

The Journey to Real-Time Cross Border Commercial Payments using Distributed Ledger Technology



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Distributed ledger technology (DLT) is proven technology and its use is growing. Bitcoin has run continuously and securely since 2009. Over 600 alternative distributed ledger networks have appeared since, including Ripple which launched in 2012.

As of Q1 2016, over \$1.1bn¹ of venture capital has been invested in DLT, a 60% increase since Q1 2015. Distributed technology works, its use is expanding and it is maturing fast.

However, despite this, there is no widespread use of DLT in areas such as inter-bank commercial payments where its potential is huge. Many banks have experimented with the technology, installing it in innovation labs and running proof of concepts, but few have taken it to the next step to support customer business.

A key reason is that DLT is designed to support networks, and to become established and grow, new networks require like-minded participants. Once a network is established, network effects drive its growth, but getting to that point is the challenge.

DLT has a long way to go before it is adopted for widespread, mass use, but DLT is mature enough as a technology to begin commercial use. The time has now come for new networks to develop from it, in particular for cross-border and inter-bank commercial payments.

Distributed Ledger Technology for Cross Border Payments

Ripple has chosen to focus on cross-border and inter-bank commercial payments for its distributed ledger technology. These types of payments are typically made across a network of correspondent banks without a central authority or clearing system, an ideal use for DLT, and there is opportunity to make significant improvements over existing arrangements with the technology.

Today, most cross-border payments take a day or more to reach their destination, and only during business hours; they have cut-off times or deadlines after which payments are processed the next business day; at the point of initiation the exchange rate can be unknown, as can transaction fees which may be deducted from the principal amount; they can be routed through many banks before they reach their destination causing delays and accruing fees; and unless a repeat payment, they are sent without certainty they are valid for the destination account. The net result is that bank customers, mainly small and medium enterprises (SMEs) and corporates, experience delays, uncertainty and high costs in managing their cross-border payments. Meanwhile banks need to devote considerable headcount and effort to manage transactions and liquidity, respond to customer enquiries, track status, repair payment details and investigate exceptions and errors.

In contrast, Ripple's vision for correspondent banking, in particular for commercial payments and trade finance, is a 24x7, real-time, information rich, synchronous and transparent operation. Payments are immediate, 24x7, with real-time confirmation of receipt and with certainty and transparency of fx rates and fees disclosed before the transaction is originated. Ripple combines payments messaging with funds settlement, a combination that is proven with domestic payment schemes, and with established card schemes such as Visa and MasterCard but which is not currently available for cross-border inter-bank payments (where messaging is typically separate from the operation of the nostro and vostro accounts used for settlement).



Setting up a DLT Network for Cross-Border Payments

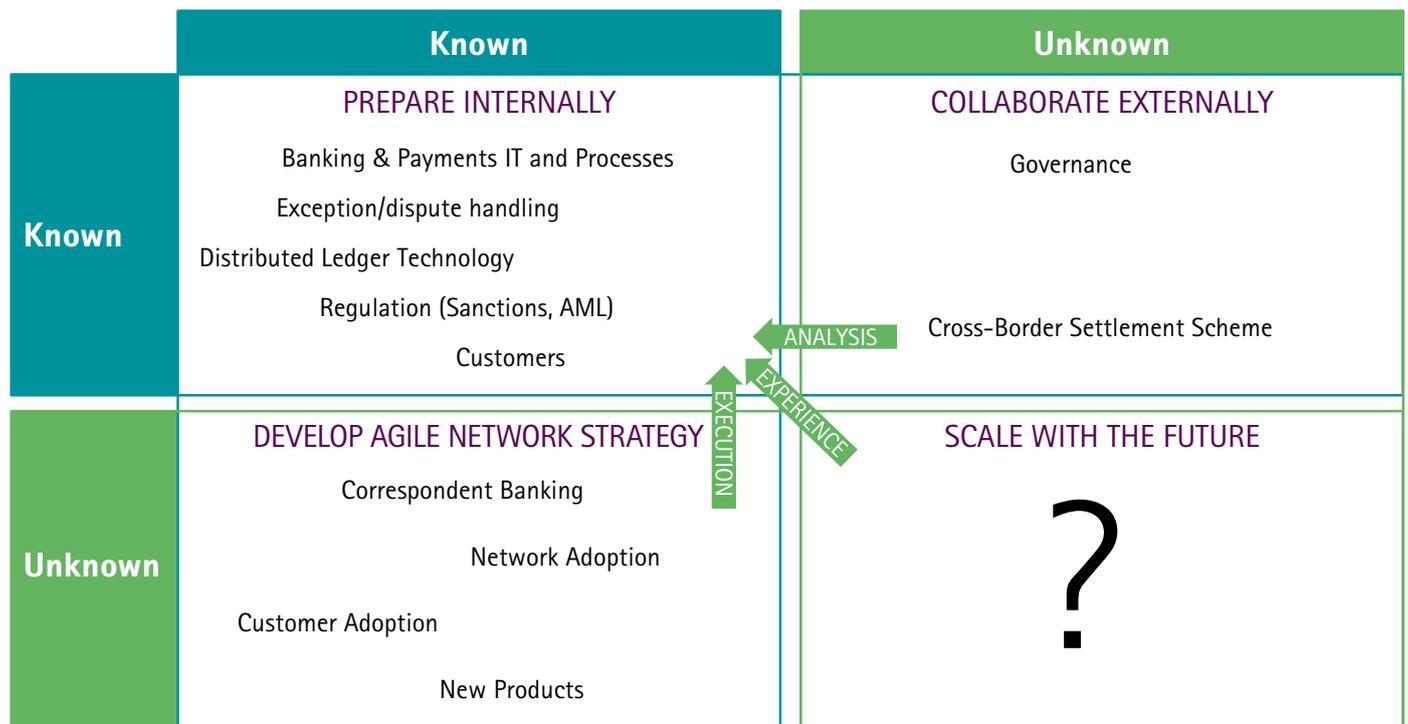
There are thousands of banks worldwide reachable through correspondent banking and engaged in cross-border payments, with an annual value of \$25 to \$30 trillion and volume of 10 to 15 billion payments². It is not practical to link all these banks immediately into a new network using DLT, nor to expect rapid migration to full scale volume—not only would it be a huge logistical exercise that would introduce risk into cross-border payments, but there are too many unknowns about how the network would operate which cannot be determined through research and analysis.

