How Blockchain Can Reinvigorate Facultative Reinsurance Contract Management

The reinsurance industry faces growth, legacy systems and process inefficiency challenges, many of which could be remediated by an industry-wide embrace of blockchain thinking and technology, and the application of smart contracts. This could improve stakeholder communication, reduce operating costs through advanced automation, streamline processes through greater trust and transparency, reduce paperwork, and improve auditability through immutable records - if all parties are willing to work together.
EXECUTIVE SUMMARY

Reinsurance is an essential component of the insurance ecosystem — the supporting pillars that keep the industry intact by smoothing out the effect of claims on insurers. However, all is not well in the reinsurance industry. Increasing competitiveness, surplus capacity, downward pressure on premium pricing and alternate forms of capital are all impacting the profitability of reinsurance players. Moreover, many are grappling with major issues of claims leakage through insufficient reinsurance recovery strategies. They are looking for foolproof systems and processes to stem such bleeding.

Brokers/reinsurers are now examining ways to build a competitive advantage in their new business (i.e., policies and revenues from new coverages for new and existing customers), underwriting and policy servicing areas. They are doing so by upgrading their infrastructure, systems and processes to build efficiencies, foster collaboration and improve productivity (e.g., Lloyds of London embarking on an ambitious target operating model). Blockchain offers the ability to handle secure, multiparty transactions across geographies, automate rules through smart contracts and bring counterparty transparency while maintaining an immutable audit trail of transactions. These attributes could set a standard for regulatory compliance and prove to be a game-changer for the reinsurance industry.

Across the financial services industry, major companies such as Barclays, ICICI and Metlife are successfully experimenting with blockchain applications. Distributed ledger consortiums such as R3 are simultaneously expanding their scope and potential across such segments.

This white paper looks at how blockchain thinking and technology can be applied to transform the facultative reinsurance industry by revamping the contract management process, automating and streamlining manual inefficient processes, and addressing key pain points for stakeholders across the value chain.
Blockchain offers the ability to handle secure, multiparty transactions across geographies, automate rules through smart contracts and bring counterparty transparency while maintaining an immutable audit trail of transactions.
BLOCKCHAIN: AN OVERVIEW

Traditional business models are under constant attack. If insurers fail to redefine themselves and how they operate, they will end up paying the price in terms of ceding market share to fintech start-ups and other competitors that are embracing technology at a much faster pace. The insurance industry has taken a conservative stance in its adoption of digital technology; historically, insurers have played a wait-and-watch game until a technology reaches a certain degree of maturity before investing. This is especially evident in the reinsurance industry due to its global nature, scale of business and high entry barriers.

Blockchain, however, has caught the eye of not just fintech insurance firms, but also incumbents, highlighting the industry’s faith in the potential of technology. The time is ripe for the reinsurance industry to hop onto the digital bandwagon through blockchain to rethink and reinvent the existing reinsurance ecosystem.

Defining Blockchain

Blockchain is a shared, distributed ledger with non-repudiation of transactions that works across a trusted peer-to-peer network. Participants validate and authenticate online transactions via public key infrastructure (PKI) encryption and consensus protocols on a single ledger without the need for a central clearing authority. When a party adds a new transaction to the blockchain, participants in the network evaluate, verify and agree to the proposed transaction. This results in its inclusion on the “chain,” along with other proposed transactions, in the form of a “block.” (See our “Demystifying Blockchain” e-book for a deeper dive.) Blocks, which are identified by a hash, provide both information identification and integrity verification.

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With a smart contract, trust is hard-coded into the system, eliminating the need for counterparties to execute or perform their part of an agreement. It can help in streamlining transactions, reducing duplication, cutting costs and eliminating the need to reconcile data across multiple systems.

