Blockchain is poised to rewrite the rules of competition in the insurance industry by streamlining operations, enabling data to be shared seamlessly with external stakeholders, and disrupting traditional business models and intermediaries. Insurance and reinsurance companies need to act now to learn how they can apply this evolving technology to best address their business challenges, our latest research finds.
EXECUTIVE SUMMARY

Blockchain technology is set to overturn the insurance industry, if senior decision makers have anything to say about it. In their minds, blockchain’s distributed ledger technology could streamline how insurance companies operate and interact with the numerous stakeholders across the industry value chain. Beyond increasing efficiency and reducing costs, blockchain could also enable entirely new business models, such as peer-to-peer (P2P) insurance, and, over time, either eliminate or challenge entrenched intermediaries.

To understand how insurance companies view the potential of blockchain, we conducted a global survey of 526 insurance professionals representing all industry segments† – including life and annuity, property and casualty, group benefits, and retirement services – on how they expect the technology to impact their industry and the steps their organizations are taking to prepare (see Methodology, page 24).

Although blockchain made its debut in banking, the technology is viewed as a force multiplier for organizations seeking to restructure operations and overturn outdated business models across industries. Since one of its principal advantages is an inherent ability to allow multiple parties to seamlessly integrate and validate data by employing a single distributed ledger, blockchain could be a strong fit in instances where carriers must interact with a variety of stakeholders’ systems, including agents/brokers, third-party administrators, vendors, government agencies, third-party data providers, reinsurers and customers.
By leveraging blockchain, insurers have the potential to dramatically reduce operating costs by automating the manual tasks involved in requesting, exchanging and entering data in areas such as underwriting, claims and reinsurance. Automating these manual tasks on a blockchain platform will also speed processing, improve data quality, reduce fraud and provide real-time transparency into the status of transactions for all involved.

Blockchain technology is still in a nascent stage of enterprise adoption. However, like their banking and brokerage brethren, insurers need to get in the game by gaining familiarity with the blockchain landscape, identifying the areas where the technology can best be applied in their organization, and undertaking proofs of concept and pilot projects to gain hands-on experience. Many insurers are already taking these steps to gain experience with technology and position themselves at the forefront of these changes.

Leveraging blockchain’s potential could require insurers to rethink some of their current practices. Insurers may find themselves shifting from a traditional paradigm of data ownership to sharing data in distributed networks with external partners and stakeholders for mutual benefit. In addition, they will also need to be ready to respond to the disruption to established business models that blockchain will enable.
Key Findings

Our study revealed:

• **Blockchain’s business impact is potentially game-changing.** There was broad consensus that blockchain would have an important impact on the insurance industry, with 86% saying it would be either important or very important, including 54% who said it would fundamentally transform the industry. The expected benefits of blockchain that were cited most often were faster claims settlement (43%), reduced fraud (40%), improved record keeping (40%), streamlined processes (38%) and greater transparency (38%).

• **Use case assessment is top of mind.** Respondents said their organizations are exploring a variety of blockchain use cases, including payment processing (73%), insurance processing and multi-party collaboration (59%), death benefit processing (53%) and new business models, products, markets and services (50%).

• **Blockchain strategy remains a work in progress.** Insurers need to identify where blockchain can generate business value and decide which types of blockchain platforms to join. Although early in the game, only 44% of respondents said their organization had identified the functional areas and business processes that could be impacted by blockchain. However, an additional 54% said they were in the processing of doing so. There is a wide variety of blockchain platforms, with different platforms best suited to different use cases. Given the uncertainty over the future of the blockchain ecosystem, insurers are well advised to gain experience with multiple platforms, both permissionless and permissioned, and respondents said their organizations are exploring several platforms.

• **Communication and identifying proofs of concept are top impediments.** The internal barriers to blockchain adoption are largely strategic rather than technical. The top issue cited by respondents as a barrier to adoption was communicating to their key decision makers the benefits of adopting blockchain technology (51%). The communication problem largely stems from the struggle to understand how to apply blockchain. Two of the barriers to adoption cited most often by respondents were understanding blockchain and use cases (48%) and evaluating the cost-benefits of use cases (49%). Insurers need to conduct proofs of concept and pilot projects to understand how blockchain can be leveraged to address business issues and generate value, while keeping in mind that quantifying the costs and benefits of blockchain projects may not yet be possible because of the technology’s early stage of development.

• **Blockchain expertise is an unspoken but critical ingredient in business success.** Insurers will need additional blockchain expertise, but many organizations appear to be underestimating the challenge. Roughly half of respondents felt their organization would require additional expertise in compliance (54%), cybersecurity (54%), risk management (52%) and legal (49%), while only 45% said they believed they would need additional technical expertise.
• **External roadblocks are manifold but manageable.** Privacy and security (71%) was the issue cited most often by respondents as a top external obstacle to adoption. Regarding privacy, permissioned blockchain networks are working actively to design methods to allow enterprise users to limit access to their data. As for security, blockchain networks, in fact, provide a much higher level of security than is currently available, and we believe that security concerns will lessen as decision makers become more comfortable with the technology and regulators catch up with its emerging implications. Scalability/latency (65%) was named next most often as an external barrier. When choosing a platform for each use case, insurers should assess the speed and scalability required.

