



**DISTRIBUTED LEDGER TECHNOLOGY AND
BANK GUARANTEES FOR COMMERCIAL PROPERTY LEASING**

JULY 2017

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RATHER THAN RELY ON A PAPER INSTRUMENT,
THE RULES TO ENSURE THE VALIDITY AND
INTEGRITY OF A GUARANTEE WERE INSTEAD
CODIFIED AND BUILT INTO THE OPERATION OF
THE SHARED LEDGER.

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INTRODUCTION

Bank guarantees — that is, a bank’s unconditional undertaking to pay one party in the event of another’s default — are used across many industries to secure contracts, be it in the trade of goods and services, financial transactions, industrial projects, the development of property, or the leasing of assets.

Bank guarantees are commonly used by prospective tenants to secure commercial property leases in lieu of a cash deposit or rental bond.

For tenants, they allow for more flexibility in securing their lease obligations as an alternative to cash.

For commercial landlords, they provide the certainty of a financial institution in the event of the tenant’s default (e.g. where they fail to pay rent or make good¹ upon vacating a property), while also avoiding the administrative burden of managing cash deposits and trust accounts.

In fact, such is the benefit to landlords, that many embed the requirement for a bank guarantee in their standard form lease agreement.

But while a useful financial instrument, today’s bank guarantees are paper-based, and their physical nature gives rise to a number of inefficiencies. These include:

- **Physical Document Management:** costs, risks and delays associated with the physical printing, issuing, exchanging, retrieval and potential loss of guarantee documents;

- **Tracking and Reporting:** challenges in the tracking, reporting and overall transparency of a guarantee’s status as it undergoes potentially multiple handoffs and changes throughout its lifecycle; and
- **Lack of Standardisation:** manual effort required to review and negotiate the terms and conditions of a guarantee, which can vary by bank and by landlord.

A shared ledger, which could be relied on as the single source of truth for the existence and status of a bank guarantee, could resolve the first two challenges, while acting as a catalyst for the third.

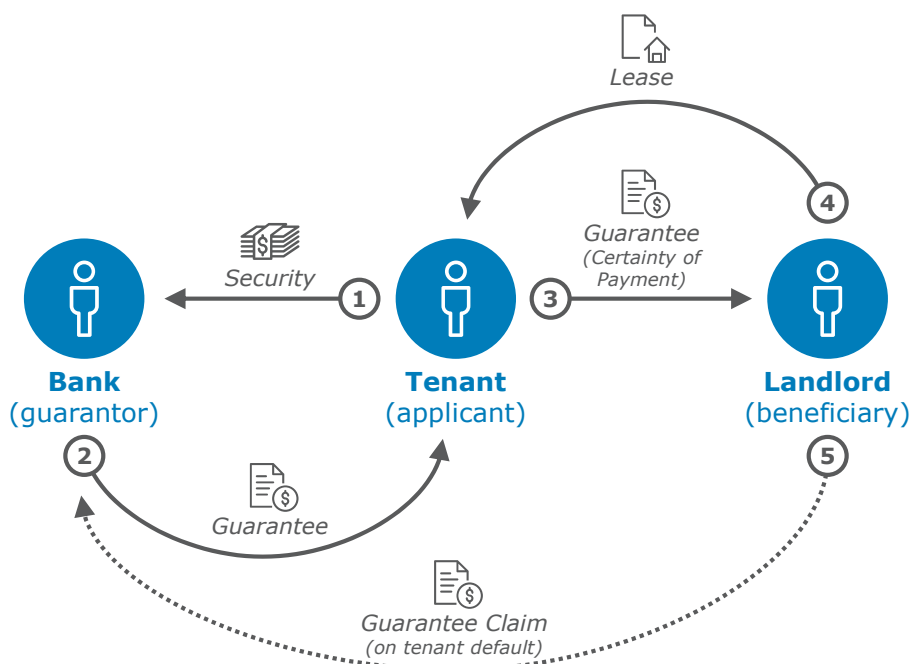
In an ecosystem where three parties (i.e. the tenant, the bank, and the landlord) participate in the creation, management and expiry of a common instrument, a blockchain solution could provide the optimal medium for facilitating the necessary flow of information, while balancing the competing needs of transparency and confidentiality.



WHAT IS A BANK GUARANTEE?

