DISTRIBUTED LEDGER TECHNOLOGY FOR RECONCILIATION BETWEEN INSURANCE COMPANIES AND BROKERS

ANZ Bank New Zealand Limited's ('ANZ') Proof of Concept demonstrates how distributed ledger technology ('DLT') can solve inefficiencies in the reconciliation of bordereau statements, which detail the insurance policies that brokers manage, and the corresponding payments to insurance companies. DLT can be used to create a 'single source of truth' for brokers and insurance companies, removing the need for reconciliations in the process and providing greater visibility for more informed management decisions.

When an individual buys an insurance policy through a broker, the process for managing the policy and its corresponding payments can be complex because data needs to be transferred between the individual, the broker and the insurance company. This needs to happen at all stages of the insurance policy's lifecycle, from the customer obtaining a quote, to agreeing to a policy, to making their premium payments and subsequently for endorsements and renewals.

When insurers receive premium payments, they need to match these payments with the individual policies. However, this reconciliation process can become complicated and inefficient when the payments are made through a broker. This is because brokers typically make batched payments to the insurer, for all the policies they manage, and it can be difficult for the insurer to reconcile the bulk payments with the individual policies.

The current process is not efficient, mainly due to the lack of a 'single source of truth', because data held by the broker and insurer on each policy can differ. This culminates in challenges for the insurer in allocating payments received to the correct policy.

This proof of concept established that a distributed ledger can provide this single source of truth, removing the need for reconciliation and rework throughout the process, as well as eliminating the exchange of manually-created documents.

This provides the opportunity for operational efficiency gains for both the insurer and the broker. Further benefits come from allowing more informed management decisions, especially for the insurer, through cash forecasting and real-time understanding of the status of quotes and policies.

Ultimately these outcomes are beneficial to the end customer, the insured party. A more efficient system with greater visibility allows claims to be paid quicker and more time to be spent on tasks that add value to the end customer.

INTRODUCTION

As a banker to the insurance industry, ANZ noted a particular pain point around the reconciliation of the monthly bulk payments made by a broker to an insurer to pay for all policies. Based on the outcome of previous trials we believed distributed ledger technology might be appropriate and could be scaled into a multilateral industry solution, while maintaining the required confidentiality between the various participants.

After a comprehensive planning phase, we focused on three opportunities around a 'single source of truth' for data in the reconciliation process:

- The efficient transfer of data throughout the process of quoting to issuing an insurance policy, removing the need for keying and reconciliations at various stages throughout the process.
- The automated allocation of a bulk payment by a broker to the individual policy level for an insurer.
- The removal of the manual generation of operational reporting and the ability to automatically generate insightful reporting to aid management decisions.

With the key opportunities for the project agreed, and to enable this project to be completed in four sprints (fortnightly deliveries), we isolated and removed some of the more complex areas:

- While system integration will be a key consideration of any commercial solution, it was not relevant to whether distributed ledger was an appropriate solution in the intermediated insurance market. As such it was agreed to build a stand-alone sandbox system for this project. This has resulted in the duplication of some functionality with existing systems and the creation of some manual processes that would be automated through system integration in a final solution.
- The issuance of new insurance policies can be complex, driven by the underwriting and pricing of different risk types. With this project focusing on the efficient transfer of data between brokers and insurers, and underlying calculations remaining off-stage, the risk types considered were restricted to one of the simplest – personal motor insurance.
- Much of the data used to issue insurance policies is sensitive. Dummy data was used to populate the ledger. This removed the need to consider any privacy requirements and allowed wider demonstrations of the solution.

There are existing bilateral systems between individual brokers and insurers in the marketplace. These cover various stages of the quote to binding phase, but we are not aware of any extending to the payment process. This project is not designed to replace these systems. Instead it is designed to work alongside them, capturing the data to connect them to the wider process through to payment.

A DISTRIBUTED LEDGER PROOF OF CONCEPT

Since the publication of the original Bitcoin paper in 2008[1], and with public key encryption schemes common in the modern networking environment, there has been an increasing awareness that distributed ledger technology has the potential to solve long-standing problems in business communication.

