Connecting digital islands: Tokenised assets

Results of Swift's collaborative experiments interlinking multiple tokenisation platforms toachieve global interoperability

Results report:
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Swift

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Executive summary

Financial markets, which operate to provide financing and stability, are by nature built on deep liquidity. The tokenisation of assets, or creating "records of value held on and transferred across a shared cryptographically secured ledger[1]," is a new and growing trend in financial services and other industries alike, specifically targeting those legacy assets with limited liquidity and multiple layers of disintermediation.

Like all new technology, tokenisation raises challenges and opportunities. These are specifically around both how the growth of a relatively untapped market can be enabled, accelerated and leveraged as well as how interoperability and communication can take place between on-chain markets for tokenised assets and off-chain legs.

While it's possible that over time digital assets will only be traded and settled on ledger, there's currently a need to support the coexistence of new "tokenised assets" and existing "traditional assets," the interoperability between the platforms on which they exist, and the ability for financial market participants to access them. As a neutral, global cooperative, Swift was created almost 50 years ago to enable economic interoperability around the world and set standards across the financial services industry – and we are uniquely placed to help find solutions in this new landscape too. The successful experiments described in this report are the next stage towards developing interoperability solutions for tokenised assets.

Since 2020, our strategy has been heavily influenced by the emergence of digital assets. In May 2021, we published a white paper 'Exploring central bank digital currencies: How they could work for international payments,' in which we explored the impact of Central Bank Digital Currencies (CBDCs) and digital currencies on Swift and on our members. We showed for the first time how interoperability could be achieved between a CBDC network and a non-CBDC payments network, and between two CBDC networks on different technologies. Since then, we have expanded our exploration of use cases for digital assets, which will help our securities clients to innovate in this space.

[1] See the Swift Institute paper 'Defining Digital Assets': https://swiftinstitute.org/research/defining-digital-assets/

About our experiments

In December 2021, together with Northern Trust, Clearstream, Citi and technology partner SETL, we evolved our innovation work and initiated a new set of experiments. These explore the feasibility and benefits of Swift acting as an interconnector and 'single access point,' linking up multiple tokenisation platforms and various cash leg payment types – Swift global payments innovation (gpi), Real-time Gross Settlement (RTGS) system and CBDC[2] – with the clients interacting with tokenised assets via Swift, similar to the way they do today with traditional securities assets.

With these key industry players representing different parts of the tokenised and traditional asset ecosystem, we aimed to simulate primary token issuance and secondary market transfers of tokenised bonds/equities and cash, using a number of different tokenised assets and cash settlement environments. Our aim was to show the ability to create, transfer, and redeem tokens and update balances between multiple client wallets.

The results

We've now completed the experiments and technically tested the solution with all participants involved, with 70 test scenarios. These successful experiments have demonstrated the feasibility of our solution across both the primary and secondary market use cases, single and multiple tokenisation platforms, bond/equity tokens, and multiple cash leg types in different combinations, and with a representative number of transactions. The experiments also demonstrated multiple benefits of the solution, including some of the efficiencies that can be achieved through accessing tokenised assets via existing Swift

What's next?

Based on industry consultation on our experiments, we will explore further development areas, the feasibility of offering the solution demonstrated in the experiments as a service to Swift customers, a next set of experiments for expanded use cases, and how we can evolve our data dictionaries.

Our vision is to enable instant and frictionless transactions anywhere in the world, regardless of the form they take. We're confident that the insights from these experiments and the solutions being developed will help the post-trade industry realise this for tokenised assets and deliver seamless services for end customers.

[2] Swift gpi, RTGS and CBDC were all simulated in these experiments.

Introduction: A growing trend

In Defining Digital Assets, a recent report published by the Swift Institute, Alistair Milne, Professor at the Loughborough University School of Business and Economics, defines digital assets as "records of value directly held on and transferred across a shared cryptographically secured ledger." In that context, digital assets can be new digital constructs or tokenised assets. The latter are simply token representations of things that exist today – financial assets like stocks and shares or even ownership of a piece of artwork. In the future, it could theoretically be possible to tokenise anything. This could have a huge impact on finance, and on our lives more generally.