An independent undertaking by a bank, on behalf of its customer, to pay a named beneficiary in the event the customer fails to fulfil their contractual obligations with that beneficiary. Crucially, the obligation to pay is unconditional, and can be made on presentation of a simple claim / demand by the beneficiary, without regard to the customer’s performance or non-performance of the underlying contract.

Figure 1: Simple concept map for bank guarantees in commercial property leasing



¹ The need to “make good” is a standard clause included in most commercial leases, which requires tenants to return the property to its original state.

BUSINESS USE CASE: DLT FOR BANK GUARANTEES IN COMMERCIAL PROPERTY LEASING

In April 2017, ANZ and Westpac — two providers of bank guarantees — partnered with Scentre Group — the owner and operator of Westfield in Australia and New Zealand — and IBM — a leader in blockchain and distributed ledger technologies (DLTs) — to prove that a blockchain solution could be used to replace the current paper-based bank guarantee process, reducing the potential for fraud, driving standardisation and increasing efficiency for the three primary parties involved: tenants, landlords and banks.

OUR APPROACH

To prove feasibility in a short period of time, our scope was narrowed to bank guarantees in the context of commercial property leasing in Australia, with the view that any solution, if proven, would be transferrable to a broader guarantees context.

Given ANZ and IBM's role as founding members and continuing supporters of Hyperledger, Hyperledger's Fabric was selected as the core blockchain technology.

THE CURRENT BANK GUARANTEES PROCESS

Many of the limitations and inefficiencies within the current guarantees process stem from the physical nature of the guarantee itself, which typically takes the form of a letter — printed on bank letterhead and signed to signal authenticity, and stipulating the terms of the guarantee alongside key attributes such as the tenant, the landlord, and the amount to be paid on demand (see box out).

This letter represents the source of truth for all parties to the transaction, and its enforceability is cemented by the business frameworks and processes that have been built around it.

A key example of this is the process for demanding payment under a guarantee. When a payment demand is made — due to the tenant's failure to meet their lease obligations — the typical process requires the landlord to surrender the original guarantee, along with any other required demand document, to the bank for the claim to be processed.

Given the bank has no prior relationship with the landlord — all dealings to this point occur via the tenant — provision of the guarantee by the tenant to the landlord is used to evidence the tenant's intention to bind the guarantee (and their security) to the landlord.

As such, providing the landlord is in possession of the original bank guarantee and is named as the beneficiary, the demand for payment will be honoured.²

This reliance on a single physical document has a number of implications.

² Standard bank guarantee terms call for "unconditional payment", "without reference to the tenant", "even if the tenant has given the bank notice not to pay", and "without regard to the performance or non-performance of the tenant or landlord" of the underlying agreement.



WHAT IS SPECIFIED IN A BANK GUARANTEE?

In general, bank guarantees contain the following information:

"Applicant"

The prospective tenant, who is also a customer of the guarantor bank.

"Beneficiary"

The landlord, in whose favour the guarantee is issued. They need not be a customer of the guarantor bank.

"Amount"

The maximum amount that can be disbursed by the bank in the event of a claim by the landlord.

"Purpose of the Guarantee"

This refers to the underlying contract (the lease agreement in this case) between the applicant and the beneficiary.

"Bank Reference"

An internal reference for the bank.

"Signature"

The "wet ink" signature of a bank employee.

"Expiry Date"

The date on which the bank's guarantee ceases.

"Other Terms"

This will include, amongst other things, the legal jurisdiction, the claim process, and the fact that the guarantee is unconditional.

PAIN POINT 1: PHYSICAL DOCUMENT MANAGEMENT

The need to issue, handle, store, exchange and manage a physical document is a key source of inefficiency for all parties.

Issuance

As part of the issuance process, the tenant typically needs to complete, sign, and in some cases, physically deliver a guarantee application form to the bank. Note: in some instances, these application forms can be emailed or submitted to the bank in an electronic format.

For the bank, the tenant's application for the guarantee instrument includes the necessary consent to pay the landlord, and deduct that amount from the tenant's account without prior notice, in the event of a demand.

For the tenant, the original guarantee document, which will ultimately be provided to the landlord, is signed by an authorised bank officer.

Once the guarantee issuance process is completed by the bank, the instrument is considered live, and the

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tenant usually takes responsibility for delivering the original guarantee to the landlord. The bank will assume the guarantee has been provided to, and accepted by, the landlord unless it receives the instrument back for cancellation or amendment.