• **A willingness to collaborate is vital but hasn’t crystallized.** The greatest benefits from blockchain adoption will stem from its ability to streamline data exchange among the multiple parties involved in insurance transactions. Yet, 55% of respondents said that working with partners/ecosystem members is one of the top barriers to adoption. The aspects of collaboration that respondents most often cited as posing high difficulty were establishing connectivity with partner systems (52%) and identifying and finalizing blockchain use cases (47%). Although the many ways blockchain can be applied to insurance are still to be determined, executives recognize the technology’s potential to alter the industry’s rules of engagement and competitive landscape. This poses a conundrum for decision makers, who acknowledge the need to move forward with blockchain, but are not clear on which platforms and use cases they should focus on (a finding that is reinforced by our interactions with carriers across industry sectors).

As previous technology cycles have demonstrated, organizations that sit on the sidelines, waiting until the contours of a new paradigm-shifting technology come into focus, are often unable to catch up once the trajectory becomes clear. Insurers need to get in the blockchain game, familiarizing themselves with the technology, identifying promising use cases, and gaining experience with collaborating within emerging ecosystems so they are not left behind as blockchain networks take shape and form across the industry.

**Organizations that sit on the sidelines, waiting until the contours of a new paradigm-shifting technology come into focus, are often unable to catch up once the trajectory becomes clear.**
We are working with major life insurers to develop a consortium that will facilitate cross-company transactions and data sharing. The collaboration will result in increased efficiency and lower costs due to faster processing, improved data quality and reduced potential for fraud and money-laundering across network participants.

THE POTENTIAL FOR GAME-CHANGING BUSINESS IMPACT

First used in 2009 for the digital cryptocurrency Bitcoin, blockchain technology has applications across every major industry, including insurance. Blockchain provides a way to conduct and record transactions through a peer-to-peer network that replaces the traditional role of a central trusted authority. Blockchain networks create proof of ownership by using unique digital signatures that rely on both public encryption keys known to everyone on the network and private keys known only to the owner. Consensus models ensure that only valid transactions are posted on the network and become a part of the record. Complex cryptographic algorithms that link transactions together in a time-sequenced manner ensure that data cannot be altered or tampered with, making the record immutable.

Blockchain platforms can be public (i.e., permissionless), like Bitcoin, with anyone allowed to submit a transaction and take part in validating other transactions. Or they can be private (i.e., permissioned), where only authorized participants can share and validate information. Private blockchains pivot around the reputational investment of the actors participating in the network. The private blockchain approach allows for innovations that address the speed, privacy and scalability concerns of public blockchains while reinforcing the validity of transactions. Insurers may employ several platforms, both public and private, selecting the platform that best meets the requirements of individual use cases.

For insurance, blockchain holds the promise of allowing the seamless transfer of data among the many stakeholders involved in insurance transactions, as well as automating many currently manual tasks. The result will be dramatically increased efficiency and lower costs, as well as faster processing, improved data quality and reduced fraud. We are working with major life insurers to develop a consortium that will facilitate cross-company transactions and data sharing.

Yet, the impact of blockchain won’t be confined simply to driving greater efficiency; it will also disrupt insurance markets, driving the creation of new business models, such as P2P insurance, while disintermediating some of today’s established players.

There was broad consensus among respondents that blockchain will be important to the future of the industry, with 86% saying it will be either important or very important, and 54% saying it would be very important, i.e., it will fundamentally transform the industry. Sixty-seven percent of respondents said the top leadership of their organization is very committed to blockchain adoption.
Blockchain's Operational Potential

Respondents were asked to rate the impact of blockchain across enterprise functions. (Percent rating impact as “high”)

![Figure 1](image)

Respondents believe blockchain will have important impacts across their organizations (see Figure 1). Fifty-nine percent of respondents said they expected blockchain to have a high operational impact, while many also expect data management (46%), finance (44%), IT (41%) and procurement (40%) to be greatly impacted.

Blockchain will help to streamline operations and reduce operating costs. Ninety-one percent of respondents said they expected blockchain adoption to result in cost savings at their organization of greater than 2.5%, and much of these savings are expected to come from automation. Sixty-seven percent of respondents predicted that more than 2.5% of the jobs in their organization will be automated due to blockchain.

**Faster Payment Processing**

Payment processing currently presents a host of challenges to insurance carriers, including high service fees charged by banks, vendors and other intermediaries; slow payment clearance; high processing costs due to paper-intensive processes; and the potential for fraud. These issues are magnified in commercial property and casualty (P&C) coverage, where the payments are large and can involve multi-currency settlements.

Blockchain can address these pain points by enabling faster payment and confirmation, including for cross-border payments. The benefit of blockchain adoption cited most often by respondents was faster claims settlement (43%) (see Figure 2, next page).

Blockchain can enable payments to be approved automatically without the need for human intervention or a central authority, which can drastically speed payment and slash operating costs. An automated blockchain payment solution would eliminate the need for reconciliations, improve audit quality and reduce the potential for payment fraud.

