Abstract

While Blockchain has become a widely discussed and hailed distributed ledger technology across the banking world, its impact on the insurance space is yet to be witnessed. From product innovation, effective fraud detection, to reduced operational costs, Blockchain has the potential to address some of the key challenges plaguing the insurance industry today. Given that implementing Blockchain is a long-term engagement that requires consistent collaboration between market participants and technology leaders, it is essential to carefully assess the technology implications and define network and regulatory conditions. That said, the time for insurers to invest time and resources in Blockchain—as individual players and as an industry—is now.
Time to Evaluate Blockchain for the Insurance Space!

Blockchain is a relatively new technology for the insurance industry, and is currently going through the litmus test phase. Many major insurers are investing in Blockchain, for the fear of competition moving ahead of them.

Traditionally, the insurance sector has been slow to adopt new technology and is often the last financial sector to incorporate any technological evolution, and Blockchain is no exception. However, it is important to note that the concept of Blockchain is being looked at as one of those rare innovations, which has the potential to disrupt the insurance industry much ahead of the trend.

The insurance industry is all about managing financial risks and includes a high volume of financial transactions on a day-to-day basis. This makes the industry vulnerable to a potentially large number of intrusions, attacks, and fraudulent transactions. The insurance space is also highly complex with composite contracts between multiple stakeholders that require a large processing potential. In this thought paper, we will review some of the current challenges in the insurance space, and analyze if Blockchain can provide the much-needed solutions.

Implications for the Insurance Industry

Blockchain is being assessed from multiple perspectives to find appropriate use cases and the insurance industry is no different. In Insurance, Blockchain can be applied at a more fundamental level because it automates the basics of insurance carrier value proposition: TRUST.

There are many areas across the insurance space where Blockchain can add value and help resolve challenges. Some of these include:

- High volume of digital transactions involving third-party gateways
- Identity thefts and frauds
- Delays in claims processing due to unreliable processes
- Managing multi-party insurance (TPAs, Re-insurers etc.)
- Reducing administrative cost by automating key processes
Problem Statement: Use Case of the Insurance Industry

To simplify the applications of Blockchain, let us take a typical use case from insurance.

John buys insurance for his specialized high value truck from insurance company X. His truck is a specialized one, and thus has a very high insurance value. In order to decentralize the risks and showcase sound financial judgement, company X extends the insurance to re-insurer company Y, which is part of an insurance consortium.

Let us assume that John has a quarterly billing plan and pays his premium every three months. In such a scenario, John has distributed his premium between multiple entities to be cleared at regular intervals.

Now, tracking John’s payment until the last dollar can pose a transactional challenge that many insurers deal with across the industry on a daily basis. To add to the complexity, if there is any claim from John, it involves reverse transactions, which include all insurers and re-insurers. Some of the pain areas in such a scenario are:

- Possible financial loss during digital transactions
- Possible fraudulent or duplicate claims (John may have insured the same truck with another insurer and may have received a claim from them)
- Complex and unreliable reconciliation processes

The above scenario is a typical challenge that the insurance industry faces, and it possesses transactional and contractual complexity.

How Blockchain can be Applied across the Value Chain

- **Claims Management**
  - Claim payout
  - Fraud management
  - Auto initiation of claim

- **Marketing**
  - Bringing back the traction

- **Underwriting**
  - Health record
  - DMV record
  - Pharmacy record
  - Property details

- **Product Management**
  - Offer new product and services
  - Integrated solution

- **Sales & Distribution**
  - Agent contracts
  - Customer details
  - New policy details

- **Policy Services**
  - Policy renewal
  - Renewal premium
  - Policy transactions
An important aspect of Blockchain is the way it is implemented with the digital ledger. In the Banking sector, Blockchain technology along with Bitcoins has been extremely disruptive, being considered alternative currency. Not all countries have started accepting such digital currency, but the acceptance has seen a positive trend so far.

In the insurance industry, based on the implementation scope, Blockchain may see a high demand too. We believe that Blockchain can contribute immensely, if the scope and implementation are captured and defined appropriately. Blockchain requires investment and expertise, and its success demands a change in business thought leadership.

Can Blockchain Help?

The aforementioned problem is an ideal application opportunity for Blockchain implementation, especially if all the insurers in question are part of a private consortium. Blockchain can provide significant benefits to the consortium and all of its participants, including the insured customers like John. Blockchain can address the fundamental challenge of managing and tracking the distributed digital transactions of the problem scenario, as they will be extremely secure, manageable, and high-speed transactions.

Blockchain has the potential to provide a well-structured mechanism of managing and maintaining transactions, relevant public distributed ledgers, while minimizing operational costs from third parties. It will also help customer retention by optimizing processes.
Does this mean Blockchain can solve most of the challenges faced by insurers? No. We recommend that it should be viewed as a specific solution, and one needs to analyze if such a solution fits in as a resolution of any given problem statement.