Given the tenant's primary concern is the expedient fulfilment of their lease obligations, the settlement and delivery process for the guarantee can be a time consuming exercise and can give rise to further delays — for example, scheduling and rescheduling meetings due to the availability of parties, or documents lost in transit.

As the recipient of potentially hundreds of guarantees a month, storing and managing these documents is also a pain point for landlords. And as the scale and sophistication of a landlord varies, so too can their processes for storage and management. Significant time and resources are required to efficiently manage these physical guarantees, which potentially need to be managed across multiple landlord entities and locations, and which are also prone to being lost, damaged or stolen.



As a paper document, today's guarantees can be easily damaged or lost.

Amendments

Lease agreements are commonly subject to change during the life of the lease. These can either be once-off or cyclical change events, but in either case, they result in a deficit with the live guarantee instrument, which needs to be amended / covered for the lease to remain in effect, and for the landlord to adequately address the tenant's risk of default.

While intuition may suggest that a simple letter be issued to amend the original agreement, doing so would create a number of risks for the landlord.

As another paper document, the amendment could be easily damaged or lost, either in transit to the landlord or post receipt and storage. This could lead to a misunderstanding regarding the live guarantee terms, including the amount — all documents (the original instrument and subsequent amendments) would need to be read together to determine the final terms of the guarantee, and viewing the original guarantee alone would not provide any indication as to how many amendments had been made.

As such, rather than amend the original guarantee, landlords typically require that a new guarantee be

issued. The result is that, in every instance where the guarantee amount has changed, the tenant must repeat some or all of the origination and issuance steps with the bank to generate a new replacement guarantee. Once complete, the bank or tenant arranges settlement with the landlord, who needs to retrieve the original document from storage and complete the exchange with the bank.

It is useful to note that, while settlement could be eliminated by couriering the relevant documents, landlords typically refuse to surrender the old guarantee until the new one is provided, which requires the tenant and bank to assume the risk of having two genuine guarantees on issue. Furthermore, banks will typically expect tenants to provide fresh security for the new instrument in instances where the physical exchange of old for new cannot be assured.

This physical exchange of old for new is commonly termed the "swap" process, and is designed to help the bank avoid the risk of having two valid instruments in circulation, while ensuring the landlord has a valid guarantee throughout the amendment process.

As with issuance, difficulties in locating the original guarantee can delay this "exchange" settlement.

Cancellations

When a lease expires or is terminated, the tenant's primary focus is to release the security held by the bank against the guarantee, and to stop the payment of associated fees, by completing the cancellation process.

In the event of termination prior to guarantee expiry, it is a requirement that the landlord locate and either hand over the original guarantee to the tenant to return to the bank, or return it directly to the issuing bank themselves.

Similar to earlier processes, delays can arise from difficulties in locating the original document. Things become complicated if the tenant and landlord do not part on good terms, with little incentive for the landlord to surrender the guarantee expediently or provide a release to the bank if the original guarantee has been lost.

Importantly, guarantee terms dictate that only the landlord can authorise cancellation of a guarantee outside of its nominated expiry term.

Validation of Guarantees

Increasingly, banks are being asked by landlords to confirm the validity of the bank guarantees they have been previously provided — their primary concern being to ensure that the instrument will be honoured by the bank if called upon. Often, landlords will need to validate their portfolio across multiple banks who have issued instruments in their favour. Given that banks have not traditionally had a direct relationship with landlords, this service proposition is not fully developed, and is typically provided on an ad-hoc basis as a gesture of goodwill.

Although an uncommon occurrence, paper documents of this nature are also susceptible to forgery. In these

scenarios, landlords are at greater risk than banks — banks have the controls and systems in place to easily validate a guarantee.

If accepted by the landlord, an invalid guarantee can go unnoticed until the landlord seeks to demand payment, at which time the claim would not be honoured.

Lost Guarantees

As described above, many stages in a bank guarantee's lifecycle can be adversely impacted by the loss of, or inability to locate, the original guarantee document.

For landlords, demands for payment can only be made by surrendering the original guarantee to the bank — if this document is lost, the landlord's rights under the guarantee are adversely affected.

Where guarantee documents have been "lost in transit" to the landlord (or in fact at any other stage during the lifecycle), tenants can request the guarantee be reissued by the bank, but not without significant effort — banks have no way of knowing whether reissuing the guarantee will result in two valid instruments being put into circulation. In these instances, the bank may require written requests — and in some cases, indemnity from the landlord before reissuing the guarantee to cover against receipt of duplicate claims.