Blockchain’s Flavors

<table>
<thead>
<tr>
<th></th>
<th>Public</th>
<th>Private</th>
<th>Permissioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrators</td>
<td>All participants</td>
<td>One organization (node)</td>
<td>Selected nodes</td>
</tr>
<tr>
<td>Speed of transaction</td>
<td>Slow</td>
<td>Fast</td>
<td>Fast</td>
</tr>
<tr>
<td>Ensuring Data Privacy (Access control)</td>
<td>Not possible</td>
<td>Possible</td>
<td>Possible</td>
</tr>
</tbody>
</table>

Blockchain consists of the following technological attributes:

- **Cryptographic security:** It enables secure, real-time data transfer between authorized parties.
- **Auditability:** It maintains a history of each transaction with a permanent date-time stamp.
- **Decentralized architecture:** Data is stored on multiple nodes, thereby ensuring no single point of failure.
- **Immutability:** Once entered, data cannot be erased or altered easily.
- **Transparency:** All stakeholders have access to real-time, authentic data.

Numerous companies across industries are experimenting with distributed ledger technology to digitally track ownership of assets. They are recognizing blockchain’s potential to sustain process efficiencies, cut costs and reduce the instances of fraud. (For more, read our primary research reports on blockchain readiness; learn more about blockchain in the life insurance business by reading “Blockchain: A Potential Game-Changer for Life Insurance.”)

Blockchain also supports smart contracts, which are digital promises that include the protocols to perform business agreements, where performance is objectively verifiable and can be automated. These contracts are created and stored on the blockchain networks, and they convert business rules into code, thereby initiating certain actions whenever specific trigger points are reached. With a smart contract, trust is hard-coded into the system, eliminating the need for counterparties to execute or perform their part of an agreement. It can help in streamlining transactions, reducing duplication, cutting costs and eliminating the need to reconcile data across multiple systems.
Today’s Reinsurance Business

In facultative reinsurance, a “chain of trust” is the central theme between cedent, broker and reinsurer. This is based on an intangible promise to pay, to disclose authentic and accurate data that describes the insurable interests of the cedent and to pay in a timely fashion. Due to the level of risk involved, the agreements need to be carefully drafted, with real-time transparency and collaboration essential for all parties. This process can be very complex and operationally inefficient; existing options to monitor such agreements require the adoption of complex technological solutions.

Facultative Reinsurance Process Flow

Cedents, brokers and various reinsurance companies discuss and agree to indemnify a ceding company against all or part of its loss. Among them, the broker plays a crucial role by acting as an intermediary between various parties. Figure 2 shows the various steps involved in signing a facultative reinsurance contract with different stakeholders.

Challenges in the Facultative Reinsurance Industry

Figure 3
The industry’s key challenges include the following:

- **High turnaround time:** On average, each risk takes up to three months until the final contract is signed (even though a contract is deemed effective once the terms are agreed upon). Depending on the nature of the risk, when a cedent submits the risk to a broker or a reinsurer it may take time to be authenticated and underwritten due to the lack of information available or the need to weed through historical data. Most of this time is wasted exchanging terms via e-mail or physical copies across parties, which results in manual entry of data into systems at each of the stakeholders, which can delay the process.

- **Fragmented data sources:** There is no standardization or common platform for collaboration where the cedent, broker and reinsurer can work simultaneously and share data as they use different systems and technology. This lack increases the frequency of follow-ups and time spent for contract creation.

- **Administrative overhead:** The facultative reinsurance market is still highly dependent on paper, due to its global nature, diverse work culture, and sluggish adoption of digital tools and thinking. Brokers/reinsurers face a massive administrative burden in data collection, contract creation, international shipment to each stakeholder and follow-up until the final contract sign-off. This is further compounded during endorsements, renewal, premium payments, claims settlement and reporting. We estimate that an average of three hours per contract is wasted on administrative and mundane activities.

In short, the industry lacks a central repository where all the stakeholders can view the latest reinsurance contract. Thus, a contract with its key metrics and conditions would need to be entered by both the insurer and reinsurer into their respective systems. And they often have different systems, processes and practices that can end up with each side having a different interpretation of the contract.

Moreover, insurers face the problem of claims leakage (i.e., the recovery of reinsured risk claims), where – due to the complex nature of the contract – insurers understate the claim amount owed by the reinsurers, to the tune of more than $25 million a year.

The aforementioned challenges pose a serious threat to the industry at large, especially as all business processes are in the throes of being digitized, be it for revenue lift, process optimization or customer satisfaction. The sooner brokers and reinsurers advocate for and adopt digital ways of working, the better it will be for industry participants to partake in long overdue business renovation.