However, it is practical to start building such a network bottom-up, initially with a small number of banks and a small number of transactions. This is a viable approach, the technology is ready, and the customer demand is there. Starting small, implementing DLT technology iteratively allows learning by doing and a gradual rollout that can be scaled steadily in a contained and controlled way. It gives the network freedom to evolve to the best possible end state model.

There are still a lot of unknowns with this approach, but starting small allows these unknowns to be discovered and addressed quickly. Early adopters will gain insightful learnings that enable them to transform and influence the existing and new products, services and operating models required to keep pace with an ever-increasingly dynamic payments industry.

Borrowing from a well-known quote, there are in fact "known unknowns," "unknown knowns" and "unknown unknowns," as well as "known knowns" when planning a new DLT network, as shown in Figure 1.

FIGURE 1. Actions to set-up a cross-border payments network using distributed ledger technology



A pre-requisite is that a small number of banks need to get together, say 5 to 10 and agree to form a network, and agree the DLT technology or infrastructure to use. Each bank can then make internal preparations—they know their IT systems, their business processes, their priority payment flows, their regulatory obligations, their customers, their revenues and their business volumes. These are the **"known knowns."** Banks can identify how these will be impacted and what changes need to be made, and they can choose the degree and timing of change they prefer—for example, one, several or many countries, all customers or initially one or two large corporates or just SMEs. They may also need to work with integration partners such as Accenture to integrate DLT into bank payment and channel systems—the degree of integration can be controlled, moving from relatively light integration initially to deeper integration as the network and volumes grow.

A new network requires a system of governance and a payment scheme that defines the rules of how it works and the requirements for its participants. These are the **"known unknowns."** Banks forming a permissioned DLT network have control over who participates and how the network operates. They need to work together collaboratively to analyze and define the controls and operating rules and the governance around them, but initially only to the detail required to start the network. As the network grows, the scheme and its controls are developed further and refined.

How the network will develop cannot be known for certain, but it is known that it will have an impact on correspondent banking over time, where the role and type of correspondents and intermediaries will change. There are also different possible scenarios for network adoption—slow, medium or fast growth. These are the **"unknown knowns."** These require a strategy covering the roll-out to customers, customer acquisition, choice of payment flows and corridors, products and services to offer, transaction growth rates, new revenue streams and the impact on correspondent banking. This strategy can only be executed and refined once the network is launched and grows in usage.

Finally, there are the **"unknown unknowns."** By definition, these cannot be planned for or predicted, but it is only by launching the new network that these can be surfaced. And by being agile, banks can respond and adapt rapidly as their experience of the network grows. This is the key reason why it is important to grow the network by starting small and scaling steadily. Factors such as governance, data controls, confidentiality and security can be scaled and tuned through direct experience in line with growth to reach a robust end state.

Correspondent banking is entrenched in global banking, it is proven, it works and banks and corporates are familiar with it. It has shortcomings as highlighted earlier, but banks are conservative and they have no desire to introduce risks into cross-border payments. A "start small, scale steadily" approach allows banks to prepare properly internally to avoid unnecessary risks and disruptions to their existing cross-border payments business while still introducing new capability to dramatically improve the way they provide cross-border commercial payments to their customers.