Some of the areas where Blockchain is already causing significant disruption in insurance by providing appropriate solutions to historic challenges are:

- Decentralized consortiums in insurance, re-insurance, and retrocession (B2C, B2B)
- Insurance consortiums (including underwriting, billing, and handling of claims fraud)
- Underwriting for claim avoidance including automation in claims settlement and disbursement (use of IoT devices in a Blockchain environment)
- Customer experience
- Fraud detection and pricing (Peer-to-Peer insurance, as a relatively new concept has already disrupted the industry)

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<thead>
<tr>
<th>Use Case</th>
<th>Description</th>
<th>Area</th>
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<tbody>
<tr>
<td>Claims handling</td>
<td>Insurance companies become the focal point for customers during the claims initiation process. This is the time when user experience matters and the handling of complex contracts and ease of claims management comes into play. Complex mapping between the contracts, claimants, and claim situation calls for multiple checkpoints because of potential frauds. Blockchain can ensure smooth contract handling and improve claims processing.</td>
<td>P&amp;C, L&amp;A</td>
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<td>Optimizing processes</td>
<td>Blockchain can help in optimizing insurance-based transactions, starting from new business to endorsements, and from cancellations to claims. This can be implemented using smart contracts and easy financial transaction handshake between stakeholders using blocks.</td>
<td>P&amp;C, L&amp;A</td>
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<td>Moving toward interoperable, comprehensive health records</td>
<td>Blockchain adds security and establishes trust between the entities and helps solve the interoperability problem better than today’s existing technologies. An interoperable and comprehensive health record on the Blockchain would most likely be pulled directly from existing EHRs (Electronic Health Record) in hospitals and physician offices. Today's health records are typically stored within a single system. Blockchain allows providers to select which information to upload continuously or upload to a shared Blockchain when a patient event occurs. These interoperable and comprehensive health records push stakeholders to explore this technology and its impact on health information exchanges in the future.</td>
<td>L&amp;A and Healthcare</td>
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<td>Smart contracts to support administrative/strategic imperatives and detect fraud effectively</td>
<td>Blockchain can automatically collect records of agreements, transactions, and other valuable information sets, link together the information, and act on the data using smart contracts. When fraudulent information is submitted to a P&amp;C/Life or Health insurer via false claims, falsified applications, or other channels, smart contracts can help determine if the submission is indeed valid.</td>
<td>P&amp;C, L&amp;A</td>
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<td>Client-centric focus having dynamic insurer/insured relationship</td>
<td>Blockchain provides an easy-to-access, more comprehensive set of medical records that help in infusing comfort and peace of mind. Additionally, it helps in storing EHR securely, which further helps in integrating a wide variety of wellness-related behaviors, which facilitates the insured-insurer relationship dynamically.</td>
<td>L&amp;A and Healthcare</td>
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Figure 1: More Insurance Use Cases for Blockchain
## Are there Limitations to Blockchain?

Blockchain can be implemented under certain conditions only, i.e. multiple parties should be involved and the data on which the results are based should be accurate and unchangeable over time. What happens in a situation where parties are limited, data is not reliable, and there is already a trusted intermediary in place?

In such situations, Blockchain has limitations in terms of the following 3S:

- **Scalability** because of continuously growing data that needs ongoing replications and validations
- **Security** because of evolving, newer threats that have not been experienced, understood, or mitigated yet
- **Standardization** because Blockchain is a new area, it lacks standardization and investment decisions

### Advantages

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<th>Disintermediation and trustless exchange: Two parties can make an exchange without the oversight or intermediation of a third-party strongly reducing or even eliminating counter-party risk</th>
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<td><em>Empowered users</em>: Users are in control of all their information and transactions</td>
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<td><em>High quality data</em>: Blockchain data is complete, consistent, timely, accurate, and widely available</td>
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<td><em>Durability, reliability, and longevity</em>: Due to decentralized networks, Blockchain does not have a central point of failure and is better able to withstand malicious attacks</td>
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<td><em>Process integrity</em>: Users can trust that transactions will be executed exactly as the protocol commands, removing the need for a trusted third party</td>
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<td><em>Transparency and immutability</em>: Changes to public Blockchain can be easily accessed by all parties creating transparency. Moreover, all transactions are immutable, meaning they cannot be altered or deleted</td>
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<td><em>Ecosystem simplification</em>: With all transactions being added to a single public ledger, it reduces clutter and complexities of maintaining multiple ledgers</td>
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<td><em>Faster transactions</em>: Interbank transactions can potentially take days for clearing and final settlement, especially outside of working hours. Blockchain transactions can reduce transaction times to minutes and are processed 24/7</td>
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### Disadvantages/Challenges