A growing market

Relative to cryptocurrencies and stablecoins, the current market capitalisation of tokenised assets is small, but momentum is expected to accelerate rapidly in the coming years. By some estimates, volumes of tokenised assets could reach 24 trillion USD by 2027.[3] This is leading many securities market participants to actively assess how they could tap into – and accelerate – the growth of this market. Banks, securities firms and financial market infrastructures (FMIs) have been responding to this trend by exploring digital asset servicing capabilities and how they could support the full lifecycle of digital native or tokenised securities.

There are a number of potential benefits to tokenisation. One is fractionalisation, in which larger assets can be split into smaller parts, spreading ownership across more people. In a tokenised future, investing could become more accessible to people who have never had the resources to do so. Fractionalisation is not only relevant for individual investors. It is relevant for financial institutions as well. In a tokenised future, investments could become more diverse than ever before, resulting in the potential for stronger portfolios, spreading risk across a combination of tokenised and traditional assets, and enabling the creation of more sophisticated trading and investment strategies.

Other potential benefits include compressed settlement times or even real-time or atomic settlement, a reduced need for reconciliations, the enablement of a single source of truth, the opening of new forms of automation, greater transparency, and a reduced risk of fraud.

[3] See for example: https://www.gbm.hsbc.com/-/media/gbm/insights/attachments/potential-of-tokenisation.

Open hurdles

There are many open hurdles that need to be addressed before tokenised assets can be actively traded by securities market participants. For starters, we know that with market players moving at different speeds, tokenised assets will need to co-exist with traditional assets. For that, and to enable an impact on liquidity, ensuring interoperability and communication between participants and systems (traditional and new), as well as on-chain and off-chain markets during the transaction lifecycle of tokenised assets, will be key to ensuring success. Furthermore, solutions will need to ensure that they provide the ability to use multiple cash leg methods, including new forms of currency such as CBDCs or stable coins, alongside fiat currencies.

Fragmentation, due to a variety of conflicting or different technologies, platforms, and regulatory environments can create inefficiencies for the market, including lack of standards, market conventions and an inability to scale. So the ability to easily access multiple tokenised asset types residing on multiple different platforms will be key. This means that to allow for the seamless use of digital assets, securities participants will have to integrate with each platform directly and independently. As such, there's a need for standardisation in this space so that these new ways of working can be seamlessly integrated using existing communication channels and networks. For securities markets this also means that current communication standards, such as ISO 15022 and ISO 20022, which encapsulate current business requirements, will need to evolve to cater for the particularities of new digital asset classes. Although communication with Distributed Ledger Technology (DLT) platforms often happens through APIs, there's also a need to update existing data dictionaries and even existing messaging standards and develop market practices so that institutions that wish to reuse these data dictionaries to create API contracts or continue to use messages to interact with DLT platforms can do so.

Today, Swift provides a single access point for securities players throughout the post-trade lifecycle across many asset classes (equities, fixed income, derivatives).

As institutional investors increasingly expect access to all asset classes (both traditional and digital) which belong to various service providers, we have begun to explore the extension of our role to include tokenised assets – leveraging our community APIs to connect data consumers and providers in a harmonised way (enabling data models, identity management frameworks, as well as security and encryption to be standardised).

The experiments

Our experimentation aimed to validate two key areas. The *first* was to demonstrate the technical capabilities of enabling the use of the Swift infrastructure as a means of simulating primary market issuance and secondary market transfers of tokenised bonds/equities and cash using a number of different tokenised assets and cash settlement environments. This includes:

- The ability to create, transfer, and redeem tokens[4] and update balances between multiple client wallets; and
- Showing how interoperability between the "old" and "new" worlds can be achieved: RTGS/gpi and CBDC settlement, real traditional assets and the analogous tokenised asset. We also aimed to show interoperability between different tokenisation platforms that have been developed.