In addition to claims processing, a blockchain payment solution can streamline operations, improve accuracy and reduce costs across the value chain in such areas as agent/broker commissions and incentives, premium receivables, premium refunds at cancellation and service provider/vendor payments.
Effective Processing and Multi-party Collaboration

Depending on the type of transaction, insurance carriers must access data from customers and numerous other stakeholders, such as agents/brokers, vendors/service providers, third-party administrators, financial advisers, government agencies, enrollment outfits, mutual fund companies and reinsurers. For underwriting, pricing, claims management and reinsurance, for example, P&C carriers need to access third-party reports, such as motor vehicle records, comprehensive loss underwriting exchange reports, office of foreign assets control reports and insurance services office claims or loss runs.

Doing so is heavily manual, time-consuming and expensive, while also raising the concern of data breaches. According to respondents, many of the major expected benefits of blockchain adoption would relate to its ability to increase process efficiency and data security. Among the benefits cited most often were reduced fraud (40%), improved record keeping (40%) and streamlined processes (38%).

Having stakeholders house their data on a blockchain would create a shared source of truth, which would facilitate data-sharing, reduce costs and decrease the likelihood of errors. Data would also be more secure since blockchain networks store data in a format that cannot be replicated or tampered with.

Blockchain’s Performance Implications

Respondents were asked to indicate the top five expected benefits of adopting blockchain.

(Percent of respondents naming each as a top-five benefit)

Note: Percentages total to more than 100% since respondents could make multiple selections.

Figure 2
Having stakeholders house their data on a blockchain would create a shared source of truth, which would facilitate data-sharing, reduce costs and decrease the likelihood of errors. Data would also be more secure since blockchain networks store data in a format that cannot be replicated or tampered with.
In life insurance, hospitals and hospices could integrate their death registration records with a blockchain network that would be directly processed by the insurer. For P&C insurance, data on property and vehicle titles, driving history, business licenses and building permits could eventually be stored on a blockchain, eliminating the need for carriers to request this data. Blockchain networks could also maintain a consolidated source of information regarding the purchase of expensive items such as antiques, luxury items, diamonds, art works and jewelry. Everledger, for example, has established relationships with certificate houses around the world and has now registered the unique identification codes for more than one million diamonds to reduce fraud. For more insight, read our report, “The Blockchain Imperative: The Next Challenge for P&C Carriers.”

Blockchain can streamline a variety of operational processes. In underwriting and policy administration, blockchain would facilitate collaboration with third-party information sources needed for underwriting and pricing, and make it easy to share policy information with customers, agents/brokers, reinsurers and risk-engineering specialists. In claims management, information could be shared between carriers and service providers to help identify fraud and support timely investigations.

**Automation Through Smart Contracts**
Implementing agreements with agents/brokers, vendors/service providers, reinsurers and customers is currently a time-consuming and heavily manual task for carriers. Blockchain technology can allow insurers to enforce agreements by storing their business rules on the network and enforcing them through “smart contracts,” which execute automatically once their terms are met, without the need for human intervention. The smart contract would perform automated checks of publicly and privately available information to determine if a triggering event had occurred (such as a flood in a particular geographical area) and then automatically settle the claim in near-real-time up to a specified threshold. For example, a smart travel insurance contract could automatically initiate and pay out claims when a flight is cancelled, using information (such as flight schedule and the weather) stored on separate blockchains.

Smart contracts could be employed to automate processes in a wide variety of areas, including:

- **Distribution management**: billing, commissions/incentive payouts, licensing and terminations.
- **Underwriting and policy administration**: underwriting, policy issuance, renewals, cancellations and endorsement processing.
- **Claims management**: first notice of loss, multi-party claims workflows and claims payouts.
- **Reinsurance**: multiparty reinsurance buying process, claims settlement.

The Internet of Things (IoT) – the sensors, software and network connectivity increasingly present in homes, products and vehicles – will allow smart contracts to automatically initiate claims. For example, a smart boiler covered under a smart insurance contract for equipment breakdown could automatically detect a breakdown, estimate the damage, trigger the smart policy contract and request maintenance from the designated service provider. Applying blockchain technology and thinking to the world of IoT could help expedite the adoption of what some experts have termed “the Internet of Value.”
Enable New Business Models

Beyond streamlining operations, blockchain also has the potential to disrupt current business models. Sixty-two percent of respondents expected blockchain will have a significant impact on their organization’s business opportunities. One example is the ability of blockchain technology to support P2P insurance models in which geographically dispersed parties are combined into a common risk pool. P2P insurance has been slow to gain traction because carriers are skeptical of the role they would play and the costs they would incur in managing these risk pools. Blockchain can help to overcome this by enabling smart contracts and consensus management to manage risk pools, underwriting and claims payments. In addition, it can integrate carriers and reinsurers to provide coverage for excess layers beyond what the risk pool can cover.

