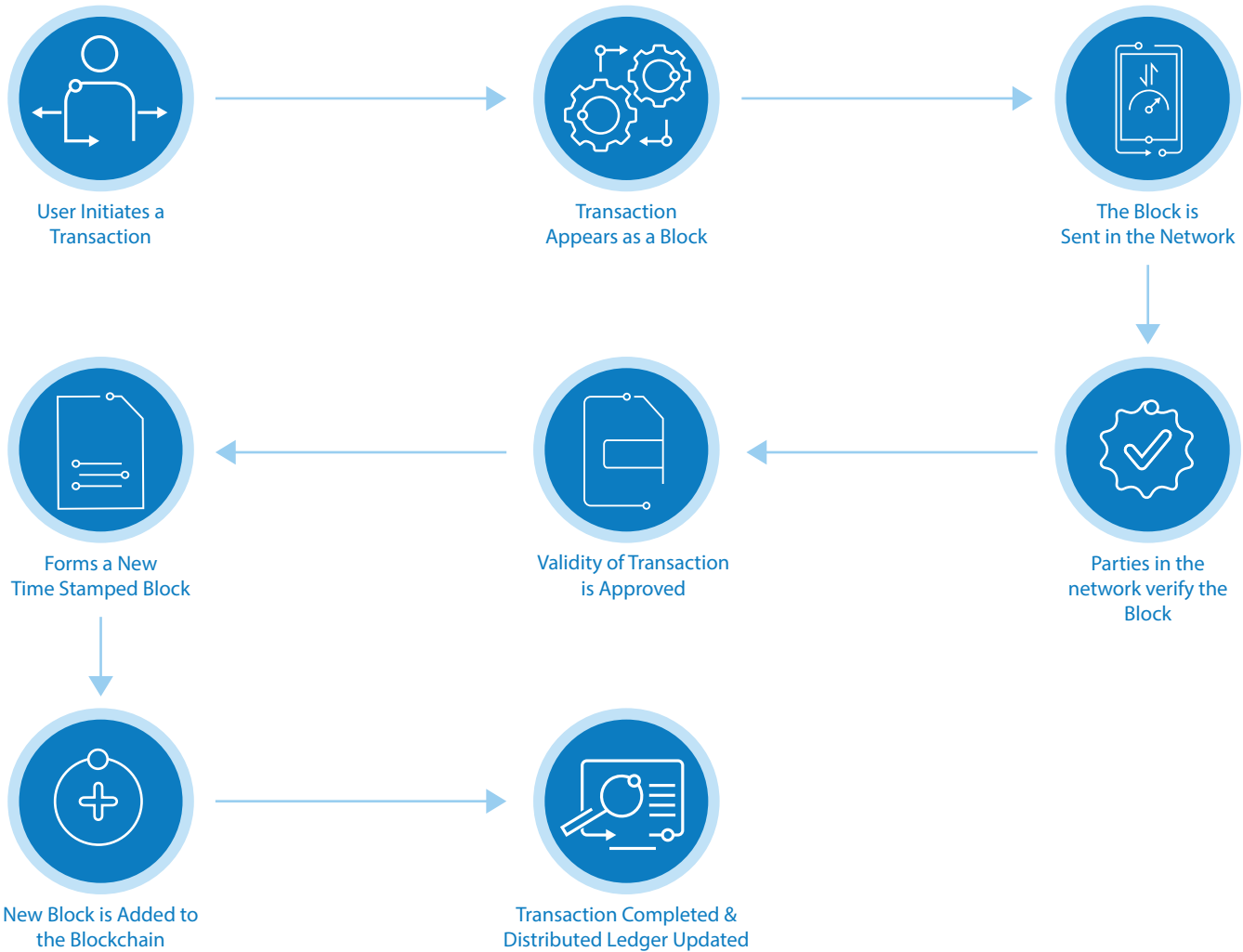| The same set of records replicated multiple times in the network eliminating the 'one powerful entity' concept to control the whole set of transactions and corresponding data	Distributed and decentralized architecture allowing transactions to be independently authenticated by the entire community	Does not allow record alteration or deletion	Gives users full control over their data; the data transmission decision solely rests on them	Creates private keys to provide user-specific rights in the blockchain network

Smart contracts

Smart contracts enable two anonymous parties to do business together without the need of an intermediary. Although in a nascent stage, experts believe that a mature smart contract module will be the core of blockchain technology in the future.

