



THE BLOCKCHAIN REVOLUTION

INSURANCE CONSIDERATIONS

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Blockchain technologies could revolutionize the global economy. As a fast paced emerging technology, there is little doubt that it offers enormous potential, however hurdles remain before that potential can be realized. That is not stopping companies from spinning up pilots or positioning learnings in patent applications. At this point, it is more a question of when than if. This report is a blockchain primer that aims to inform and inspire the reader to consider the art of the possible. What could blockchain technologies mean for our industry?

In recent decades, society has become accustomed to frequent technology innovations. Insurance has benefited from these breakthroughs, but the industry's basic business model hasn't changed. How long will this hold true? Our customers and workforce increasingly demand a user-friendly, fast, transparent, and digital experience. Where does this lead? What can we learn from other industries like banking?

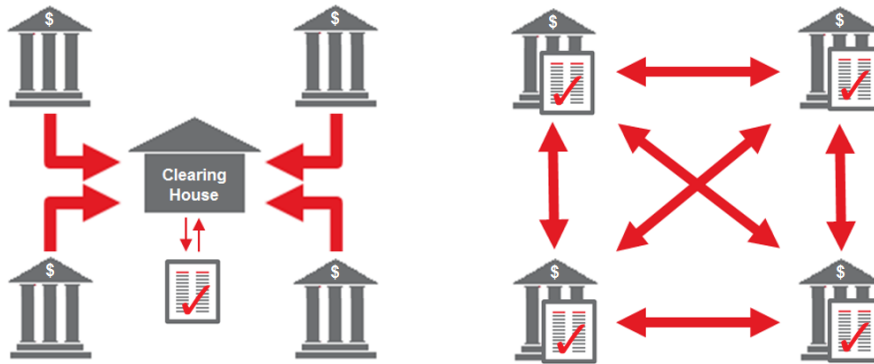
This is an opportunity for insurers and others to think about alternative business models and consider how technologies like blockchain could enable our industry. Blockchain technologies are expected to improve the customer journey, drive new innovation, and create new efficiencies.

What are Blockchains?

A blockchain is a public ledger of all transactions that enable parties to safely trade and transact without going through a trusted third party.¹ This approach is revolutionary in that 1) the ledger is maintained in a distributed fashion providing greater transparency and 2) the approval of transactions is crowd-sourced to the blockchain network as a consensus-building process.

For example, assume that funds are to be transferred between two banks. A traditional approach would leverage a third party to oversee the settlement process. Assuming the settlement oversight comes from a clearing house, the funds would flow from the originating bank through the clearing house and on to the receiving bank. Along the way, several ledgers would be updated and reconciliations performed. In contrast, what if there had been only one communal ledger (i.e. blockchain)? The same oversight could have been provided by the consensus of the network. Through an established consensus, the transaction could have been approved without the need for the clearing house. The benefits of this blockchain use case primarily comes from the potential savings in settlement time and fees.

Blockchain transactions are settled by the network, eliminating the need for trusted third parties



How is Consensus Achieved?

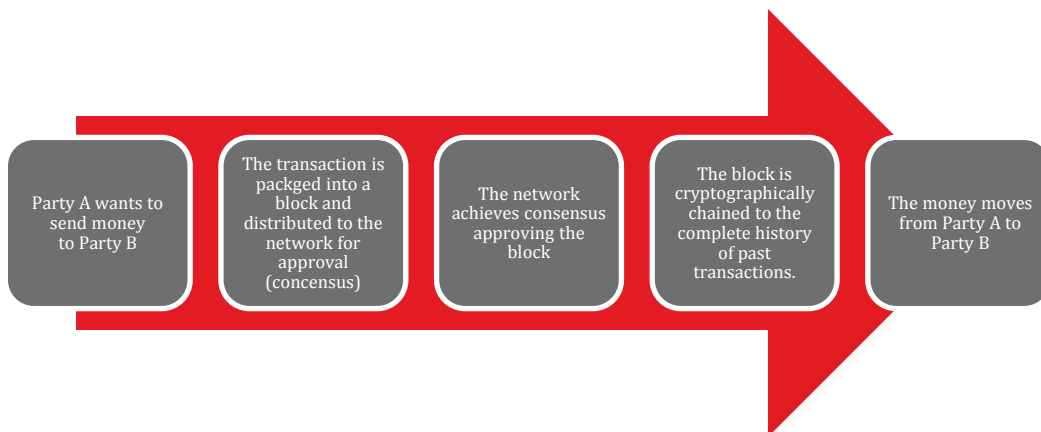
Consensus is the crowd-sourced agreement of a blockchain network that a block of transactions is not fraudulent. Universal agreement is not required, only sufficient agreement to mitigate the risk of corruption and collusion. Stronger consensus requirements mean longer transaction processing times.

For a variety of reasons (performance, security, and economic), private blockchains have become very popular. Private networks are more trusted because of the upfront permissioned agreement necessary to join. In contrast, a public blockchain infrastructure can be used by anyone. It is much harder to achieve consensus when any entity can participate to any degree.

How do Transactions Work?