The blockchain platform could aggregate a pool of insured individuals using a common digital wallet to store their pooled money as a cryptocurrency. The funds in the wallet could only be spent if the insured member and a majority of members in the risk pool vote for it. Voting consensus would also establish the risk coefficient of new members and the share of premium or claims payout to be paid. Among other companies, Teambrella is investing in this model.

Despite the potential for blockchain to underpin entirely new business models, just 5% of our respondents cited support for new business models as one of the top benefits expected from blockchain. We believe executives are underestimating the profound disruption to business models and strategies that blockchain could enable. Insurers that overlook the disruptive potential of blockchain could fail to take advantage of significant new revenue opportunities that will help counter eroding margins and performance plaguing the industry in recent years.

IDENTIFYING USE CASES

With blockchain still in the early stages of development, it can be difficult to analyze which use cases to pursue. For this reason, insurers should look first to meaningful business challenges that blockchain could potentially solve when considering potential applications. However, blockchains are adopted across multi-party networks, so insurers must also analyze the required network effect for a given use case and assess the challenge associated with jumpstarting the network. Thus, companies should look for opportunities where a minimum viable ecosystem exists, in which few parties are required to find value from the use case – not the entire ecosystem. The identification process can be difficult, and organizations are adopting a learn-by-doing experimental approach. Respondents told us their organizations are exploring a wide variety of use cases, including payment processing (73%), insurance processing and multiple-party collaboration (59%), death benefit processing (53%) and new business models, products, markets and services (50%). When taking an experimental approach, it is important for insurers to extract key learnings and identify capability gaps from proofs of concept just as much as ROI calculations.
The following are several of the use cases that appear especially promising.

**Simplifying the Death Registration and Claims Processes**

The death claims process is manually-intensive and inefficient for life insurers, while being slow and frustrating for beneficiaries. Death registration and filing a death claim are tedious processes for the beneficiary, especially at a time when they are dealing with the loss of a loved one. Many life insurance benefits are unclaimed, totaling an estimated $7.4 billion in the U.S. In addition, multiple sources of data increase the potential for fraudulent claims. Up to 10% of claims costs for U.S. and Canadian insurers is attributed to fraudulent claims.

A blockchain solution could improve the largely manual death registration and claims processes by creating a network on which the participants would be insurers, hospitals, funeral homes, the department of health and the beneficiary. For a death that occurred in a hospital, for example, the details on the deceased would be entered into the hospital’s IT systems, which would be integrated with the blockchain network. Insurers would be notified automatically of an insured match.

Rather than placing the onus on the beneficiary to file a claim and follow up with the carrier, the insurer would process claims automatically. Once the insurer received information on the death certificate, a smart contract would automatically calculate and disburse the required amount to the beneficiary.

By moving to an automated blockchain solution, organizations could slash the complexity and cost of claims processing, and reduce turnaround time to three or four days (or less), from the current 45 days to six months. In addition, the potential for fraudulent claims would be reduced since all records could be easily audited on a public ledger. (For more information on this topic, please see our report, “Blockchain: A Potential Game-Changer for Life Insurance.”)

**By moving to an automated blockchain solution, organizations could slash the complexity and cost of claims processing, and reduce turnaround time to three or four days (or less), from the current 45 days to six months.**
Redesigning Facultative Reinsurance

Blockchain has enormous potential in reinsurance, where complex contracts require data to be exchanged among multiple sources, including the ceding company, often a variety of reinsurers and the broker. For example, facultative reinsurance contracts, in which insurers cede a large, complex or unusual risk, are time-consuming and complex to negotiate, involving multiple exchanges of information by e-mail or physical copies, as well as manual data entry. Facultative reinsurance agreements typically require up to three months until the final contract is signed. Since each entity records the contract using different systems and processes, this can lead to disparate interpretations of the contract. Further, given the complexity of these contracts, insurers face the problem of inadvertently understating the claim amount owed by their reinsurers.

The creation of a permissioned blockchain network involving the ceding insurer, broker, reinsurers and the regulator could address these challenges. Brokers would share a digital facultative slip with multiple reinsurers simultaneously, along with the documents required to underwrite the risk. Each reinsurer would update the facultative slip on the blockchain indicating the percentage and premium at which they are willing to reinsure, which would be transparent to all parties.

After negotiations, the contract would be digitally signed on the blockchain, thus providing all parties a single version of the contract, eliminating the possibility for version mismatch or misinterpretation. Reinsurance processes – such as quote generation, policy underwriting and claims processing – could be automated using smart contracts. By creating a single source of truth, a blockchain solution would eliminate data redundancy, reduce the potential for errors and speed the process by eliminating the need for continual information requests. To accelerate the time to market in implementing blockchain solutions, we have built a prototype that leverages distributed ledger technology to streamline the management of reinsurance contracts and payments. (For more, please read our white paper, “How Blockchain Can Reinvigorate Facultative Reinsurance Contract Management.”)

Subrogation in Auto Insurance Claims

Subrogation in auto insurance – the process in which the insurer recovers the claim amount from the insurance company of the at-fault driver after paying a claim to the insured for damages – involves data and collaboration from multiple parties, usually other insurance companies, which is time-consuming and susceptible to fraud. It is also prone to litigation due to concerns regarding data collection, data sharing and data validation on estimates. These problems could be addressed by employing a shared ledger hosted on a blockchain network connecting insurers across the insurance industry and independent claim adjustors.