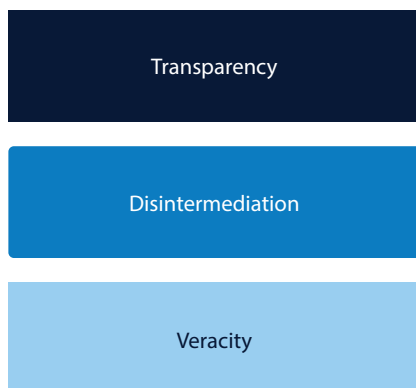| Uses computer protocols to verify and enforce contractual agreements	In case only contract conditions are pre-specified, but contractual agreements aren't, it uses 'oracles' to trigger respective contractual obligations	Its self-executing capability after evaluating and verifying data feeds from an 'oracle' improves blockchain's usability and operational effectiveness	Takes only a fraction of the time & cost over traditional contracts in completing its stated objective

How is a transaction processed in blockchain?

Blockchain enables two anonymous parties to do business together without the need of an intermediary. Although in a nascent stage, experts believe that a mature smart contract module will be the core of blockchain technology in the future.

User Initiates a Transaction → **Transaction Appears as a Block** → **The Block is Sent in the Network**

↓

Forms a New Time Stamped Block ← **Validity of Transaction is Approved** ← **Parties in the network verify the Block**

↓

New Block is Added to the Blockchain → **Transaction Completed & Distributed Ledger Updated**

Three significant value propositions, as per the World Economic Forum

- Transparency
- Disintermediation
- Veracity

Insurance: The operating model

There are many ways of managing different kinds of risks. Insurance is one way where a financial transfer of the risk is assumed by the insurer in return for a premium. Risk probabilities are derived from past experiences and risks are further quantified following the law of large numbers. Risk quantification eventually translates to premiums using statistical and actuarial calculations. Some considerations applied for coverage are:
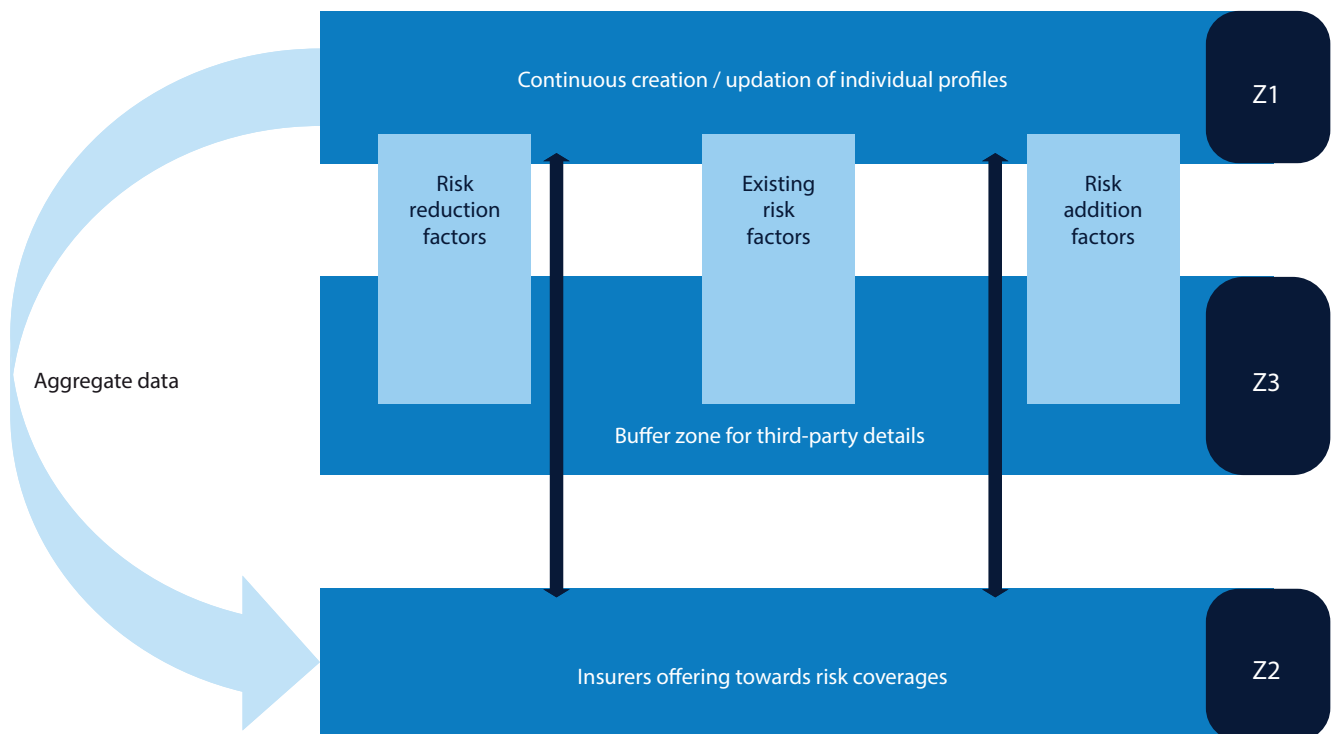
- A specific risk which cannot be quantified due to data or any other issue may not have insurance coverage. Specialty insurance specializes to provide coverage for some such scenarios but cannot include all.