The *second* was to understand whether the experiments could provide evidence to support some of the claimed benefits of tokenised asset securities, such as:

- **Atomic settlement:** Token exchange represents instant settlement, reducing counterparty risks.
- **Fractionalisation:** Fractional ownership makes it easier for more retail investors to purchase high-value assets or illiquid instruments. This could facilitate greater liquidity, even across very illiquid assets.
- **Programmability:** Deliver new forms of automation with 'smart contracts'.
- **Shared golden copy:** Single sources of truth replace siloed ledgers across firms.
- **Removal or reduction of end-of-day reconciliations.**
- **Cost savings and processing acceleration.**

Use cases

Our experiment comprised seven different use cases:

1. A bond/equity **tokenisation** – Tokenisation is the process of representing traditional assets such as bonds or equities in token form, which are available on a blockchain.
2. A bond/equity **de-tokenisation** – De-tokenisation is the opposite of tokenisation, whereby a token will be redeemed for a traditional asset such as bonds or equities.

Delivery versus Payment (DvP)[5] transactions over different scenarios that also include split settlement scenarios (where cash and securities settle at two different times and environments):

3. A DvP transaction where the asset is a tokenised bond/equity, the payment in fiat currency is on **Swift gpi or the enhanced Swift platform**, and the buyer and seller are using the same tokenisation platform.
4. A DvP transaction where the asset is a tokenised bond/equity, the payment in fiat currency is on **Swift's simulated RTGS platform**, and the buyer and seller are using the same tokenisation platform.
5. A DvP transaction where the asset is a tokenised bond/equity, the payment in fiat currency is on **Swift's simulated CBDC platform**, and the buyer and seller are using the same tokenisation platform.
6. A DvP transaction where the asset is a tokenised bond/equity transferred between **two tokenisation platforms** on different blockchain environments and the payment in currency is on Swift gpi or the enhanced Swift platform.
7. A DvP transaction where the asset is a tokenised bond/equity transferred between two tokenisation platforms on different blockchains, and the payment of the fiat currency is on **Swift's simulated RTGS platform**.

In addition, we tested the following **exception flows:**
DvP and Receipt versus Payment (RvP) instructions do not match
– Insufficient balance in custody account to tokenise
– Insufficient tokens to de-tokenise
– Insufficient tokens to complete DvP

[4] Here we define redemption as de-tokenisation: the surrender of the token for the traditional asset.
[5] Delivery versus Payment: settlement which ensures that the transfer of securities is only performed once the payment has been received.

Roles and responsibilities

Within these experiments, Swift provided the integration layer for all inbound and outbound connections to all systems, developed the routing logic to outbound connections by authentication and routing API requests, and implemented the MT creation and parsing programmatically. In addition, Swift was responsible for emulating the three types of cash legs involved (RTGS, gpi, and CBDC), comprised of both API and CBDC networks.

The SETL PORTL technology platform was used to orchestrate and execute the flows, creating and parsing MT messages, and providing a user interface for the creation, status and details of the transactions and tokenisation platforms. In addition, the SETL matching engine was used to match instructions, based on pre-defined matching criteria.

SETL and Northern Trust provided tokenisation platforms for the experimentation, with two additional Citi and Clearstream tokenisation platforms hosted by SETL. One of these hosted platforms was based on SETL's blockchain and the other on a Digital Assets DAML implementation. All of the platforms were designed to support Swift messaging. A combination of Swift messaging and API calls formed the integration between the various DLT environments and with transaction orchestrations using their respective capabilities, including holding the bookings of different amounts of tokenised securities and wallets via exposing APIs.

In the experiments, Clearstream, Northern Trust and Citi represent key parts of the tokenised – and traditional – asset ecosystem, including securities market infrastructures, global and sub-custodians, playing the role of Asset Owner (owns a security or a tokenised version of the underlying security); Custodian (assists the asset owner with executing the securities settlement, including forwarding the instructions to the depository or initiating the cash movements or payments); and Depository (holds the booking of securities and owners). Each of these institutions played these roles in different capacities, per each use case, as detailed in the experiment flow explanations below.

Design decisions

The following design decisions were made in order to enable our experimentation:

Messages

The ISO 15022 MT messages are well established for securities settlement and reconciliation, but in the past did not have a dedicated functionality for tokens or digital assets. New token-related features will be added for the upcoming Standards Release 2022 in November, including the addition of a 30-digit accuracy number to allow for the granularity needed for fractionalisation, and the option to use a wallet blockchain address instead of a safekeeping account: these changes and features were utilised in our experiments.