This dependence on a single physical document is a significant cause of delays, risk and manual effort for all parties involved.

RESPONSE: TOKENISATION OF BANK GUARANTEES

In our proof of concept (POC), a blockchain network was set up between the tenant, landlord and bank to digitise and reliably share information relating to the bank guarantees in circulation.

At the point where a paper guarantee would typically be issued (i.e. following completion of relevant bank credit reviews and approvals), the bank would instead create a new entry on the shared ledger representing the newly issued "digital guarantee".

The existence of this guarantee would be immediately visible to both the tenant and the landlord, who would in turn carry out the process that would normally be triggered by the receipt of a paper guarantee (e.g. commencement of the lease).

This dematerialisation of the guarantee removed the steps involved in the physical handling and delivery of documents during the issuance, cancellation and amendment processes. While out of scope for this initial POC, this also opened the door for physical settlement to be eliminated entirely through the use of digital signatures.

Specifically for amendments, dematerialisation would allow the guarantee amount to be changed — subject to landlord consent — without the need to retrieve and exchange old for new.

And for demands and cancellations, the process would never be held up by a lost digital guarantee, as the shared ledger would provide a reliable record of the current state of all guarantees. Additionally, the use of

blockchain technology would also provide a full and auditable history of all transactions that led to that current state.

The resultant outcome would be a digital guarantee that avoids risks associated with losing guarantees, delays in the retrieval of guarantees, the need to issue duplicate guarantees, and the inconvenience of having to surrender a guarantee in person at a branch for a call-up or cancellation.

PAIN POINT 2: TRACKING AND REPORTING

Physical guarantee documents also pose problems for the tracking and reporting of their status as they undergo handoffs throughout their lifecycle.

In today's process, several options are used to track the status of a guarantee.

Banks maintain an internal database of all guarantees that have been issued.

Landlords, at a minimum, store the guarantee with the associated lease agreement on receipt. This is sometimes supplemented by an Excel spreadsheet, or in some instances, the use of a third party to physically store and maintain a register of guarantees. These services are commonly provided by law firms or commercial property managers, and equally, their tracking method could range from something as simple as a spreadsheet, to more bespoke software packages.



Landlords either store the guarantee with the associated lease, or engage the storage and management services of a third party.

Tenants may also leverage similar tracking techniques, particularly if they are a large retailer with multiple leased properties.

However, each of these techniques uses a conventional database. Their private and segregated nature means that they only provide a partial view of a guarantee's lifecycle. Furthermore, these databases are inherently difficult to share outside the owner's organisational boundaries. Security, trust and integrity concerns make it difficult to allow parties outside these boundaries to contribute information or make updates. As a result, these records often do not provide the complete picture required by each party.

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RESPONSE: A SHARED LEDGER VIEWABLE AND MAINTAINABLE BY THE NETWORK

One of the key benefits of a blockchain solution is its ability to provide a single source of truth across multiple parties. The traditional method for achieving this is through the trust and responsibility placed in a central authority to own and operate a registry for the benefit of others.

In a blockchain solution, trust and responsibility are federated across the network.

Rules for updating and maintaining the database — that is, what records can be changed, how they can be changed, who can change them, and who needs to provide consent — are codified and embedded in each node in the network.

Consensus algorithms ensure that changes originating from different nodes are committed in a way that ensures all nodes retain a shared and consistent view of the database at any given point in time.

And encryption of each transaction and record ensures that only parties to the transaction can view its contents, therefore preserving business confidentiality in a distributed environment.

This ensures that the responsibility for creating and updating records can be spread across participants at relevant points in a guarantee’s lifecycle.

In our POC, while both the tenant and landlord could request that a guarantee be created or amended, the ability to action that request was limited to the bank. This ensured that neither tenants nor landlords could illegitimately adjust active guarantees in their favour (e.g. increasing a guarantee amount before claiming, terminating a guarantee before an anticipated claim by the landlord, etc.).

Notably, the ability for the landlord to request a new guarantee on behalf of the tenant is an improvement over today’s process, and one intended to reduce the issuance and subsequent rework of incorrect guarantees, due to incorrect landlord / beneficiary details being provided by the tenant to the bank (e.g. beneficiary name).

Business rules for creating and updating records were as follows:

Creation and Maintenance

Both tenants and landlords could:

- request a new guarantee be issued;
- request an existing guarantee be amended;
- request an existing guarantee be cancelled; or
- when required, provide consent for a guarantee to be issued, amended or cancelled.