There are examples where banks have taken this approach successfully in the past. EBA Clearing set up the Euro¹³ high value payment system in 1999 for the introduction of the Euro. It launched with 44 banks across 21 countries in Europe, and was based on a new design for clearing and settlement to meet the needs of its participants. At the start, some of the banks committed all their commercial payments to Euro1, others only gradually and it took time for volumes to grow to where they are now. Since then EBA Clearing has expanded its network to Step1 and Step2, which is reachable by 4,806 banks in Europe, and is now launching an instant payment scheme with 40 banks. Daily volumes average 220,000 transactions in Euro1 and 39m transactions in Step2.

Similarly, Faster Payments (FPSL)⁴ in the UK launched in 2008 with 13 member institutions, and has grown transactions volumes from 227,000 daily transactions in its first year to over three million daily transactions today. FPSL is opening up access to its infrastructure and expects a substantial increase in payment service providers using it over the next few years.

Both EBA Clearing and FPSL have started small, scaled steadily and developed their governance, controls, services and rules as volume and participants have increased. The difference in these examples is that no new major infrastructure needs to be developed and tested with DLT, it already exists—for example Ripple, which is designed specifically for cross-border and inter-bank payments.

Defining a Cross-Border Settlement Scheme

A settlement mechanism needs to be adopted for settling cross-border payments in fiat currency—this cannot be avoided in a DLT payments network unless it operates only with its own cryptocurrency issued on the network to make payments, such as Bitcoin or Ethereum (fiat currency could be issued on a DLT network, but any initiatives to do so would probably need to be driven by central banks to issue the cryptocurrency). Ripple has its own native digital asset, XRP, which can be used for settlement to reduce liquidity costs, but it also has a flexible architecture using the Interledger Protocol which does not require use of a cryptocurrency. A fiat currency settlement mechanism is therefore needed, requiring the creation of a scheme, and in the case of a DLT network for cross-border payments, a cross-border settlement scheme.

Figure 2 shows Accenture’s payment scheme operating model framework, and its components, with Ripple DLT as the core infrastructure, and under the control of participating banks.

The Governance, Rules and Planning component covers scheme governance structure, regulatory compliance, best practice such as CPMI-IOSCO principles for financial market infrastructure, rules for network participation, payment processing and settlement, including how transactions are validated and approved through a consensus mechanism.

Core Scheme Functions cover risk management and assurance, on-boarding, scheme development participant management and communication, settlement and market maker management.

Products and Services cover services such as foreign exchange, real-time payments, addressing and trade finance.

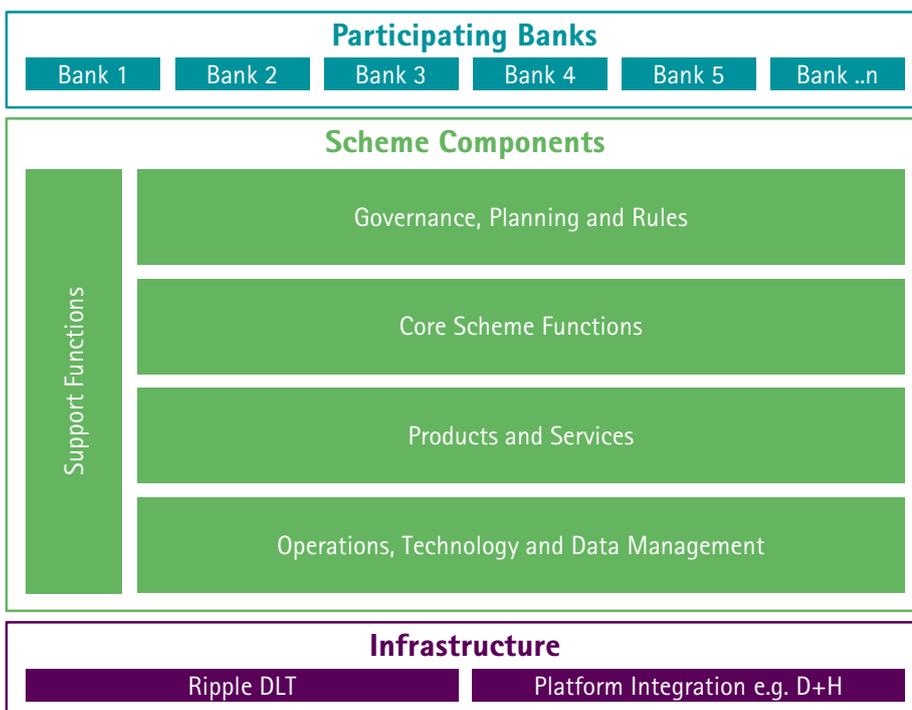
Operations, Technology and Data Management cover consensus validation, security, data, access management and scheme management.

Support Functions cover functions such as legal, IT, finance and billing.