With this context, blockchain offers a lot of value to the facultative reinsurance industry, not only in terms of providing enhanced trust and transparency between the parties involved, but also via enhanced and cost-reduced business capabilities that result from smart contracts.

**We estimate that an average of three hours per contract is wasted on administrative and mundane activities.**
REIMAGINE REINSURANCE USING BLOCKCHAIN

We envision a permissioned consortium-based blockchain including cedents, brokers and various reinsurers to help reimagine the current facultative reinsurance workflow. The proposed solution can reduce turnaround times and automate processes through predefined smart contracts.

Contract management is among the key areas for a reinsurance firm, and blockchain can help reduce manual administrative overheads in the current process. The access to risk-related documents (i.e., the hashed location of the documents) can be shared by the cedent over a blockchain network, which can be used by the broker to create a digital facultative slip. The broker can then share the slip with multiple reinsurers simultaneously, and also provide the reinsurers with specific documents to underwrite the risk. A snapshot of the proposed workflow with all actors and the transactions is depicted in Figure 4.

Proposed Facultative Reinsurance Blockchain Ecosystem
The access to risk-related documents can be shared by the cedent over a blockchain network, which can be used by the broker to create a digital facultative slip. The broker can then share the slip with multiple reinsurers simultaneously, and also provide the reinsurers with specific documents to underwrite the risk.
Based on their assessment of the risk details, reinsurers can update the facultative slip on the blockchain with the percentage and premium at which they are willing to reinsure. Post negotiations, the broker can draft the reinsurance agreement and update it on the blockchain for all parties to review. Each party can then digitally sign this agreement, after which a smart contract becomes effective, to handle periodic premium payments, endorsements intimations, claim notifications, etc.

Blockchain enables all relevant parties to collaborate with each other simultaneously in real time and to avoid duplication of data across multiple systems. Digitally-created contracts reduce the manual effort and heavy administrative burden of contract sharing and execution. All parties would then be looking at a single version of the contract, with no possibility of version mismatch or misinterpretation, even after multiple endorsements, thereby eliminating the need for reconciliation. Each stakeholder would have access to an integrated dashboard that would give them a bird’s-eye view of its reinsurance contracts and their corresponding status.

In sum, this approach could help brokers reduce time spent on mundane activities, enabling additional efficiencies around core activities such as placing and negotiating risks.

**Stakeholder Challenges Solved by Blockchain Solutions**

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Blockchain Solutions</th>
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<tbody>
<tr>
<td><strong>Reinsurer</strong></td>
<td></td>
</tr>
<tr>
<td>Manual Data Entry, Different Versions of Truth</td>
<td>Common Data Sharing Platform, Single Source of Truth</td>
</tr>
<tr>
<td>• Lack of integrated systems for information transfer.</td>
<td>• Seamless transfer of information across stakeholders.</td>
</tr>
<tr>
<td>• Possibility of data duplication, human error.</td>
<td>• Single version of contract on one platform.</td>
</tr>
<tr>
<td>• Local copies of contracts present different interpretations of the contract – possible litigation during claims.</td>
<td>• Smart contract - automatically inform reinsurers of contract updates/FNOL/payments.</td>
</tr>
<tr>
<td><strong>Broker</strong></td>
<td></td>
</tr>
<tr>
<td>Administrative Overheads, Data Authenticity</td>
<td>Smart Contracts, Perfect Audit Trail of Data</td>
</tr>
<tr>
<td>• Mundane administrative activities; getting contracts signed, disbursing premium payments, etc.</td>
<td>• Single platform for interfacing with multiple stakeholders.</td>
</tr>
<tr>
<td>• Verifying authenticity of submitted risk-related data.</td>
<td>• Smart contract to codify business logic and initiate processes, such as premium payments.</td>
</tr>
<tr>
<td>• Tracking regulatory developments, contract amendments.</td>
<td>• Perfect audit trail of all data - trust “hard coded” systems on one platform.</td>
</tr>
<tr>
<td><strong>Insurer</strong></td>
<td></td>
</tr>
<tr>
<td>Claims Leakage, Fragmented Data Sources</td>
<td>Automated Claim Handling, Monitoring Dashboard</td>
</tr>
<tr>
<td>• Disjointed systems - understated claims.</td>
<td>• Mapping incoming claims to reinsured risk easier.</td>
</tr>
<tr>
<td>• No common platform to capture reinsurance data - time-consuming bordereaux reporting.</td>
<td>• Integrated dashboard with all reinsurance contracts details – coverages, liability %, premium %, etc.</td>
</tr>
<tr>
<td>• Administrative delays lead to high turnaround times for signing contracts.</td>
<td>• Automated bordereaux reporting, digitally signed contracts on one platform to reduce turnaround time.</td>
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</table>