A digital wallet is required to exchange value in a blockchain network. Value may be a currency like bitcoin, or an asset or data. A wallet contains a public account code for directing funds and a private approval code that allows the funds to be spent. Transactions are conducted based on the mathematical relationship between the public and private codes. Ledger transactions occur between public account codes providing some, but not complete anonymity.

A digital wallet makes it extremely easy to transfer value, but also comes with increased security concerns. Protecting this information is extremely important as the blockchain is designed to prevent reversible transactions. In time, these and related risks will likely create demand for new cyber insurance products.²



Blockchain Capabilities

Blockchains reduce trust based friction from transactions. Most use cases rely on one or more of these core capabilities.

Value Transfers	<p>Financial institutions, such as banks, spend significant time and effort maintaining lists of ownership and obligations. The diversity of back-office processes and technical architecture within and between them creates a continual need to reconcile.</p> <p>Proponents of blockchains suggest that distributed ledgers could reduce costs, increase speed, improve product offerings, and aid with new regulation (e.g. Derivative settlement periods). As the complexity in processing transactions goes down, so should the associated fees making micro-transaction business models increasingly viable.</p>
Smart Contracts	<p>A smart contract is a contract written in software that automatically executes the terms of a contract. Once approved, the software contract will perform on its own. Many open questions remain regarding the legality of this process.</p> <p>For now, smart contracts serve as powerful tools for running back-office processes, providing audit trails, and highlighting contractual violations. They will become increasingly powerful as the internet of things allows greater automation of contractual terms. For example, travel insurance could automatically pay the claim if a covered flight is canceled.</p> <p>Proponents suggest that smart contracts will solve the problem of trust between parties in a legal agreement. Transactions will have certainty and transparency, and the expenses associated with contracting will be reduced.</p>
Asset Registry	<p>The digital revolution brought with it a proliferation of digital content. Creating, copying, and manipulating digital content can be done with ease. This offers greater efficiencies, but also makes it extremely hard to trust the authenticity of digital records. Until now, a physical document has been the best way to establish authenticity.</p> <p>Blockchains can change that. Modern blockchain implementations allow additional context to be added to a transaction. By including a signature of authenticity in a transaction, it can later be confirmed that a record is official and was sent from A to B on a specific date. A potential application of this would be the management of titling such as a land or automotive registry system.</p>
Chain of Custody	<p>Supply chains are fragile environments. Businesses put a lot of time into building and optimizing them. The blockchain can enhance the supply chain by introducing greater integrity and transparency into the chain of custody and emphasizing the value of the premium good. This will create new opportunities for insurance theft/fraud prevention.</p> <p>For example, Everledger uses a blockchain to document the authenticity and history of transactions related to a diamond. At the time of sale, this digital record is more useful than a paper certificate of authenticity. Insurers can use Everledger to prevent fraud.</p>

Role & Protocol Flexibility

Implementations could and do vary greatly depending on the size, parties, and purpose of the implementation. Leaders like IBM and Microsoft have both announced their Blockchain as a Service platforms. When considering a blockchain implementation, organizations should begin by answering these questions:

- Will the blockchain belong to a private group or a public community?
- How will the identity of parties be managed?
- Who should have read/write privileges?
- What consensus model is most appropriate?
- What steps are necessary to protect the network from attacks?

Challenges Remain

The first blockchain implementation was designed hand-in-hand with the bitcoin digital currency. Debuted in 2009, it has proven itself to be a viable strategy to the distributed ledger problem, however challenges remain.

Blockchain is in the hype cycle that accompanies new, promising technologies. Until it matures, there will be a tendency to use the blockchain hammer for any inconvenient nail in insurance.

- Jamie Macgregor, SVP of Celent's Insurance practice

Cooperation / Economics

Industries are coming together to create new outsourcing models for challenges that are both hugely expensive and require complex skillsets to perform. By pooling the data as an industry, new risk insights can be gained. Ideal solutions also include regulatory components that reduce compliance/security expense.

The blockchain technology plays nicely in this space, but it is not the only possible solution. It must be evaluated if the cost/benefit provided can exceed existing technical solutions. Legacy approaches may already offer a better value.

The value resides in opportunities where trust is secured at a premium. Companies participate because a value is delivered that they could not secure on their own. Alignment of the parties is complex and takes time.

Legal / Regulatory

As we transition to a digital world, the legality of each activity must be considered. The laws need to catch up with the changes in technology. "For example, there's a need to legally recognize the possession of stocks and bonds using shared ledgers, and the finality or transfer of assets on those ledgers."⁴

Innovation brings new risk and new opportunities. In a recent keynote, the chair of the SEC raised the question of "whether blockchain applications require registration under existing Commission regulatory regimes, such as those for transfer agents or clearing agencies."³ The agency is "actively exploring" these questions and their implications.³

The EU Parliament recently hosted a non-commercial round table on cryptocurrencies and blockchain technologies. "The tenor of the discussion was one of overwhelming support for the blockchain sector, with the expressed intent to not prematurely regulate or over regulate."⁴ It is clear that it will take time to determine how best to resolve the legal and regulatory questions at hand.