For the purpose of this experiment, we created a market practice template that allows:

- Swift to simulate secondary market transfers of tokenised bonds/equity and cash 24hrs a day.
- Swift users to transfer tokens and update balances between multiple client wallets.
- Simulated settlement using CBDC.
- Simulated settlement at RTGS.
- Simulated settlement using Swift gpi or the enhanced Swift platform.
- Blockchain specific details to be captured (a code to clarify the operation workflow, blockchain addresses, system specific technical attributes).

The proposed market practice templates demonstrate that the rich MT messages only need a handful of additional refinements to make tokenisation, de-tokenisation and the processing of token settlements possible. These messages included a mock-UTI (Unique Transaction Identifier) for tracking purposes.

In addition, the following existing MT messages are in scope for the experiment: MT 101, MT 103, MT 199, MT 540-548, MT 524, MT 508.

Fractionalisation

We enabled assets to be fractionalised to six decimal places, adding a field into the ISO 15022 messages to capture the agreed amount (up to six decimal places) to be traded by an asset owner.

Connectivity

The experiments involved the passing of messages between a variety of applications: some built specifically for this project, while others required a delegation of the workflow to legacy systems. In order to enable the interaction of these systems and allow for scalability, we used APIs, in which every party exposed their APIs hosted on their own cloud. Swift's simulated environment was used to create inbound and outbound connections to all the systems involved. It exposed an API to facilitate sending of MT messages (passed as Base64 encoded JSON payloads) to any specified recipient, as well as methods to interact with the tokenisation platforms and to start the cash leg flows.

Audit trail functionality

While each component logs inbound API calls, in order to ensure a sufficient audit trail, the SETL PORTL tracked each step in the flow. This includes the status of the API call (success, server error, client error, etc.), the sender of the API call, the receiver of the API call and the contents of the API call. All of this information was displayed via the SETL user interface.

Identity

Identity for our experiments was established through a combination of API keys, client certificates and (wallet) private keys.
The logic behind each connection was implemented at the level of the Swift environment, as it is highly configurable to the target's desired means of authentication/ authorisation.

Orchestration

The experiments ensured successful orchestration in the case of tokenised assets being settled against different cash leg types, even across multiple platforms (i.e. when the token is issued, traded and settled on different platforms).

Security types

For the purpose of the experiment, we tested each use case with three different securities:[6]

1. Ordinary Equity: DE0005810055: Deutsche Börse AG
2. Corporate Bond with Coupon: DE000A3H2465: DeutscheBörse 0,125% 22/02/2031
3. Government Zero Bond: DE0001142263: Bundesrep.Deutschland Anl.v.05 (4.1.2037) o.Zinssch

Out of scope

The following were out of scope in our experiments:

- FX rates and cross-currency settlement
- External wallet and key management

[6] The securities mentioned are for illustrative purposes only and not a recommendation to buy, sell or hold a particular security type.