These technologies can enable integrity in a transactional record shared between multiple participants; an improvement on the current situation where messages and instructions exchanged between participants are reconciled separately after the fact.

The effectiveness of reconciliation has been traditionally limited by a lack of visibility through the transactional chain. Reconciliation is typically done by matching a list of expected receipts against referencing provided by the remitter of the payment.

Additional communications outside the transaction record itself do not necessarily simplify things, as it creates one more source of data to be reconciled against and another 'moving part' in the machine.

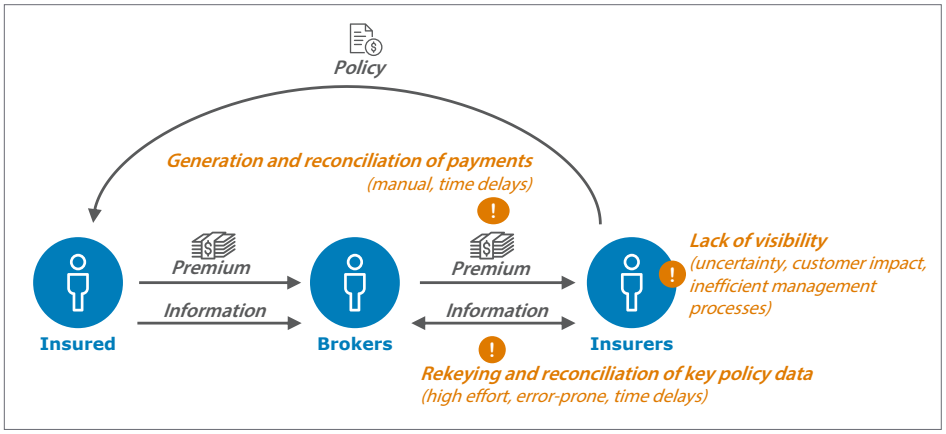
A decentralised ledger approach provides data communication, cryptographic assurance of shared state, process workflow, a balance of authority between participants, and the ability to expand from a bilateral solution to a multi-participant network solution, in a way that might be challenging to emulate with a more traditional architecture.

For this reason, ANZ explored the potential of decentralised ledger technology with Suncorp New Zealand to create a single source of truth that encompasses the outstanding financial obligations of each insurance policy, along with a definitive and agreed record of the status of payments. Building on the distributed ledger work completed by Australia and New Zealand Banking Group Limited in Australia[2], we wanted to better understand how this technology could be used in the insurance market in New Zealand.

THE CURRENT PROCESS

A typical insurance policy will go through several steps before it is issued:

1. An individual customer contacts a broker to obtain insurance for a car, for example.
2. The broker requests a quote from one or more insurers, seeking the best policy for their client. This request is either sent through as a system request or by email or phone.



1 https://bitcoin.org/en/bitcoin-paper

2 https://bluenotes.anz.com/posts/2017/07/why-bank-guarantees-need-blockchain

3. Each insurer enters the information in their quoting system and provides a policy quote, with respect to a certain applicable policy document.
4. The broker accepts a quote from an insurer on behalf of the customer, at which point the policy is bound and entered in to the broker's policy system. The broker sends a closing statement to the insurer.
5. The insurer reconciles the closing statement to the quote provided and issues the policy.
6. In line with the broker's credit terms, the insured customer pays the broker. This payment will include commission which is retained by the broker.
7. In line with the insurer's credit terms, the broker makes a bulk payment of all policies due. A few days prior to the scheduled bulk payment being paid to the insurer, the broker creates a bordereau statement – which details all the policies the broker manages – and sends it to the insurer. This bordereau statement is used by the insurer to reconcile the payment received back to the individual policy level.

This process is further complicated by amendments, cancellations, overdue payments, renewals, adjustment payments and so forth. We have covered some of these in this project.

WHAT IS A BORDEREAU?

A bordereau or bordereau statement is a list of premiums payable prepared by a broker for an insurer, normally produced on a monthly basis. It breaks down bulk premium payments to allow allocation to the individual policy level by the insurer.

WHAT PROBLEMS ARE WE TRYING TO SOLVE?

The project was initiated with a focus on the central problem of bordereau payment reconciliation. However, in the course of developing the project, further key pain points were discovered.