Working with emerging technologies brings both foreseeable and unforeseeable risk. Some examples of foreseeable risks are skill availability, stability, scalability, unclear upgrade paths, and integration with legacy technologies. The hidden risks are harder to mitigate. Hypothetical examples of these include new security attack vectors and support of unintended adopters.

All of these risks are amplified by the newness of an emerging technology and very few examples of its adoption in production applications. Conducting a readiness assessment will help determine if the existing environment is ready for change. It will also predict how change may impact productivity.

Insurance Opportunities

The world has become more connected as our customers and workforce embraced internet, mobile, and social media. This trend of digitizing the world around us has changed how we work and consume. Blockchain technologies promise to take this one step further by changing how we trust.

In time and with continued investment, blockchain technologies could become the foundational technology of the digital world. Banking is paving the way. Insurers should consider strategies that balance the newness of the technology with its possible product, distribution channels, and back-office implications.

Learning from Banking

In 2015, venture capitalists invested \$500 million in blockchain startups. Blockchain will fundamentally recreate the financial services industry within 10 years. The established financial services industry is taking note and making big moves.

Matthew Wong, research and data analysis at CB Insights, says: “Big deals in blockchain will continue in 2016, although the space is maturing.”⁵ Jalak Jobanputra, founding partner of Future Perfect Ventures, adds “The low-hanging fruit for blockchain startups are industries that are predominantly paper-based and time-intensive. For instance, mortgage origination or insurance could be a good play, and the latter is becoming the new industry buzzword.”⁵

New York based R3 CEV, a private blockchain consortium of 42 of the world’s largest banking institutions, has announced the closure of its initial window for new bank members.⁶ The R3 consortium is now looking to raise up to \$200 million in exchange for equity in a new utility that is speculated to provide blockchain-based financial applications.⁶ Private networks, such as the one R3 is establishing, can protect competitive value and create significant value. What additional value will the first movers capture?

Despite great investment and strong momentum, the financial services industry has yet to see meaningful rollout of blockchain based products or services. Banks are pivoting from innovation in the blockchain technology to innovation in business models. Relatively few leaders are announcing or beginning small-scale customer-facing pilots. This is expected to accelerate over the next 12-18 months, but the number of remaining adoption hurdles (ROI, governance, process re-engineering, standards, regulatory, security, etc.) hint that the adoption will likely be much slower than some initially expected.

The Modern Consumer

Knowing what customers want and putting their needs at the center of the customer journey improves more than just the customer experience. Blockchain can be a strong enabler when meeting expectations of the modern customer including privacy, transparency, ease of use, and personalization.⁷

- **Privacy** – The policy holder’s identity is managed outside of the blockchain in an identity management service. This helps ensure compliance with privacy laws and regulations, while at the same time providing companies with a single view of the customer when needed.
- **Transparency** – The rich history of events related to the customer and the authenticity of their goods are registered on the blockchain, providing context. This additional context benefits both the policy-holder and the agent in addressing the customer’s needs.
- **Ease of Use** – For extremely simple products, the blockchain technology will reduce transaction friction through automation. These simple products will need to be easy to understand, record, and programmatically execute. Claims could be automatically paid based on data from third-party sources rather than statements by the customer, thus reducing ambiguity, fraud, and administrative overhead.
- **Personalization** – Identity/blockchain analytics combined with new digital distribution channels allow increased personalization/localization of products and the customer experience.

How do these statements align with existing industry modernization efforts? What new business models might emerge?

Back-Office Efficiencies

New technologies are interesting to insurers in so much as they increase the effectiveness, efficiency, or competitiveness of the existing organization. Like banks, insurers see potential for back-office savings through greater automation of industry workflows.

For example, a single public ledger could be used to record the transfer of risk through the insurance value chain. This level of connectedness would expedite the risk transfer process, enable more sophisticated risk-management strategies, and provide regulators with greater transparency within the financial services risk portfolio.

Longer term, more robust blockchain utilities could further reduce fraud and increase automation of the claims process. Regulators will need to be involved as the industry walks the line between new efficiencies and increased systemic risk (i.e. too big to fail). We as an industry owe it to ourselves to stay involved in order to advance the potential of greater industry connectedness in a way that benefits all parties.

Conclusion

The insurance industry has benefited from continued technological innovation, yet the basic business model has not changed. How long will this remain the case? A complacent industry is one ripe for innovation. The blockchain revolution is about so much more than the blockchain technology itself. Through decentralized transparency and automation, the speed of trust can be accelerated improving the quality of our relationships and transforming the way business is done.

“I believe that the next generation of insurance products and services will be built using blockchain protocols,” notes Tim Rozar, Chief Executive Officer, RGAx. “Blockchains enable all parties to improve trust and transparency, whether that is between consumers and their advisors, or policy beneficiaries and insurance carriers.”⁸

There is a window of opportunity to shape this revolution. Do you know your capabilities? Do you know your weaknesses? Is this the time to disrupt before being disrupted? How will policy and regulation shape your approach? It's up to each of us to decide how much of a role we want to play in defining the vision for our industry. Let's make the most of this opportunity.

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