Infrastructure covers the DLT network provided by Ripple and the integration required for banks to connect to the network including any message translation (e.g. ISO20022). There are also software providers such as D+H who provide standard Ripple integration to their payment engine platforms.

The operating model in Figure 2 looks like a centralized function, a contradiction to the distributed nature of a DLT network. However, this cross-border settlement scheme is essential for a permissioned network to operate, and for settlement to work cross-border in fiat currencies. In the same way Visa and MasterCard operate distributed networks for their participating banks, enforcing a common set of rules on them under their respective payment schemes. Thus, it is necessary to have a scheme for the settlement of cross-border payments operating on a DLT network. However, the overhead in running a DLT scheme for cross-border settlement should be low and manageable.

FIGURE 2. Accenture’s payment scheme operating model framework



The Ripple Solution for Cross-Border Payments

Ripple is a DLT solution for cross-border payments. It integrates the messaging required to clear payments between sending and beneficiary bank with the settlement process required to settle the fiat funds between those banks. The Ripple solution lowers the total cost of settlement by enabling banks to send and settle money instantly, and it creates new revenue opportunities through enabling access to new markets and new products such as micropayments.

Ripple has proven technology. It is already in operation with banks like Santander and Fidor and is being implemented by others. Governments and central banks are interested and supportive of the technology, and among commercial banks there is a strong desire and appetite to road test the technology with real live transactions. Numerous banks have run internal proof of concepts including the real transfer of money. Thirty have completed pilots and are actively

progressing plans to extend into live operation, including a group of several banks who are forming an alliance to build a cross-border payments network together. These banks are drawn from the top 50 banks globally, broadly configured to enable wide geographic reach, with one bank per geography, each with access to local domestic clearing systems.

These banks are ready to go. They are preparing internally, they are setting their strategy and they are working together to define the cross-border settlement scheme that works for them and the governance required for it. Their approach is agile—the framework for a scheme is in place, and they will fill in the details as the network they launch grows.

The pace of change in payments is accelerating—smartphones, digital business models, APIs, autonomous payments, real-time payments and regulation such as PSD2 in Europe are

transforming the way we pay. 24x7, real-time domestic payments are already a reality in the UK and the Nordics, and soon will be a reality in the rest of Europe, the USA, Australia and elsewhere, but a large gap is opening up in the global payments landscape for a 24x7, real-time cross-border payment network.

To meet the demands of the digital economy and global trade and to match the capabilities of domestic payments, this gap needs to be filled, and DLT is ideally placed to do so. Banks are already upgrading their IT systems and business process for real-time domestic payments, which can also be leveraged for real-time cross-border payments.

The Ripple enterprise solution is mature enough to launch and scale a cross-border payments network, and a consortium of banks is forming to use this Ripple technology to keep ahead of the competition.

Conclusion

Global trade runs at about \$24 trillion per year⁵. This is not going to migrate to a new commercial payments network overnight or even over five years, and the degree of migration will be dependent on competition from other alternatives. It will take time. A new payment network needs to be designed to be ready to launch and to scale steadily, it does not need to be designed before launch for full volumes and full participation. These can be evolved over time.

In fact, it can't be designed in full before launch, there are too many unknowns which can only be discovered through live experience. This is the FinTech approach of agile development, versus the traditional monolithic approach for large infrastructure programs.

DLT has a long way to go before it is ready to support trillions of dollars in payments per year, but it is ready now to form the base of a new cross-border commercial payments network at manageable volumes that could eventually reach this size.

The time is now for banks to collaborate to launch the foundation of a real-time, 24x7, transparent and efficient cross-border payments network.

Carpe Diem—seize the day! The moment is here. Ripple and its partner banks are seizing it.

Contact us

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NOTES

¹ Coindesk State of Blockchain Q1 2016
<http://www.coindesk.com/state-of-blockchain-q1-2016/>

² Source: Accenture Research

³ Source: EBA Clearing, BIS

⁴ Source: Payments Council (now Payments UK), Faster Payments Scheme Limited

⁵ Source: World Trade Organisation

ABOUT ACCENTURE

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world's largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With approximately 373,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

ABOUT RIPPLE

Ripple provides global financial settlement solutions to ultimately enable the world to exchange value like it already exchanges information—giving rise to an Internet of Value (IoV). Ripple solutions lower the total cost of settlement by enabling banks to transact directly without correspondent banks and with real-time certainty, optionally using the digital asset XRP to further reduce liquidity costs. Banks around the world are partnering with Ripple to improve their cross-border payment offerings, and to join its growing, global network of financial institutions and market makers.

Ripple is a venture-backed startup with offices in San Francisco, New York, London and Sydney. As an industry advocate for the Internet of Value, Ripple sits on the Federal Reserve's Faster Payments Task Force Steering Committee and co-chairs the W3C's Web Payments Working Group.

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