Policy establishment

During the project it became apparent that the establishment of policies is equally a source of operational burden. The request for quote, quote and binding phases of the policy lifecycle are a constant source of rework, with a mixture of tools being applied to the job. We realised that it would be valid to test the use of distributed ledger technology for this part of the process also.

Bordereau creation

On a monthly basis the broker must create a bordereau statement which can summarise hundreds of items, both payments and credits to be netted back (or paid in a separate credit-only bordereau), which are then settled in a single payment. This can impose quite a large workload, particularly in the case of adjustments and credits. For this reason, and because the payment itself may require some planning, the bordereau is typically 'closed' and sent from the broker to insurer prior to the payment being made.

Bordereau reconciliation

The problem of bordereau reconciliation was the initial impetus for this proof of concept. Steps 6 and 7 outlined in the current process are the tidy summary of a less than tidy process. A problem arises when, in assembling these hundreds of line items, the broker's records and the insurer's records have diverged. In addition, payments between the two parties may be separated into multiple bordereaux. These could be separated for different types of businesses, or payments could be separated from adjustments, for example, multiplying the problem.

Resolving this situation is costly in time and effort for the broker, and even more so for the insurer. This core bordereau reconciliation problem drove the impetus for this proof of concept.

Visibility and reporting

The other key problem with the status quo is that it is opaque. Insurers have limited visibility of expected payments, cash-flow, or the efficacy of different parts of the process. By providing an agreed ledger as a reference, reliable reporting becomes something that is straightforward to provide.

THE PROOF OF CONCEPT SYSTEM

Platform

When starting this proof of concept, we chose to put more emphasis on exploring how the solution would function in practice, rather than focusing on the specifics of the technical platform. We used Hyperledger Fabric, a well-known blockchain-based platform for permissioned decentralised ledger solutions. As expected, it proved to be a suitable platform to build out this project. By choosing this platform we also leveraged the experience from the previous project in Australia on property rental guarantees[3], and also the expertise of our technology partner IBM. However, it was important for this project to keep the core blockchain and product development in-house in New Zealand.

3 https://bluenotes.anz.com/posts/2017/07/why-bank-guarantees-need-blockchain

Segregation between network participants

Our demonstration network modelled two dummy insurance companies (Pacific and Atlantic Insurance), two dummy brokers (High Street and Queen Street Brokers) and one bank, ANZ. This meant there were four different broker/insurer combinations to consider. In order to segregate data between these broker/insurer combinations we used the Hyperledger Fabric channel mechanism. This mechanism allows us to associate a distinct channel identity (ID) for each broker and insurer with each channel recording transactions separately on its own blockchain. This creates the assurance of privacy, as each party will only be a participant in those blockchains that relate to its own activity.

Chaincode controls access and creates workflow

Chaincode defines the operations that the participant organisations can conduct at any point in time based on their role, and on the status of the data (for instance, policies) in the blockchain. Access control is managed by the code, restricting what the different participants can do. The insurer, for example, can issue a policy quote, but cannot accept it. The bank only has visibility of bulk amounts to be paid, not individual policy information. By controlling what actions are possible based on the status of the policy, the chaincode effectively functions as a workflow definition for our decentralised application.

Presentation and integration

For demonstrating our proof of concept system, we built a standard single page style web interface. This interface was built specifically for demonstration and it would be expected that in a production system, there would be a high level of system integration into the participants' existing systems. Having said that, the requirements of different participants might vary; some smaller brokers, for example, might prefer to retain a web interface, or to be provided some level of intermediation in their system integration.

WHAT THE PROOF OF CONCEPT DID

Established policies with a request for quote process

When a broker wishes to establish a policy, they can conduct a 'request for quote' process with one or more insurers. The request for quote can be created with just one insurer, or with more than one if the broker would like competitive bidding for the policy. Each insurer that receives a request for quote may provide a quote, identifying the relevant premium amount and specific policy text. Then the broker can choose to accept an offered quote; this will have the effect of declining any other offers provided in relation to the same request for quote.