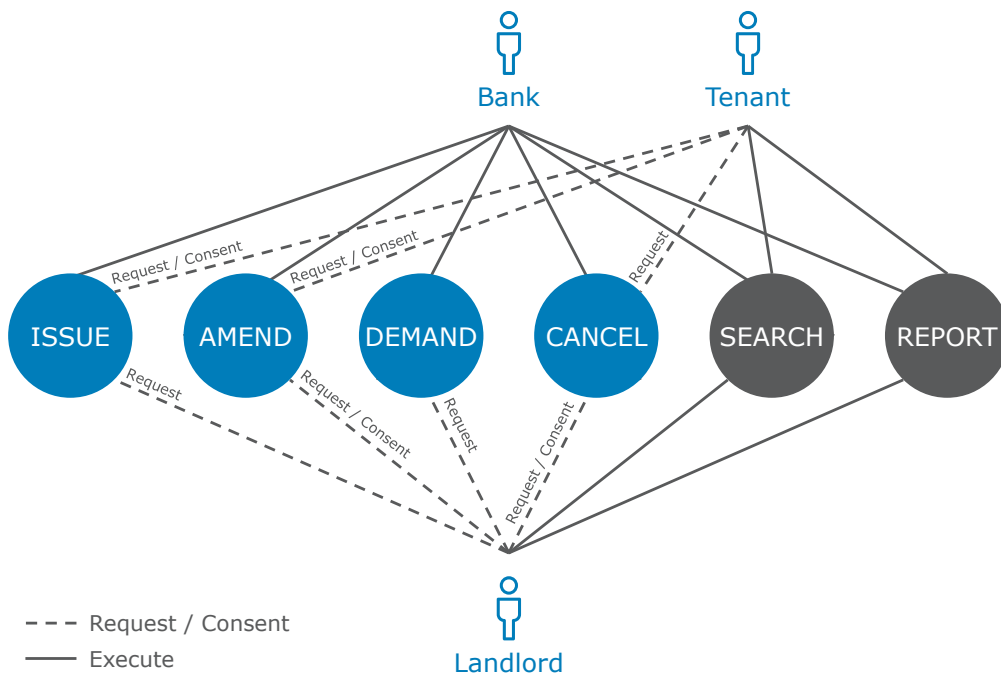
Additionally, landlords could:

- demand full or partial payment on a guarantee.

Banks could:

- issue a new guarantee in response to a request from the tenant and landlord;
- amend an existing guarantee in response to a request from the tenant and landlord;
- cancel an existing guarantee in response to a request from the tenant and landlord; or
- close a guarantee in response to a demand from the landlord, and after payment is made through existing rails.

Figure 2: Use cases for the DLT solution



Reporting and Notifications

Parties were also able to view summaries of guarantees within their portfolio based on the aggregate view provided by the blockchain solution.

Each party was also notified at each stage of the guarantee's lifecycle, with the exception of demand payments — in these instances, tenants are not notified of a demand from the landlord until the bank has completed the payment. This prevents the tenant from taking action to adversely affect the landlord's right to claim against the guarantee.

Subject to the above, each party could:

- view all guarantees to which they are a party, along with the guarantee status at any point in time;
- view a list of requests requiring action; and
- view a graph of their current and anticipated total guarantee amounts as they expire over time.

As a result, all participants were able to track, report on, and update the guarantees relevant to them, while relying on the shared ledger as a single source of truth.

PAIN POINT 3: LACK OF STANDARDISATION

At present, no standard format exists for a bank guarantee document across the industry. Formats and obligations can vary by bank, and by landlord. It is also often the case that larger commercial landlords prescribe the specific template that must be used to procure a bank guarantee.

When this occurs, what ensues is typically a back-and-forth between tenant or bank and landlord to negotiate a suitable agreement.

Aside from the inconvenience and frustration often experienced by all parties in these negotiations, effort is also expended by the legal departments of each party in reviewing document revisions and finding common ground. Ultimately, this can further delay the tenant from commencing their lease and their business.

Lack of standardisation also increases a landlord's susceptibility to forgeries, as variances between guarantee formats can hinder their ability to detect irregularities.

RESPONSE: A CATALYST FOR SIMPLIFICATION AND STANDARDISATION

A shared ledger, underpinned by blockchain technology, provides advantages as well as trade-offs when compared to conventional databases.