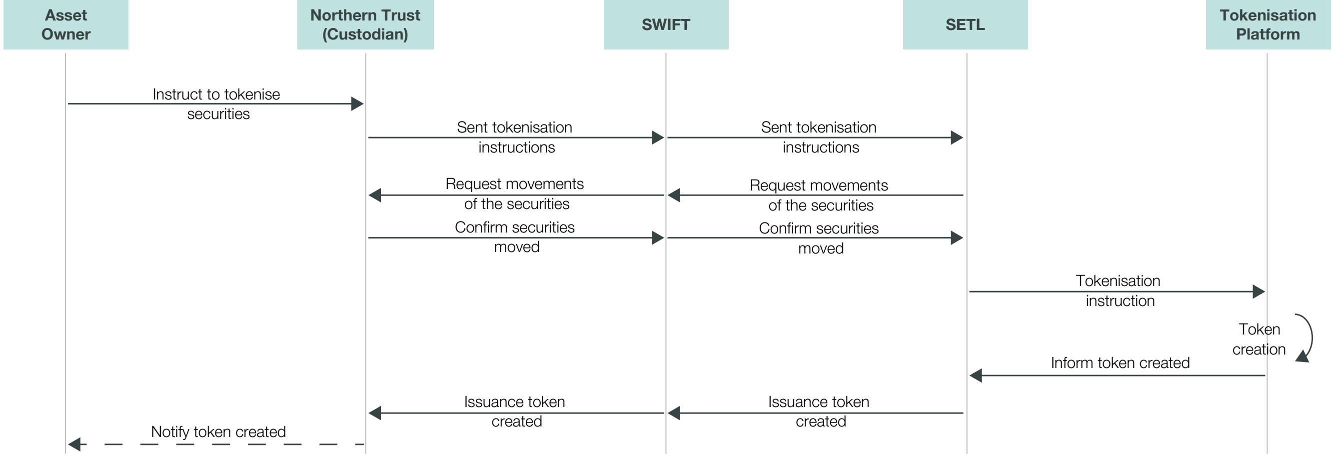
The experiment results

For testing purposes, we ran each of the seven use cases (described in detail below) multiple times, varying the amounts and using three types of securities (Ordinary Equity, Corporate Bond with Coupon, Government Zero Bond). In total, 70 test scenarios took place. The success of the use cases was ensured by verifying that the balances were correctly updated, and that statuses and acknowledgements were conveyed to the Asset Owners.

Experiment 1: Tokenisation

Objective
This experiment aims to model the case where a holder of a bond/equity (held in custody at the custodian) wishes to exchange the bond/equity for equivalent tokens on the tokenisation platform.

Figure 1: Experiment flow – Tokenisation



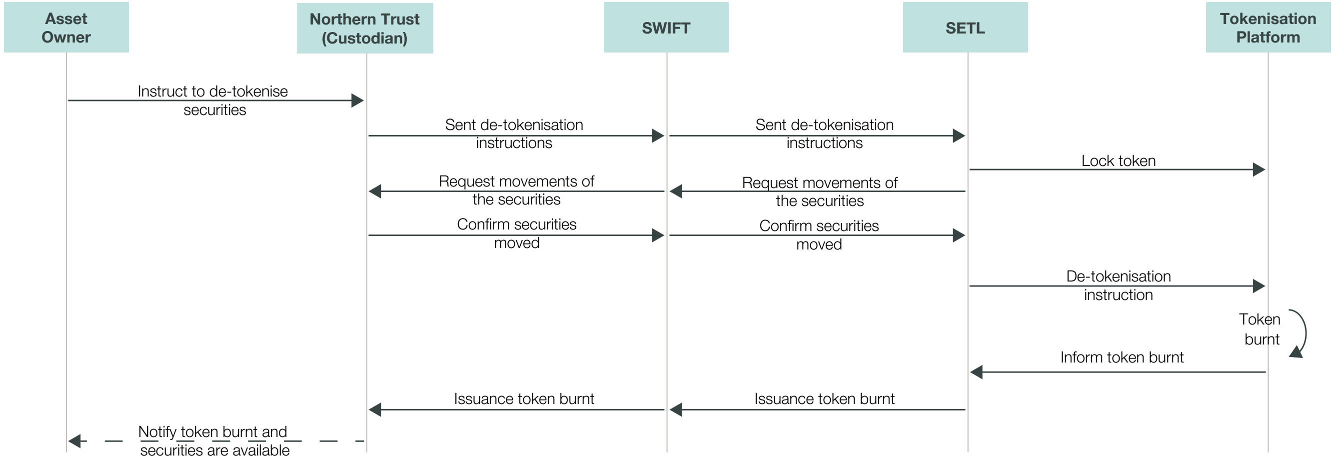
The experiment flow
This diagram above illustrates the following steps:

1. The Asset Owner instructs the Custodian (Northern Trust) to tokenise the securities.
2. The Custodian instructs this operation to SETL PORTL via Swift.
3. The Custodian transfers the traditional asset on its custody platform.
4. Once SETL receives the confirmation of the asset movement, SETL instructs the tokenisation platform to create the token.
5. The token is generated on the tokenisation platform.
6. SETL informs the Custodian that the tokenisation is completed.
7. The Asset Owner is informed that the operation is completed.