Figure 5
Comparing Blockchain with Other Approaches

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<thead>
<tr>
<th></th>
<th>Blockchain</th>
<th>Other IT Solutions</th>
</tr>
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<tbody>
<tr>
<td>Contract Management</td>
<td>Automation of contract management process including administrative operations, payments, contract execution.</td>
<td>Difficult to automate the end-to-end contract management process when multiple parties are involved; scalability and accessibility issues.</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Real-time interaction among multiple parties; reduced manual effort, data duplication.</td>
<td>Disparate systems leading to operational delays – time wasted on manually entering data across systems.</td>
</tr>
<tr>
<td>Control</td>
<td>No central repository of information, no central management and no central point of failure.</td>
<td>Centralized storage of data – relatively susceptible to attacks, need to ensure backups are taken on a periodic basis to avoid data loss.</td>
</tr>
</tbody>
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Figure 6 compares blockchain’s unique capabilities vis-à-vis other solutions.

We estimate that blockchain can help save over $100 million annually across the facultative reinsurance industry. A breakdown of how we arrive at that figure is shown in Figure 7.

Industrywide Savings

<table>
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<tr>
<th>Industrywide Savings Annually Using Blockchain</th>
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<tbody>
<tr>
<td>Contract Management (Three Man Hours Saved per Contract)</td>
</tr>
<tr>
<td>Administrative Expenses</td>
</tr>
<tr>
<td>Insurer Claims Leakage$^\text{1}$</td>
</tr>
</tbody>
</table>

*Estimated savings of ~ $100 million/year*

- For contract management: There are approximately 400,000 facultative contracts signed per year; we estimate that blockchain could save three hours per contract, at an average man-hour rate of $35, which computes to $42 million of savings.

- Administrative expenses including shipment, stationery, and other miscellaneous expenses for interacting with insurers and multiple reinsurers, which were estimated at $75 per contract, which computes to $30 million in savings.

- The $25 million in claims leakage savings was provided by Aon Benfield.
As highlighted in Figure 8, other potential applications of blockchain thinking and technology in the reinsurance space include the following:

- Claims administration could become more efficient by reducing the time and cost involved in sharing and validating claims for administering and approving claims and providing services (insurers, reinsurers, brokers, service providers/vendors and regulators). This would allow all stakeholders to collaborate and share details over a common shared platform.

- Smart contracts are parametric contracts that initiate transactions when there is a change in a certain parameter designed into the contract. Thus, when a loss notification is received, smart contracts can trigger the FNOL process, notify relevant stakeholders and also eliminate information gaps through the claims process.

- Cedent’s periodic premium bordereaux reporting process could be automated by leveraging smart contracts. When a reinsurance contract is finalized, the premiums and other contract details are codified and the smart contract initiates triggers periodically and uses premium data to generate the reports.

- Blockchain maintains a complete audit trail of each of the transactions performed by different actors, which ensures absolute transparency. In the future, it could become a regulatory best practice, with regulators also joining the network with read-only access to monitor risks in real time.

**Blockchain Use Cases Beyond Contract Management**

- Streamlined workflows leading to process efficiencies.
- Automated premium bordereaux reporting and regulatory oversight.
- Parametric event triggering leading to fewer manual touchpoints.
- Access control and audit management.