Key data, such as vehicle information, accident/claim information and accident reports from law enforcement officials, could be shared among the various stakeholders to help determine liability. Subrogation claims could be processed instantly among the insurers involved and settled quickly as bulk claims transactions.
Insurance Industry Initiatives

The potential for blockchain to increase operational efficiencies across the value chain has caught the interest of major insurers around the world. Notable pilot projects underway include the following:

- **B3I** (Blockchain Insurance Industry Initiative) was launched in October 2016 to explore the uses of blockchain in insurance. It now includes 15 major insurers and reinsurers, including Allianz, Liberty Mutual Insurance, Munich Re, Swiss Re, Tokio Marine, Zurich Insurance Group and XL Catlin.

- **R3** is a consortium of more than 80 organizations, including insurance companies, formed to manage agreements between regulated financial institutions.

- **American International Group** and **Standard Chartered Bank** successfully piloted a multinational, smart contract-based insurance policy, to notify the parties after an insurable event.

- **Bajaj Allianz**, the Indian subsidiary of Allianz, is using blockchain technology in travel insurance with its Travel Ezee product to streamline the claims process and provide instant payouts, while its On The Spot motor claims facility allows it to process submissions in 20 minutes that formerly required five to seven days.

- **John Hancock** is working on multiple proofs of concept of blockchain technology to streamline operations, including trials in the areas of know-your-customer (KYC) and employee rewards.

- **Tokio Marine** is forwarding blockchain-based marine cargo insurance certificates to the parties concerned with the trade, along with other key shipping documents such as a bill of lading and commercial invoice.

- **The Shanghai Insurance Exchange**, China’s first insurance asset trading platform, has initiated a blockchain trial with participation from major carriers, including Cathay Life Insurance, Minsheng Life Insurance and AIA Group, among others.

- **AXA** announced the launch of a blockchain-based insurance product that automates payments of compensation for late flights for air passengers.
BLOCKCHAIN STRATEGY REMAINS A WORK IN PROGRESS

Blockchain holds the potential to change how insurers operate and to rewrite the rules of competition in the industry. Rather than waiting until the applications of blockchain become clear, insurers should move quickly to assess where they can leverage blockchain in their operations. Additionally, they should begin now to actively develop proofs of concept and gain experience with blockchain pilot projects so they can understand both the potential benefits and what will be required to implement blockchain solutions.

Rather than being seen as simply a technology issue, developing a blockchain strategy should involve stakeholders from across the company (see Quick Take, page 17). A blockchain pilot project may demonstrate how the technology works, but its more important function is to help organizations learn whether the project is an optimal solution for the business problem being addressed and how a full-scale implementation would impact business processes and technology.

A first step to developing a blockchain game plan is to identify the functional areas and business processes that could be impacted. A total of 44% of respondents said their organization had done this, while 54% said they are in the process of doing so.

Insurers also need to assess the capabilities provided by different types of blockchain networks. With blockchain still in a nascent stage, it is unclear how the ecosystem will develop and which platform or platforms will dominate. When asked which type of blockchain their organization is planning to adopt, respondents were split, with 41% saying an open blockchain and 36% saying a permissioned blockchain. Recognizing that one of the primary benefits offered by blockchain technology is the ability to share data seamlessly among different stakeholders, only 17% of respondents said their organization was planning to adopt a private blockchain for use by various departments with the company.

A first step to developing a blockchain game plan is to identify the functional areas and business processes that could be impacted. A total of 44% of respondents said their organization had done this, while 54% said they are in the process of doing so.
With the proliferation of blockchain platforms, it is inevitable that many will not survive, and insurers are understandably concerned about committing resources to a platform that may not be around for the long haul. For this reason, 43% of respondents said their organization is very hesitant to join a platform on which to develop solutions.

Given the current uncertainty, respondents said their companies have explored a variety of public and private platforms, with top-cited platforms being Bitcoin (53%), which was the original blockchain platform, and Ethereum (49%). In addition, more than one-third of respondents reported that their organization is exploring several other platforms, including both infrastructure and solution offerings from a variety of companies. However, high-profile permissionless platforms, such as Bitcoin and Ethereum, are typically not best suited for enterprise applications, which may indicate that more companies need to gain familiarity with permissioned platforms.

In selecting a platform, insurers need to consider whether to adopt a permissionless or permissioned platform, as well as decide whether to select a platform that is best designed to verifiably track asset transfers, such as Bitcoin or MultiChain and move all processing off-chain, or one that is best suited for tracking business and governance process logic on the blockchain, such as Ethereum (see Figure 3, next page).

Many insurers are focused on permissioned blockchains, which provide organizations with the ability to customize governance to their specific requirements and can offer greater privacy/security and scalability/latency. Insurers seem particularly interested in exploring permissioned blockchain networks that are designed to automate agreements between parties in an insurance contract through the use of smart contracts on the blockchain, such as Corda, Hyperledger Fabric and Monax. Across several industries, companies have sought our help in exploring these platforms.