- If a customer asks for any sort of arbitrary coverage, it cannot be offered.

- Insurers need to follow the basic principles of insurance, contract laws, regulations, and more importantly, their capacity to price and assume a specific risk.

Customers

Insurers

Risks

Available coverage for insurable risks – ready for customers' purchase
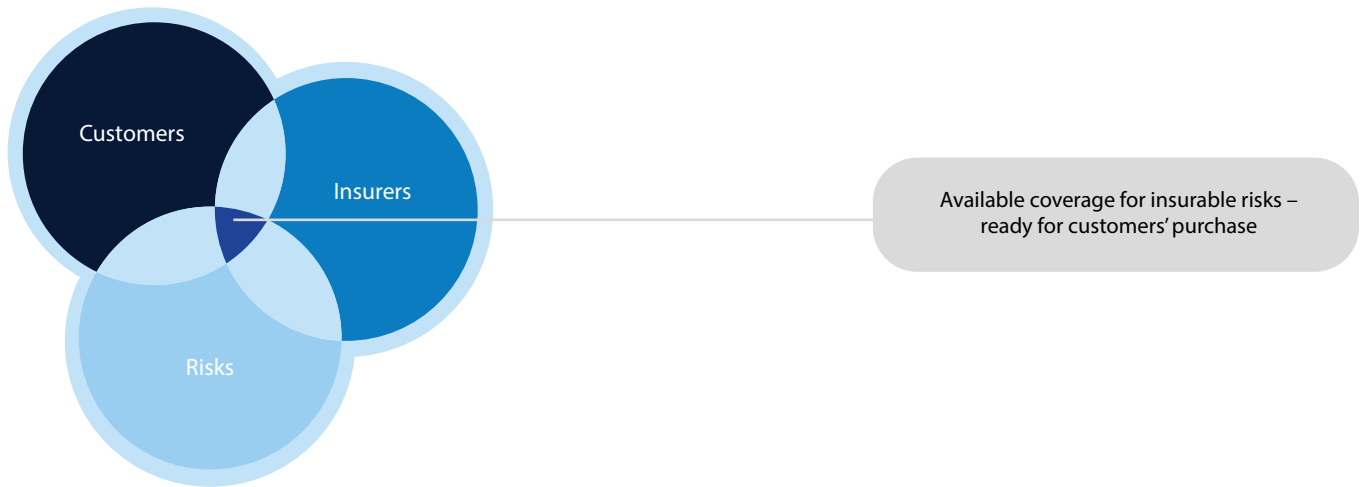
Proposed blockchain implementation model

We start by creating a public distributed ledger using blockchain technology. Our suggested blockchain implementation model has three zones.