An example of this relates to storage. While the cryptographic links between transaction blocks result in a full and auditable history of transactions, the ever-increasing nature of this transaction "chain" requires careful consideration as to the volume and nature of information to be stored. Specifically, blockchains benefit from discrete, structured data sets, and less so from unstructured data sets or "big data".

While seemingly a limitation, this characteristic can also become a catalyst for the simplification and standardisation of incumbent processes and practices.

For industries with long and established histories, it is common for processes of the day to be a product of incremental improvements over time. Quite often, these are a combination of real improvements and temporary workarounds that seek to address historical limitations in technology. Without disciplined continuous improvement programs, these unwieldy processes become established practices that are difficult to change, and fail to take advantage of advances in technology.

AS A MEDIUM FOR SHARING INFORMATION AND FACILITATING PROCESS FLOWS, BLOCKCHAINS ENCOURAGE THE IDENTIFICATION OF COMMONALITY BETWEEN NETWORK PARTICIPANTS.

As a medium for sharing information and facilitating process flows, blockchains encourage the identification of commonality between network participants. In our experience, a core part of many blockchain-related POCs is the discussion around the minimum information required by all parties to allow an asset to traverse its lifecycle. This often leads to the discovery of vestigial processes and artefacts, which can be retired as a digital solution is defined.

In our POC, key opportunities for industry standardisation revolved around:

- the terms and format of a bank guarantee; and
- the process flow for guarantee issuance, amendment, demands and cancellations.

However, each of these will require broader discussions across the industry, which are beyond the scope of this initial POC.

THE PATH TO AN INDUSTRY SOLUTION

New digital technologies often create opportunities for efficiency and value creation.

For the financial services industry, we have seen how advances in processing power, networking, and smart devices have shaped the provision of financial services. Looking ahead, the emergence of cloud, machine learning, biometrics, mobile sensors, and digital identity, in addition to distributed ledger technologies, will enable industries to transition into the digital age — but only those willing to innovate.

The following areas will require further research and discussion in order for an industry solution to be established.

BUSINESS FRAMEWORK

The application of innovative technologies always holds the potential to create new business models, and disrupt others.

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Although not assessed in detail, the POC highlighted several areas where the DLT solution may disrupt the provision of existing services. These areas included:

- guarantee document storage and management services provided by property managers, solicitors, and other third parties;
- proprietary software used for guarantee document tracking and reconciliation; and
- courier services used to transfer guarantee documents (whether between banks, tenants and landlords, or between bank branches and back offices for issuance or cancellation).

In this context, it is the expectation that this whitepaper provides the basis for further exploratory discussions with all parties involved.

Another key consideration from a business perspective is the appropriate governance framework and operating model for this industry solution. While it is understood that the traditional model of control and governance by a central authority is at odds with the distributed nature of a DLT solution, it is not immediately apparent what an appropriate alternative may entail.

At present, productionised DLT solutions are rare, and by extension, so are the examples of governance models that could be emulated. But while this is the case for DLT, guidance could be drawn from other, more established, technologies.

For example, in order to replace the slow and manual Telex technology used to facilitate cross-border payments in the 1960s, the international financial services industry came together to form the Society for Worldwide Interbank Financial Telecommunication (SWIFT) to implement, maintain and govern a new messaging platform and the associated messaging standards.³

A similar approach could be possible for bank guarantees, but further discussions would be required.

REGULATORY FRAMEWORK

Regulators face the constant balancing act of supporting innovation, while mitigating newly created risks. While distributed ledger technologies are still in their infancy, a recent Information Sheet released by the Australian Securities & Investments Commission (ASIC) provides an indication of the things a regulator may take into consideration when assessing whether the use of DLT would allow the service provider to fulfil their regulatory obligations. Questions include:⁴

- How will the DLT be used?
- What DLT platform will be used?
- Where will the data be sourced from, and how will privacy and security be implemented?
- How will its operation impact those who do not directly use the service?
- How will the solution interact with the law in terms of dispute resolution and existing doctrines?

³ "SWIFT history", www.swift.com, retrieved 21 April 2017.

⁴ "17-071MR Evaluating Distributed Ledger Technology", ASIC, 20 March 2017.

Rather than be prescriptive, these questions are intended to initiate and fast track discussions as the technology and its use evolves.⁵ Our intention is that this POC and its findings assist with these discussions.