Provided a user-specific ID

One shortcoming of distributed systems can be that a shared data object that is created has its own independent identifier. This creates another layer of reconciliation as this new identifier has to be mapped to the ID used in the participant's own system. Our proof of concept avoided this by allowing the participants to use their own respective IDs to refer to the policy object at all times.

Linked policies to policy text

While our proof of concept system uses distributed ledger technology to provide a single source of truth in our insurance problem domain, we do not propose that this system is in any sense changes the legal standing of the underlying policies. Our system represents agreements between regulated financial services companies, and the underlining insurance policies are subject to New Zealand law.

Further, we recognise there may be variations in insurance policies offered by different insurers, and that a given insurer's policies may also change over time.

To address this, all our policy data objects do not just mention the relevant policy which they represent, but actually link to the specific policy text, which is also stored in the blockchain. This means that just as the policy details and premium amount are part of the non-refutable record of the policy, so is the applicable text that applies.

Scheduled bulk payments

The bulk payment process runs on a specific schedule based on credit terms agreed between the broker and insurer. Typically the payments are made later in the month, for example, on the 20th. Establishing a schedule of payments followed naturally as part of the bordereau and payment creation process.

Linked the payment process into the ledger

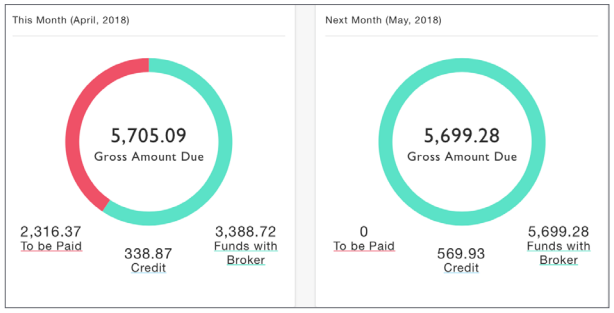
Leaving payment events outside of the ledger of record would challenge the essence of the trusted single source of truth. As ANZ provides automated payment systems with standardised public key encryption support, linking the payment event to the blockchain would be relatively straightforward. For demonstration purposes we created an internet based user interface page to demonstrate the triggering of payments and the transition of blockchain records. The bank could optionally support a manual payment authorisation step as required by a broker.

Provided visibility and reporting

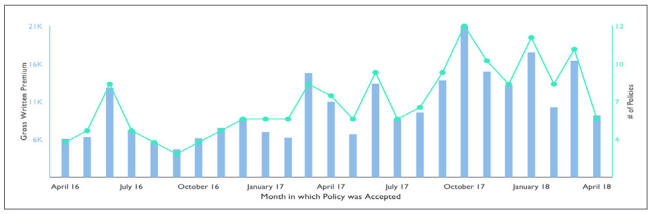
An advantage of a well-defined shared ledger is that it provides transparency (within the limits of the channel and chaincode workflow definitions). For example, as soon as a broker receives a payment and marks the relevant policy as having the payment status 'funds with broker', the insurer immediately has an updated picture of their future cashflow. With this background we developed illustrative reports in three areas:

- Operational reporting — requests and quotes that are overdue for action.
- Financial reporting — cashflow reports of amounts received and outstanding for forthcoming scheduled payments. Gross written premium reports of policies written, and reports on the unrealised value currently present in outstanding quotes.
- Management reporting — overviews of the time taken during stages of the policy lifecycle, and rates of drop out through the process.