Continuous creation / updation of individual profiles

Z1

Risk reduction factors

Existing risk factors

Risk addition factors

Z3

Aggregate data

Buffer zone for third-party details

Insurers offering towards risk coverages

Z2

Zone 1: Individual profiles

Here, users will get an interface (portal) to create individual profiles. Incentives will be offered regularly to users to update their profile with latest details. The user will also be able to integrate their social media accounts, wearable devices, and payment methods into their profile. Insurers and advertisers will offer incentives to users who regularly perform health or lifestyle activities. Its scope is wide open and we don't want to limit it. Depending on the profile details and updates, the portal will create the profile strength which will act as the user's 'credibility score'. All profile details will be controlled by the user and no data will be shared with any third-party, including insurers, without the user's consent.

Zone 2: Insurer offerings towards risk coverages

Insurers will not receive individual profile details, rather an aggregate users' data. Since the profile format is pre-specified with validations, insurers will be able to query the aggregate profile data based on different criteria such as age, gender, zip code, income, dependents, recent life events, and more. As insurance is based on the law of large numbers, this aggregate data should be sufficient to create the best-suited products for different sets of user profiles. In return for this aggregate data, insurers will fund the operational cost of this model.

Zone 3: A buffer for third-party details

Whenever a user wishes to buy an insurance product (buying process details are tackled later), third-party data such as the MIB records, credit history, driving history, and more will be retrieved during the course of underwriting. All such details will be stored in the buffer zone for a set period of time (say, 30 days). Hence, if one insurer does not assume a specific risk of a customer and submits an application to another insurer within 30 days, there will be no need to retrieve the third-party fee details again.

The potential benefits

The model solves many existing problems and creates a win-win for all stakeholders.

For the user

- Will not be required to enter personal details again and again to get quotes from different carriers
- Gain an 'always available' portal, full of digital capabilities
- One portal to buy policies across different lines of businesses and carriers
- Enables central control of all payments and even earn incentives
- Submitting a request for a quote or purchase of a coverage is a click away
- Once a quote is requested, profile details with the 'credibility score' automatically sent to selected insurers

For insurers

- Offer best-suited products with accurate premiums as aggregate user profile data is available
- Ability to retrieve third-party details from either the buffer zone or the third-parties themselves when needed
- Once a risk is assumed, ability to exchange risk addition and reduction factors with other insurers, helping keep an eye on the covered risks
- No intermediary and maintenance cost as the cost is recovered by the aggregate data exchange, enabling insurers to pass intermediation cost savings to consumers

Blockchain: Power-packed benefits

Presently, value-driven usage of blockchain appears to be endless. Here are the top ten benefits:

Lowers intermediation cost
Allows users to initiate and settle transactions without any intermediary, lowering the cost of transaction and counterparty risks.

Improves transparency
Transactions conducted on public blockchain can be viewed by all, improving transparency and building greater confidence in the system.

Accelerates transactions
As there is less dependency on other transactional variables such as time, operation hours, language, credibility, and more, a transaction can be processed quickly.

Lowers transaction costs
Eliminating intermediaries can potentially save huge operational cost of third-party interfaces and intermediary fees.

Immutable
Records in the blockchain ledger are more secure as they cannot be altered or deleted. Also, replication of records makes them less vulnerable to mutability.

Empowers and liberates users
Provides more data and transaction control, and flexibility to users, freeing them from dependency on centralized agencies to complete their transactions.

Enhances data characteristics
The quality of data generated and stored on blockchain networks is standardized and hence, is accurate, clean, consistent, complete, timely and widely available.