Differentiation is also occurring among permissionless networks, such as Bitcoin’s strength as a crypto-currency and Ethereum’s in smart contracts. Hybrid models continue to emerge, such as the efforts to build a corporate version of Ethereum with increased privacy functionality.

Insurers should choose the platform that can best meet the specific business needs of each use case. This assessment should consider:

- **Applicability.** Does the platform possess features, such as smart contracts, that meet the needs of the business use case?

- **Capability.** Does the technology meet the business requirements for privacy, security, scalability and speed?

- **Business risk.** Does the platform create unacceptable levels of business risk? For example, organizations should consider whether a platform has reasonable long-term prospects, such as having gained some traction and diverse developer support, or if there is vendor dependency from strict IP rights or platform lock-in.
**Quick Take**

**Keys to Creating a Holistic Blockchain Strategy**

Insurers need to develop a cohesive blockchain strategy rather than taking on projects in a piecemeal fashion. Other strategy considerations include:

- **Blockchain projects should be driven by cross-functional teams with a business sponsor.** Ensure the blockchain project addresses specific business problems or opportunities. Rather than emanating from IT, the initiative should involve business stakeholders from the outset.

- **Set clear goals.** Assess whether blockchain technology is well suited to the business issue being addressed, and clearly specify which objectives will be achieved.

- **Don’t wait until costs and benefits are clear.** Learning will be iterative, and costs and benefits may only become defined more clearly as the project progresses.

- **Stay flexible.** Recognize that blockchain is still in the early stages of development; innovation will continue, and the infrastructure will evolve.

- **Explore a variety of platforms, including both permissioned and permissionless.** For each use case, choose a platform based on how well it is tailored to the business need, and not the one with the most buzz.

- **Gain experience collaborating with other players across the value chain.** Don’t underestimate the importance - and challenge - of managing people to create an effective culture of collaboration. Work with industry partners on blockchain projects and assess the obstacles in working successfully with external organizations.

- **Focus on blockchain projects with real-world potential.** The risk of doing nothing is greater than the risk of doing the wrong thing.

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**Blockchain Solution Models: Logic vs. Transaction Optimized**

<table>
<thead>
<tr>
<th>Logic Optimized</th>
<th>Transaction Optimized</th>
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<tbody>
<tr>
<td><strong>Ethereum</strong></td>
<td><strong>Monax, Corda, Hyperledger Fabric</strong></td>
</tr>
<tr>
<td><strong>Bitcoin</strong></td>
<td><strong>MultiChain, Chain.com, etc.</strong></td>
</tr>
</tbody>
</table>

**LOGIC-OPTIMIZED BLOCKCHAIN**

Provides a clear and efficient way to verifiably track business and governance process logic in a decentralized environment.

- A good fit to build arbitrary business processing logic.

**TRANSACTION-OPTIMIZED BLOCKCHAIN**

Provides a clear and efficient way to verifiably track asset transfers in a decentralized environment.

- Typically provides limited logic capabilities (e.g. multi-signature).
- A good fit for applications dealing with asset transfer, clearing & settlement and provenance applications.

Source: Adapted from a matrix provided by Monax.io, formerly known as Eris Industries, [https://monax.io/explainers/blockchains/](https://monax.io/explainers/blockchains/).

Figure 3
COMMUNICATION AND PROOFS OF CONCEPT ARE TOP IMPEDIMENTS

Insurers face the challenge of identifying how they can best leverage blockchain in their organization and what will be required for implementation. Respondents said the greatest internal barriers to blockchain adoption concern understanding and communicating the business value of blockchain, rather than addressing technical issues. The internal barrier to adoption cited most often by respondents was communicating blockchain to key decision makers (51%) (see Figure 4).

Senior leadership is interested in how blockchain can be deployed to address the organization’s pain points or create new business opportunities. Communicating the potential of blockchain to senior management can be especially difficult if the blockchain initiative is led by an IT team that views blockchain from a narrow technology perspective, rather than focusing primarily on how it can address concrete business problems.

Much of the challenge in communicating blockchain to senior decision makers stems from the fact that insurers are unclear where the technology should be applied, how it should be operationalized, the budget required and the benefits to expect. Almost half of respondents said that understanding blockchain and use cases (48%) is one of the top barriers to adoption. Insurers also find it difficult to evaluate the cost-benefits of use cases (49%) and are uncertain about how much time is needed before benefits are reaped (42%). Recognizing these challenges, we have been called on by clients to educate their executives on blockchain technology, the evaluation of different use cases and market dynamics.

It is important to recognize that an organization may not be able to precisely determine the expected costs and benefits of a blockchain project at this point, given that the technology is in its early stages.

Top Internal Barriers to Blockchain Adoption

Respondents were asked to name the top five internal barriers to adopting blockchain technology for their organization.

![Bar Chart](Figure 4)

Note: Percentages total to more than 100% since respondents could make multiple selections.
The costs and benefits of a project are typically long-term in nature and will only become more apparent over time. Yet, an organization should be able to specify the objectives that each project is designed to achieve to create a yardstick to judge success.