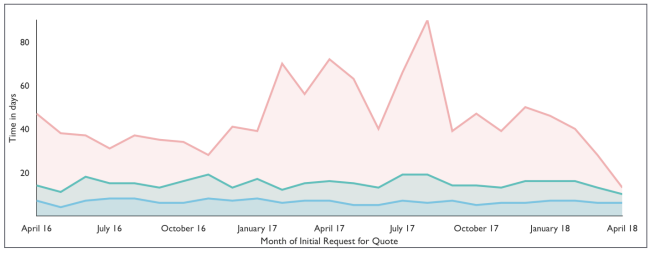
Report: Cashflow



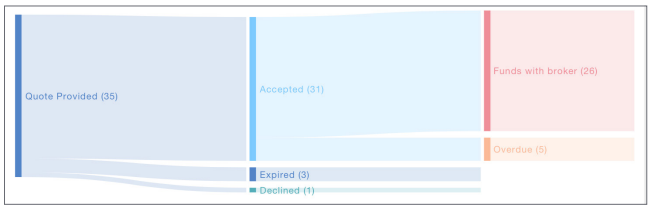
Report: Gross written premium



Report: Policy lifecycle



Report: Rates of dropout



WHERE TO FROM HERE

This solution will provide the most benefit to the industry as a multilateral solution. A key concern is maintaining confidentiality between the parties involved. This proof of concept considered this, using encryption to protect all data but also implementing channels. These channels result in only the data relevant to that party being sent to them. For example, an insurer will only receive and store information relating to their policies rather than a complete record of all policies. While encryption is a secure solution, channels provide an additional level of comfort.

With this, a future ecosystem with multiple insurers and multiple brokers is a viable outcome. This would unlock the potential of this solution and allow the industry to unlock further process efficiency and greater visibility, ultimately improving the proposition for the insured parties.

One of the main challenges of commercial implementation is integration with existing process and systems. There are a number of existing systems in place which perform a small part of the puzzle, but the benefit of the distributed ledger solution is bringing together the whole picture.

Another benefit often seen with distributed ledgers is the opportunity to digitise assets in the ecosystem, removing the need for paper. We see a natural extension for this project to link into customer facing applications owner by the brokers, providing insured parties access to electronic versions of their insurance policies as needed.

CONCLUSION

The solution built during this project successfully demonstrated the use of distributed ledgers for the following opportunities:

- Efficient data transfer without the need for multiple reconciliations and rekeying throughout a multi-party purchase of an insurance policy.
- Consolidation into one data exchange system, giving clarity of the status of policies throughout their lifecycle to allow greater visibility, reporting and insights.
- Automated allocation of receipts for bulk payments down to the individual policy/invoice level.

The experience of running a distributed ledger solution within New Zealand considering new tools for our customers' problems has given us great insight into the process. The technical knowledge built within New Zealand is invaluable and will play an important role of how we remain an important part of our customers' ecosystems.

ABOUT ANZ INSTITUTIONAL

With a relationship with over 80 per cent of the market, ANZ is the largest Institutional Bank in New Zealand. Our size and scale provides us with connections and insights into the local market which few can match.

We work closely with our customers, building tailored solutions to help them meet their business goals – whether that is managing risks, growing business or increasing returns. We are currently exploring a range of emerging technologies to create efficiencies and deliver greater value to our customers.

ABOUT IBM BLOCKCHAIN

IBM is the leader in open-source blockchain solutions built for the enterprise. Since 2016, IBM has worked with hundreds of clients across financial services, supply chain, government, retail, digital rights management and healthcare to implement blockchain applications, and operates a number of networks running live and in production.

The cloud-based IBM Blockchain Platform delivers the end-to-end capabilities that clients need to quickly activate and successfully develop, operate, govern and secure their own business networks. IBM is an early member of Hyperledger, an open source collaborative effort created to advance cross-industry blockchain technologies.

For more information about IBM Blockchain, visit https://www.ibm.com/blockchain/ or follow us on Twitter at @ibmblockchain.

ABOUT SUNCORP NEW ZEALAND

Suncorp New Zealand provides scale and financial certainty to its go-to-market brands, including Vero Insurance which took part in the proof of concept with ANZ.

With its breadth and expertise, Suncorp New Zealand is able to create more personalised and relevant choices for New Zealanders to look after their financial wellbeing.

Suncorp New Zealand took part in the proof of concept so it could better understand how technology can deliver potential operational efficiencies and an improved customer experience for policyholders and business partners.

For more information about Suncorp, visit https://www.suncorp.co.nz/

CONTACTS

REUBEN TUCKER
HEAD OF TRANSACTION BANKING
NEW ZEALAND AND PACIFIC

reuben.tucker@anz.com
T. 09 252 3438
M. 027 237 1910

MATT HEARLEY
DIRECTOR, FINANCIAL INSTITUTIONS
NEW ZEALAND AND PACIFIC

matt.hearley@anz.com
T. 09 252 6065
M. 021 247 4262