Reliable, durable and with a longer life
Due to the decentralized framework, records are maintained across public ledgers and so technical or functional failures affect one node of interaction, eliminating the dependency on a central ledger system and providing many nodes of verification, making the system more reliable, durable and long-lasting.

Independent verification
A transaction can be easily verified from a public ledger without the need for intermediary and complicated approvals.

Simplified ecosystem
Transactions are added to a single ledger and not kept separately, eliminating the unnecessary synchronizing and reading of multiple databases (ledgers).

No benefit without a cost!

Realizing all the benefits eventually depend on the way the inherent costs are managed.

High initial set-up cost
The technology has not reached sufficient baseline maturity so different businesses will need to experiment with it in their own comfort zone which means a huge initial investment to design and implement a new technology.

High maintenance cost
The underlying distributed ledger will need a lot more effort and time in maintenance, including verifying transactions and adding them to the ledger, potentially increasing the recurring cost.

Lack of technology understanding and skills
Few people know about this technology and the skillsets are limited. Unless people are quickly trained, this can be a crucial operational risk in implementation.

Uncertain regulatory status
Blockchain challenges the time-tested status quo variables which carry approvals from different governments and regulators and convincing regulators to give it a go-ahead won't be easy.

A nascent collaborative ecosystem
The blockchain ecosystem is relatively new so better collaboration across industries, businesses, people and geographies will be needed to solidify its positioning.

Security-, privacy- and control-specific issues
Although blockchain provides strong encryption capabilities and private keys, the general public will need to understand and trust what the technology offers to become its adopters.

A huge energy consumer
A distributed ledger format requires a larger computer and network resources, consuming huge amounts of energy to calculate, transmit and store information. As calculated by VICE Motherboard in June 2015, a single bitcoin transaction uses energy sufficient to power 1.57 American household for a day.

Not an easy integration job
A variety of technologies are used to communicate across different systems and platforms and a new technology will need specific interfaces and integrations points in existing systems and platforms and in some cases, a replacement of an existing system altogether.

Cultural differences
The blockchain is a major shift from the existing centralized ledger system necessitating many variables and interfaces to be redesigned. All stakeholders would need to accept these changes and people from different backgrounds and cultures have shown varied decision-making abilities in terms of technological adoption.

What does a joint insurance and blockchain future hold?

In the past, the insurance industry has missed many exciting opportunities due to its reactive nature. Overall, the industry has moved conservatively in experimenting and adopting new technologies. This needs to change to ward off the fast approaching severe consequences. Today, the industry cannot afford to miss the opportunities presented by blockchain. Many of these opportunities may not be quickly identifiable as implementation-ready and will require a thorough analysis to align the business problems in blockchain's technology framework. Most other industries are doing this and some have even successfully created unique solutions.

Since blockchain is still in the experimentation stage, no one can guarantee a smooth path ahead. Every business will need to create its own success path. Even though this is risky, the contrarian approach of a 'follower' will be a surefire route to failure. Hence, we recommend starting your due diligence immediately with a focus on the technology's many benefits. Once you align these benefits with your business situations, it will become easier to produce real implementation use cases.

Insurance is purely based on a data-driven framework. Past experiences are quantified and risk coverages priced. Products are generally sold through intermediaries. Strictly within the context of these two parameters, we find there exist large-scale blockchain opportunities for the industry. The merits of implementation will eventually translate and quantify the technology's benefits. Moreover, claims fraud is a major problem in the industry, something blockchain can significantly prevent.

We foresee that the joint future of blockchain and insurance will surface coherently. If this relationship succeeds to grow asymptotically towards innovation and certainty, the insurance industry can even experience a paradigm shift with a unique makeover.

Bright and promising, indeed!

At the fulcrum of innovation, blockchain appears to be the balancing force for many of our existing problems. Many useful value propositions are aligning with this evolving technology. In insurance, the list of challenges that can either be improved upon or completely transformed is endless.

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