In contrast with these strategic issues, the technical question of how blockchain will be integrated with existing systems is less of a concern. Only 27% of respondents considered integrating legacy systems with blockchain networks as a major barrier to adoption. Insurers should strive to integrate blockchain applications with existing legacy systems wherever possible, rather than making extensive changes to the technology infrastructure, which would delay implementation and require a substantial upfront investment. Over the longer term, however, there will be the potential for blockchain to replace legacy systems, especially in cases where business models shift.

DEVELOPING BLOCKCHAIN EXPERTISE

Designing and implementing blockchain solutions will require insurers to attract or develop the expertise in how the technology can be applied. Many respondents felt their organization would need additional expertise in areas such as compliance (54%), cybersecurity (54%) and risk management (52%) (see Figure 5).

However, we believe that many respondents are underestimating the additional blockchain expertise they will require, especially with respect to technical expertise, where only 45% of respondents said they believe their organization needs additional expertise. In our experience, most insurers will find they need additional technical expertise in blockchain-specific areas such as Public Key Infrastructure (PKI), information architecture, software engineering, network infrastructure and integration, and user interface/user experience, among others.

Insurers are using a mix of strategies to close the skills gap. Many organizations are using several internally-focused strategies, including training (65%), innovation labs (59%), hiring (52%) and offering incentives to retain key employees (38%). But they are also employing externally-focused approaches, such as partnering with blockchain technology companies (56%), investing in startups (43%) and targeted acquisitions (41%).

Blockchain Talent Needs

Respondents were asked to indicate their organization’s level of blockchain expertise in the following areas.

Figure 5
OVERCOMING EXTERNAL ROADBLOCKS

In addition to understanding the optimal business uses of blockchain, there are also significant external obstacles that must be addressed. When asked about the top external roadblocks to blockchain adoption, the two issues cited most often by respondents were privacy and security (71%) and scalability/latency (65%) (see Figure 6).

Privacy and Security

Insurers are concerned that any data placed on a blockchain remains private and can only be accessed by stakeholders with appropriate credentials. The concern over privacy is primarily with respect to permissionless blockchains, such as Bitcoin and Ethereum. In particular, Bitcoin is built on the principles of data transparency and anonymity.

Much of the innovation underway in permissioned platforms is designed to increase participants’ ability to limit access to their data. Some of the top innovations that permissioned blockchains have developed include:

- **Channels.** These allow peers to “subscribe” to what can be characterized as an independent chain of blocks where the information is only available to peers with access to the channel.

- **Specialization of nodes.** For example, R3 uses the concept of notaries, which are specialized nodes that the parties can designate to validate the transaction and thus prevent double spend. The other nodes on the network cannot see any details of the transaction, which helps maintain privacy.

Top External Obstacles

Respondents were asked to name the top five external roadblocks to blockchain adoption.

![Figure 6](percent of respondents naming each as a top-five external obstacle)

Note: Percentages total to more than 100% since respondents could make multiple selections.

Figure 6
The concerns over blockchain privacy and security can be compared to the fear of self-driving cars. People expect self-driving cars to have a spotless safety record, and whenever one is involved in an accident, this is cited as evidence that the technology cannot be trusted. In reality, most vehicle accidents are the result of human error, and self-driving cars are expected to be much safer than traditional vehicles. It takes time for people to become comfortable with a new technology, which we believe will also occur with blockchain.

**Scalability/Latency**

Blockchain platforms have been working to improve speed and transaction volumes. Ripple announced its Ripple Consensus Ledger that can handle nearly 1,000 transactions per second, and the speeds of blockchain networks are expected to continually rise. When choosing a platform for each use case, insurers should consider the transaction volumes and speeds required, such as higher transaction volumes for subaccount investment transactions in variable annuities compared with lower transaction volumes for address changes.

Although blockchain platforms often promote their speed, organizations should remember that these claims may not be achievable in practice. When testing speed, organizations need to make sure they are assessing the time required for the complete process, from transaction initiation to final confirmation. Some platforms quote fast times that are misleading because they don’t incorporate the entire lifecycle of the transaction.

**LEARNING TO COLLABORATE**

In addition to customers, insurance transactions typically involve a variety of external stakeholders, from agents/brokers and financial advisers to vendors and reinsurers. Employing a blockchain to share information and execute agreements among these stakeholders would allow insurers to slash operating costs by automating currently manual processes. However, this will require both insurers and their stakeholders to change their current way of doing business and managing data.

While the benefits of closer collaboration are substantial, so are the challenges. Fifty-five percent of respondents cited working with partners/ecosystem members as one of the top barriers to blockchain adoption. Despite the difficulties, some insurers are beginning the process of collaborating more closely. When asked whether their organization is working with stakeholders/partners on blockchain projects, 31% of respondents said they are working with external partners, while an additional 36% said this was underway. A similar percentage (28%) said they are working with other industry partners/competitors, while 36% said this was in progress.