*Figure 8*
LOOKING AHEAD

The reinsurance industry faces a multiplicity of challenges, from low interests and investment yields, to growth obstacles within the insurance-linked securities market and alternative forms of capital. Apart from this, limitations in legacy platforms are forcing reinsurers to invest in modern technology platforms to help minimize operating costs, improve customer experience, and improve top-line growth and profitability. Insurers have only recently started to explore the potential of blockchain, which in our view could help to significantly improve stakeholder communication, streamline processes, reduce paperwork and improve auditability. Blockchain is just now generating democratized value transfer, a state similar to where the Internet was in the pre-e-commerce days of the early 1990s.⁸

We believe reinsurance companies should examine their existing processes, understand what blockchain can do for them and develop potential use cases that optimize key business activities. Doing this will require all players to make a concerted effort to collaborate and test relevant use cases. This is critical since blockchain, as a shared infrastructure, generates maximum value when used at scale across an industry.

Encouraging signs of collaboration have emerged among major insurance/reinsurance players such as Aegon, Allianz, Munich Re, Swiss Re and Zurich, which recently launched a blockchain insurance industry initiative known as B3i.⁹ These players have recently agreed to cooperate on a pilot blockchain project, using anonymized transaction information and anonymized quantitative data, to test proof-of-concepts on inter-group retrocessions. This is a great starting point for the industry to build on to create blockchain technology and process standards that will catalyze efficiency gains.

REFERENCES

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FOOTNOTES


ABOUT THE AUTHORS

Shriram Sankaran is a Consulting Manager within Cognizant Consulting’s Insurance Practice. He has 25 years of experience in P&C insurance, consulting and IT industries across the insurance domain, and has worked with major insurers on the business side in India, Asia-Pacific, the Middle East, the U.S. and UK. In addition, Shriram has expertise in business process reengineering, product implementation and greenfield implementation. He holds a master’s degree in commerce and a bachelor’s degree in business administration. Shriram is a Fellow of Insurance Institute of India and a Chartered Insurer (UK). He can be reached at Shriram.Sankaran@cognizant.com | LinkedIn: in.linkedin.com/in/shriramgs.
The authors would like to thank Agil Francis (Senior Director, Cognizant Consulting's Insurance Practice), Muralidharan Krishnamurthy (Director, Cognizant Consulting's Insurance Practice) and Fletcher McCraw (Senior Consultant and Partnerships and Alliances Lead, Blockchain and Distributed Ledger Consulting Practice) for their invaluable insights.

Venkatesh Prabhu is a Business Analyst within Cognizant Consulting’s Insurance Practice. He has six-plus years of experience working across the P&C and life insurance sectors, and has business analysis experience across various functions including policy administration, group benefits, finance operations and reinsurance. Venkatesh has experience working with North American and APAC clients. He holds a post-graduate degree in management from the Great Lakes Institute of Management, Chennai. Venkatesh can be reached at VenkateshM.Prabhu@cognizant.com | LinkedIn: linkedin.com/in/venkatesh-prabhu-m-a0675a8a.

Manikandan Sankaran is a Consultant within Cognizant Consulting’s Insurance Practice. A certified ALMI professional, he has two-plus years of experience working with multiple insurers across the U.S. and APAC markets, with expertise in business analysis, process engineering and digital transformation of insurers. Manikandan holds a PGDM in finance and strategy from Indian Institute of Management, Indore. He can be reached at Manikandan.Sankaran2@cognizant.com | LinkedIn: linkedin.com/in/manikandan243/.

Vinay Alexander is a Consultant within Cognizant Consulting’s Insurance Practice. A certified AINS professional, he has over eight years of experience working with multiple P&C insurers and brokers across Europe and North America in IT product development, functional implementation, business analysis, business process consulting and digital transformation. Vinay received a PGPM in marketing and sales from Great Lakes Institute of Management, Chennai. He can be reached at Vinay.Alexander@cognizant.com | LinkedIn: linkedin.com/in/vinay-alexander-830301bb/.
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World Headquarters
500 Frank W. Burr Blvd.
Teaneck, NJ 07666 USA
Phone: +1 201 801 0233
Fax: +1 201 801 0243
Toll Free: +1 888 937 3277

European Headquarters
1 Kingdom Street
Paddington Central
London W2 6BD England
Phone: +44 (0) 20 7297 7600
Fax: +44 (0) 20 7121 0102

India Operations Headquarters
#5/535 Old Mahabalipuram Road
Omniyan Pettai, Thoraipakkam
Chennai, 600 096 India
Phone: +91 (0) 44 4209 6000
Fax: +91 (0) 44 4209 6060