Experiment 2: De-tokenisation

Objective
This experiment aims to model the case where a holder of a bond/equity token (held on the tokenisation platform) wishes to exchange the bond/equity token for the underlying bond/equity equivalent in custody at the custodian. The experiment also attempts to estimate other areas for potential cost savings

Figure 2: De-tokenisation



The experiment flow
This diagram above illustrates the following steps:

1. The Asset Owner instructs the Custodian (Northern Trust) to de-tokenise the asset.
2. The Custodian instructs this operation to SETL via Swift.
3. SETL locks the token on the tokenisation platform where it is registered.
4. The Custodian transfers the traditional asset on its custody platform.
5. Once SETL receives the confirmation of the asset movement, SETL instructs the tokenisation platform to burn the token.
6. After receiving confirmation that the token has been burnt, SETL informs the Custodian that the de-tokenisation is completed.
7. The Asset Owner is informed that the operation is complete.

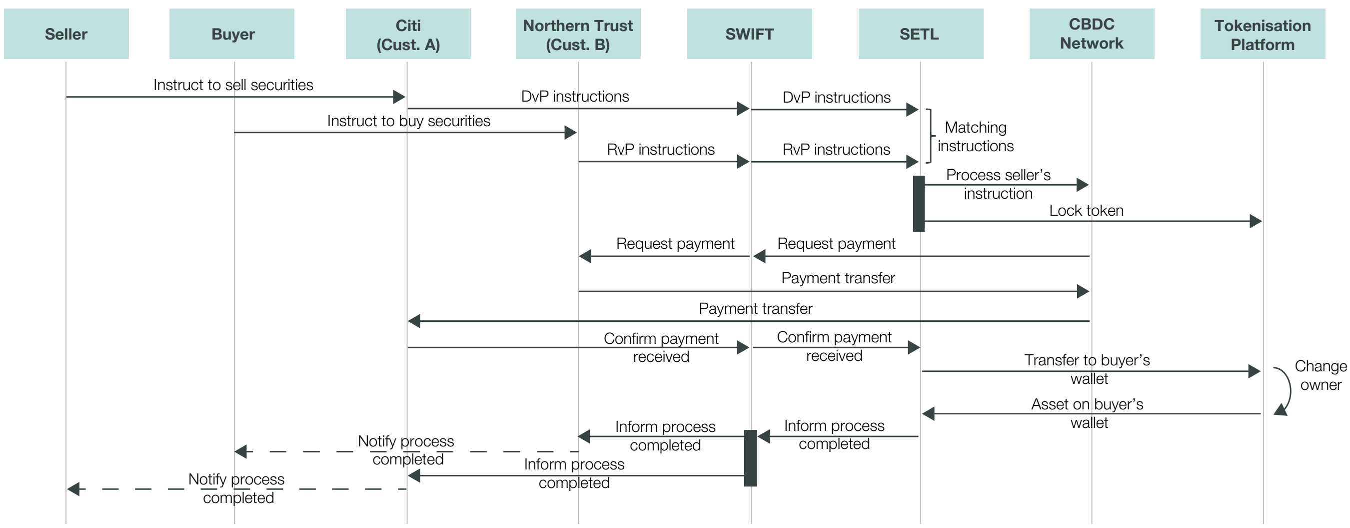
Experiments 3,4, and 5:
DvP transactions via one tokenisation platform

Objective

This experiment aims to model a situation whereby both market participants have a wallet on the same platform (using one tokenisation platform). We aimed to show this via three different cash legs – Swift gpi for global fiat payments, Swift simulated RTGS for domestic fiat payments, and Swift CBDC platform (CBDC infrastructure implemented and managed by Swift using Corda) for CBDC payments in which the flows could run over.

The experiment also aimed to show that because of improved information between participants, reconciliation can be enhanced. Finally, it attempted to estimate other areas for potential cost savings and processing acceleration. Note that as the bond/equity ownership does not change, there are no interactions at the Depository level and thus there is no need to depict the role of the Depository in this scenario.