Collaborating with external partners/stakeholders is difficult and provides an additional reason for companies to start today on the blockchain journey. Respondents most often cited establishing connectivity with partner systems (52%) as the issue presenting a high level of difficulty (see Figure 7). Other issues that pose a high level of difficulty are identifying and finalizing blockchain use cases (47%), agreeing to a shared data model, (45%), convincing partners to share experiment data (44%) and choosing which blockchain platform to work on (43%).
Blockchain is poised to have enormous impacts on the insurance industry in a variety of areas, including sales, underwriting, customer onboarding, claims processing, payments, asset transfers and reinsurance. Smart contracts enabled by blockchain will automate many of the processes in these areas, thus substantially increasing efficiency and processing speed, and driving down costs. Blockchain is likely to also disrupt the industry’s structure, enabling new services and business models and eliminating intermediaries.

While the potential benefits of blockchain in insurance are apparent, it’s still uncertain where the technology will have the greatest impact. Yet, insurers don’t have the luxury to wait until blockchain’s trajectory is clear. Late-comers will find themselves stuck with uncompetitive operating models and find it difficult to keep pace with the market given the profound cultural and business process changes blockchain technology brings. Being an early adopter will also allow companies to be in a leadership position and influence governance structures when networks and consortia begin to form.

Instead, insurers need to move now to gain experience with blockchain technology and how it can be applied to concrete business problems. Rather than being driven solely by IT, an insurer’s blockchain initiatives should have the active involvement of business leaders and the support of senior management. Companies should embark on the blockchain journey with their eyes wide open. The blockchain ecosystem is still fluid, and it remains unclear which platforms will emerge as the leader, so it is important to stay flexible and avoid being locked into a platform or a provider.
In their blockchain efforts, insurance companies should also avoid the pattern of many IT projects that are massive in scale, slow to implement and often fail to meet expectations. Instead, a more nimble approach will be needed to keep pace with this fast-changing technology, which can be summarized as: start small, fail fast, identify what works, and scale quickly.

Blockchain’s ability to automate transactions and allow multiple organizations to share data securely will fundamentally alter the competitive landscape in the insurance industry. Insurers need to begin the journey to the blockchain future on the horizon.
METHODOLOGY

We conducted an online survey among 526 respondents from insurance companies familiar with blockchain from January through early March 2017. When asked to describe their level of understanding of blockchain, 31% described themselves as expert, 47% as proficient, 15% as competent, and 7% as beginner or novice.

Fifty-four percent of respondents are from Europe, 31% from Asia-Pacific, and 15% from the U.S. Regarding industry segments, 30% of respondents work at property & casualty insurers/general insurers, 25% at life and annuity insurers, 21% at companies that provide both P&C/general insurance and also life and annuity insurance, 15% at group benefits insurers and 9% at insurers that provide retirement services.

Respondents have the following titles: 19% C-suite, 22% vice-president, 30% director, 17% senior manager and 12% manager.

Respondents work in the following functional areas: 20% each in strategy, operations, IT and R&D/innovation, 14% in compliance and security, and 6% in legal.

Respondents come from organizations with a variety of sizes as measured by net written premiums: 4% from organizations with net written premiums of $1 billion or less; 32% from organizations with premiums of more than $1 billion to $10 billion; 35% with premiums of more than $10 billion to $20 billion; 20% with premiums of more than $20 billion to $50 billion; 7% with premiums of more than $50 billion to $100 billion; and 1% with premiums of more than $100 billion.
FOOTNOTES


4 Smart contracts are not unique to blockchain, but they are greatly enhanced by blockchain networks.


9 R3 website, https://www.r3.com/about/.


ABOUT THE AUTHORS

Erik Stockwell is Chief Digital Officer and Assistant Vice-President with Cognizant Consulting’s Insurance Practice. Erik has over 20 years of experience in the insurance industry, including strategic management consulting, digital technology and operations leadership, and direct carrier and reinsurance experience. He can be reached at Erik.Stockwell@cognizant.com | LinkedIn: https://www.linkedin.com/in/erikstockwell/.

Erik Stockwell
Chief Digital Officer, Cognizant Consulting’s Insurance Practice

Agil Francis is a Senior Principal/Senior Director with Cognizant Consulting’s Insurance Practice. Agil has 14-plus years of management consulting experience in the insurance industry, where he has advised senior executives on strategy, operations and technology issues across sales/marketing, distribution, underwriting and claims. Agil can be reached at Agil.Francis@cognizant.com | LinkedIn: https://www.linkedin.com/in/agil-francis-86322537.

Agil Francis
Senior Principal/Senior Director, Cognizant Consulting’s Insurance Practice
Gauthaman Krishnamurthy is a Senior Manager within Cognizant Consulting’s Insurance Practice. Gauthaman specializes in the P&C industry, and has 12 years of business consulting and program management experience, advising clients on operations and technology issues across marketing/distribution, underwriting, policy administration and claims. Gauthaman can be reached at Gauthaman.Krishnamurthy@cognizant.com | LinkedIn: https://www.linkedin.com/in/gauthaman-krishnamurthy/.

Gauthaman
Krishnamurthy
Senior Manager, Cognizant Consulting’s Insurance Practice

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