LEGAL FRAMEWORK

There is a significant body of settled common law in Australia relevant to bank guarantees. While many of these rulings would not be disturbed by the introduction of a "digital guarantee", some areas would require further legal analysis.

Encouragingly, however, many of these questions are not unique to the use of distributed ledger technology. Instead, they are questions typically asked when transitioning between physical and digital solutions.

Examples include the accessibility of information during system outages or unforeseeable circumstances, the nature of documentary evidence required by a Court to prove a party's rights, and specifically in the context of bank guarantees, ensuring existing legal obligations — such as a tenant's indemnity — is broad enough to extend to a digital demand for payment.

Whilst it is difficult to pre-empt how the legal framework will address these new scenarios, it is unlikely to halt progress. The tendency for the law to accommodate technology innovations can be observed from its interplay with other technologies.

The use of digital signatures is a good example of this. Prior to the Commonwealth Electronic Transactions Act 1999, a key determinant of a binding contract was the inclusion of a physical signature by each party.

In recognition of the increasing use of electronic forms of communication, the 1999 Act — which is generally mirrored by each State — clarifies the role of digital signatures, and electronic communications more broadly, confirming their validity as a means of executing a contract.⁶



The tendency for the law to accommodate technology innovations can be observed from its interplay with other technologies.

Again, the question of how the legal framework will specifically adjust to accommodate a "digital guarantee" will be the topic of future discussions.

⁵ Ibid.

⁶ Electronic Transactions Act 1999 (Cth). It also sets out the criteria which must be met and the exclusions which must not apply.

TECHNOLOGY MATURITY

While the Bitcoin network has been in operation since 2009, use of the underlying technology for use cases other than digital currency is rare and relatively immature.

As is typical at this stage of maturity, distributed ledger technologies are still primarily the domain of the engineering community, whose focus lies on resolving initial challenges and making it suitable for commercial use — on this front, speed, scalability, privacy, and security are key requirements for many enterprise uses. This initial stage has resulted in a proliferation of competing technologies and standards, and as a consequence, a degree of uncertainty for early adopters.

It remains to be seen to what degree, and over what time period, these variations will converge. A number of initiatives, however, are showing promise in making the technology more accessible for non-technical audiences, and more broadly, creating an environment conducive to mainstream adoption.

In the past two years, a number of communities have formed to drive the development of distributed ledger technology. These range from proprietary consortia focused on industry-specific needs (e.g. R3, Chain), through to open source communities with a broader focus on cross-industry use (e.g. the Linux Foundation's Hyperledger project). Many of these bring together business and technology disciplines, and through exploration, testing and knowledge sharing, serve to shape the development of core technologies.

Blockchain-as-a-Service (BaaS) has also arisen as a key enabler of adoption. Eliminating the need to provision and configure bespoke infrastructure, BaaS services such as IBM's Bluemix, Microsoft's Azure, and Deloitte's Rubix allow individuals to rapidly set up blockchain networks and test their ideas.⁷

Standards also play a key role in mainstream adoption. In September 2016, ISO⁸ appointed Standards Australia — Australia's peak standard-setting body — to lead the development of standards for blockchain and distributed ledger technologies on a global basis, with the purpose being to cultivate commercial confidence in the technology and support interoperability, privacy, security and terminology.⁹

While communities, BaaS providers, and the establishment of standards will aid the transition of distributed ledger technologies into mainstream use, earlier discussions show that technology maturity is just one facet that needs to be addressed.

CONCLUSION

The solution explored in this POC has the potential to shift the issuance of bank guarantees from a manual, paper-based model into the digital era, and in doing so, lift efficiency for all parties involved.

However, this move cannot be done in isolation. The changes required are pervasive and will require close collaboration between competitors, regulators, consumers, technologists, and the legal community in order to achieve a suitable solution.

The collaboration demonstrated in this POC shows the willingness of the industry to achieve a common goal, albeit on a small scale. This now needs to be scaled and discussed with a broader range of participants. As with most DLT solutions, the full benefit will only be realised through broad industry adoption.

⁷ "3 Companies Leading the Blockchain as a Service (BaaS) Revolution", Let's Talk Payments, 15 April 2016.

⁸ The International Organization for Standardization is an international standard-setting body composed of over 100 national standards organisations.

⁹ "Australia to lead international blockchain standards committee", Media Release, Standards Australia, 15 September 2016, <www.standards.org.au>

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