Blockchain: some potential implications for marine insurance

With the world gripped by cryptocurrencies and governments struggling to monitor and regulate the trade, the underlying technology – blockchain – presents tremendous potential for the shipping industry as a whole. This article looks to shed some light on this technology, as well as other technologies, such as smart contracts, and illustrate some potential implications on the marine insurance industry.

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What is blockchain technology?

Blockchain is a ledger of transactions and data that is stored on multiple machines. While most traditional databases are housed on one centralised server, which is vulnerable to hacking, the storage of data on multiple computers (nodes) removes any single point of failure and control, and makes records almost incorruptible, while entries and changes are explicable and traceable.

Transactions or changes are only processed after several confirmations of the network, ensuring that every addition follows the parameters of the network. After the information is stored in the block, alteration or deletion is impossible unless the subsequent blocks of information are also changed and the majority of the network accepts the change/deletion. As such, this minimises the risk of fraudulent activities.

Blockchain forms a platform on which smart contracts can operate. Smart contracts are self-executing contracts in which the terms of the agreement between the parties are completely digitised and written into lines of code. A simple example would be a cargo insurance contract which would trigger once the temperature of a reefer container exceeds a specific threshold, and the loss is declared and verified by a surveyor. The insurance would automatically pay out for the loss through the smart contract. Such contracts can also automate the underwriting of policies and claims-handling between the two companies.

This can streamline processes and make claims-handling more efficient, to the benefit of insurers and assureds.

Blockchain and the marine insurance industry

The potential benefits of the technology for the insurance industry are wide ranging and extend to both claims handling and underwriting/risk assessment.

Claims handling

Blockchain enables all parties, including insurers, to have access to the blockchain of data, eg bills of lading, charterparties and reports. This can reduce the time spent in collecting relevant documents from interested parties. Furthermore, blockchain technology can also reduce human errors in reviewing claim documentation and creates efficiency in the assessment of claims.

Underwriting/risk assessment

Blockchain technology has the potential to streamline processes by connecting brokers, insurers and third parties to distributed common ledgers that capture data about identities, risk and exposures, and integrates this information with insurance contracts.

In turn, the blockchain platform can link the data collected to policy contracts so as to perform the following:

- receive and act upon information that results in a pricing or a business process change
- connect client assets, transactions and payments
- capture and validate up-to-date first notification or loss data.

Ultimately, the technology has the potential to reduce the cost of insurance by simplifying transactions and minimising the administrative burden in an industry that has traditionally been relatively paper driven.

Blockchain and P&I cover
As blockchain technology is relatively new and not as yet comprehensively regulated, it is difficult to assess how and to what extent the shipping and insurance industries will adopt and regulate this technology. It may be some time before the technology and its impact are discussed fully by the International Group of P&I Clubs. One potential area where blockchain technology might impact shipping is in the use of electronic documentation (specifically bills of lading) in the transport of cargo.

Currently, a member's P&I cover is able to respond to typical P&I liabilities arising under any approved system of electronic bills of lading to the extent that these liabilities would also have arisen under paper bills of lading.[1] However, to the extent that liabilities arise because an electronic bill of lading has been used instead of a paper bill of lading, owners/members should be aware that in so far as such risks are not of a traditional P&I nature, other insurance arrangements may be required.

It remains to be seen how an increased use of blockchain in cargo-related transactions might alter P&I and other related marine cover in the future.

Legal issues arising out of blockchain technology
Notwithstanding the advantages and improvements that blockchain technology can offer, there remain several areas of uncertainty in its use.

Legislation to deal with blockchain transactions
The legal framework of a number of jurisdictions may not yet be fully equipped to deal with blockchain transactions (eg anti-money laundering requirements and anti-corruption laws will have to be updated to accommodate anonymity in blockchain transactions). Nevertheless, there are already examples of some jurisdictions taking a proactive approach with the new technology. For example, Singapore is working on a blockchain-based digital trade platform for small and medium enterprises, Fast Track Trade (FTT). Every transaction on FTT is recorded and traceable, thus making it safer and cheaper for businesses to conduct trade transactions and access financing. Prudential Singapore offers insurance to mitigate the business risks arising from the use of FTT.

Apportioning liability and disputed claims
There may be difficulties in apportioning liability in smart contracts. As mentioned, these consist of a set of instructions that self-execute as opposed to a natural written contract with prescribed legal consequences.

Difficulties in programming a smart contract to take into consideration the nuances of liabilities and attribute an exact apportionment of contributory negligence to each party is one example. By way of our earlier example, the reason for the reefer container's internal temperature having exceeded the specified threshold may be due to the crew's negligence in monitoring the temperature during the voyage or the shipper's failure to properly pack and stow the cargo within the container. Therefore, the apportionment of liability in this scenario may not be an exact science and, as such, not readily quantifiable based on the rigid parameters of a smart contract.

Law and jurisdiction
Due to blockchain ledgers' non-specific location, transactions may potentially be subject to the jurisdiction of any given node in the network. It may be difficult to pinpoint which country has legal jurisdiction in the event of a dispute. Hence, if there is an ancillary contract, its terms should include the parties' agreement on governing law, albeit that exclusive law and jurisdiction clauses can often be challenged. The lack of physical connection to any one jurisdiction may result in certain countries' courts being willing to seize jurisdiction even in the face of an exclusive jurisdiction clause.

Conclusion
In an ideal situation, blockchain technology enables the use of smart insurance contracts, which are non-paper based, self-executing, unambiguous, involving all relevant parties concurrently with zero-fraud and error. Will it survive and thrive so as to one day replace traditional models and make contracting more accessible and cost-effective for the assured? It would seem that until the technology gains wide acceptance and addresses the outstanding concerns, insurers are likely to continue concluding separate contracts with their assureds in order to accurately capture the parties' rights and obligations.

It is also to be expected that there will be further issues that will only surface after the technology becomes widely adopted. In the meantime, legal practitioners and insurers will have to work together to identify and address as many of these issues so as to maximise the benefits of the technology.

The authors acknowledge Samantha Kong, Associate, Incisive Law LLP, for her contribution to this article.

Companies such as Maersk have led the push for innovation by collaborating with IBM and Microsoft to implement blockchain technology into logistics and insurance platforms.

1   23 October 2015, Standard Club circular – Electronic (paperless) trading systems – essDOCS, Bolero, E-title Authority Pte Ltd. http://www.standard-club.com media/1927767/23-october-2015-standard-asia-circular-electronic-paperless-trading-systems-essdocs-bolero-e-title-authority-pte-ltd.pdf