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<th>Nascent technology: Resolving challenges such as transaction speed, verification process, and data limits will be crucial in making Blockchain widely applicable</th>
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<td><em>Uncertain regulatory status</em>: Insurance regulations are uncertain, dynamic, and require updates on a regular basis. Due to this unsettled nature of regulation, Blockchain faces hurdles in widespread adoption by insurance carriers</td>
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<td><em>Large energy consumption</em>: The Bitcoin Blockchain network’s miners are attempting 450 thousand trillion solutions per second in an effort to validate transactions using substantial amounts of computing power</td>
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<td><em>Control, security, and privacy</em>: While solutions exist, including private or permissioned Blockchain and strong encryption, there are still concerns around cyber security that need to be addressed before the general public will entrust their personal data to a Blockchain solution</td>
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<td><em>Integration concerns</em>: Blockchain applications offer solutions that require significant changes or complete replacement of existing systems. In order to make the switch, companies must strategize the transition</td>
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<td><em>Cultural adoption</em>: Blockchain represents a complete shift to a decentralized network which requires the buy-in of its users and operators</td>
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<td><em>Cost</em>: Blockchain offers tremendous savings in transaction costs and time but the high initial capital costs could be a deterrent</td>
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*Figure 2: Benefits and Challenges of Blockchain Technology*
How Blockchain Can Alter the Insurance Landscape

Blockchain, in the insurance space, is still in its initial phase. The industry is yet to see a full-blown Blockchain implementation in production environments.

Some of the trends we expect to see with Blockchain in insurance space are:

- Peer-to-Peer (P2P) insurance with Blockchain will create a potentially autonomous, self-regulated business model. P2P insurance model follows a similar business principle as Blockchain, i.e. presence of no single controlling authority and high transparency. This will be adapted more and we can expect large players to start participating in it.

- More and more large players, especially re-insurance and consortiums to invest on Blockchain, especially for transactions, claims.

- Smart contracts and digital assets to become a reality

Figure 3: Blockchain in the Insurance Landscape**
The NIIT Technologies Thought Board: Demystifying Blockchain for Insurance

What are the areas in the insurance sector where Blockchain can help?

- Digital transactions involving third-party gateways
- Identity thefts and frauds
- Claims Processing
- Multi-party insurance
- Process optimization

Where can Blockchain be applied across the insurance value chain?

- Claims management
- Product management
- Policy services
- Marketing
- Underwriting
- Sales and distribution

Which areas are already seeing significant disruption in the insurance space due to Blockchain?

- Decentralized consortiums in Insurance, Re-insurance, & Retrocession
- Insurance consortiums (including Underwriting, Billing, and Claims Fraud handling)
- Underwriting for claim avoidance
- Customer experience
- Fraud Detection and pricing

What are the key challenges to Blockchain adoption?

- Nascent technology
- No standardization
- Uncertain regulatory status
- High energy consumption
- High initial capital expense

What are the advantages of implementing Blockchain in the insurance space?

- Empowered users with better control on information and transactions
- High quality data that is complete, consistent, and widely available
- Durability, reliability, and longevity
- Process integrity
- Transparent, simplified, and faster transactions

How can Blockchain alter the insurance landscape?

- Potentially autonomous, self-regulated business model
- Increased participation from larger players especially for transactions, claims
- Smart contracts and digital assets
Recommended Approach for Insurers

- Review existing collaborations/consortiums in business and identify critical challenges. This will help insurers analyze if Blockchain can help in collaborative environments.
- Blockchain is a great boom for any insurer participating in P2P insurance domain. Understanding the pros and cons of Blockchain on P2P insurance space before investing will be vital.
- Take time to understand the advantages of implementing smart contracts in business. This will help insurers to be ready for the next big change with Blockchain.
- Deep dive into the claims process to understand customer’s pain points. This is very important and can bring in positive disruption.
- Include Blockchain as a shared mechanism for insurer carriers (via inter-company claims) to manage the subrogation process quickly, efficiently (in terms of admin cost), and diligently, leaving no scope for fraud.
- Invest in understanding the limitations of Blockchain and related technologies. This will help insurers (CTOs) to ensure they do not go by any hype, and are able to take informed decisions.
- Blockchain can enable trust between peers to help increase transparency in micro-insurance. It helps overcome any geographic and collaborative limitations.
- Regulatory and compliance requirements have been driving the insurance industry. Insurers need to understand that Blockchain works in a completely different theory, i.e. Blockchain is transparent and not regulated and can potentially reduce centralized controls.
- Blockchain is a great solution for re-insurers. Since re-insurers are already part of collaborative environments or consortiums, their ability to utilize Blockchain should enhance their operational efficiency.

About the Author

Sriram Natarajan is a Solution Architect with over 17 years of leadership experience spanning delivery, program management, technology solutions, and enterprise architecture in insurance. His vast domain and technical expertise has been instrumental in the successful delivery of various programs he has been associated with. Sriram has done Masters in Computer Application from Tamil Nadu University, in addition to a Bachelor's degree in Mathematics from Delhi University.

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References

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