Figure 3: DvP transactions via one tokenisation platform



The experiment flow

This diagram above illustrates the following steps of use case 5 (the payment of the fiat currency is on Swift's simulated CBDC platform):

1. The Seller instructs the Custodian (A - Citi) to sell the tokenised asset and the Buyer instructs the custodian (B - Northern Trust) to buy the asset.
2. Instructions are sent by both Custodians to SETL via Swift, and SETL matches the information received.
3. SETL processes the Seller's instruction to the CBDC platform hosted and managed by Swift (note: this step is not necessary in the case of RTGS and gpi use cases).
4. SETL locks the token on the tokenisation platform (Northern Trust's) where it is registered.
5. Once the payment over CBDC has been confirmed and received by the seller's Custodian, SETL instructs to change the owner of the asset.
6. Once the token's owner has been transferred, SETL informs the Custodians via Swift that the process is completed. The Buyer and Seller are notified by their Custodians.

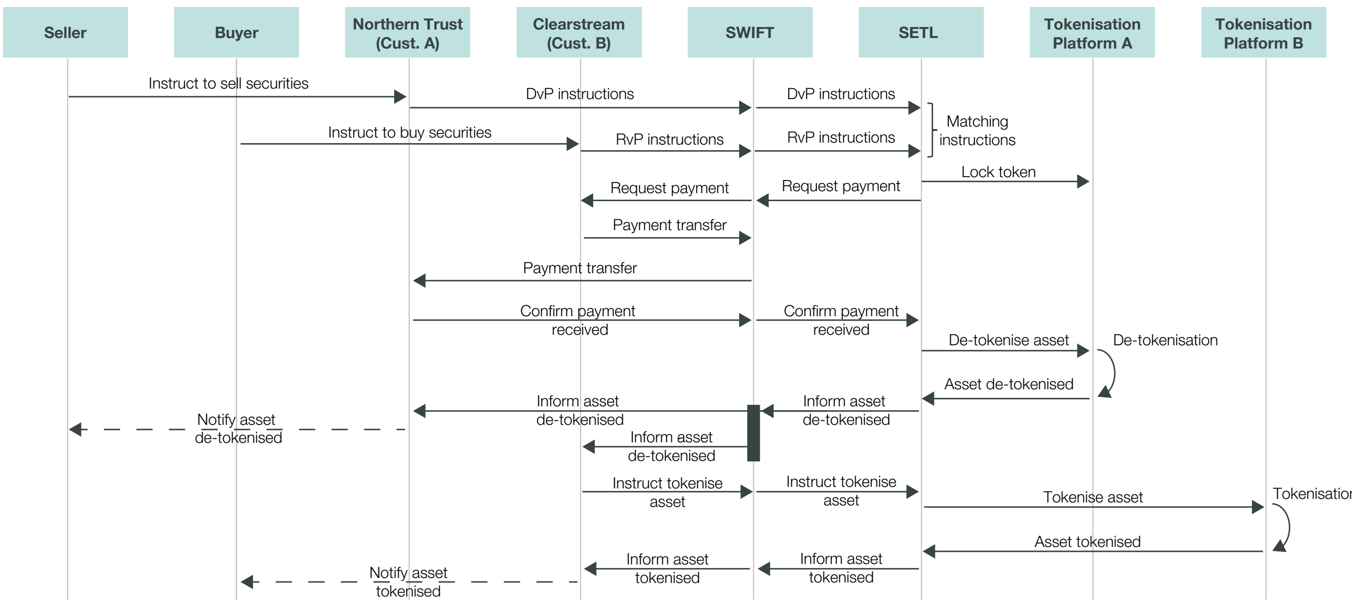
Note, the cases in which we used one tokenisation platform over gpi and RTGS are not depicted here for the sake of simplicity and similarity. However, it is worth noting that the roles of Custodians and the tokenisation platforms have been altered for each use-case:

- In the gpi use case, Citi played the role of Custodian A, Northern Trust played the role of Custodian B, and the Northern Trust tokenisation platform was leveraged.
- In the RTGS use case, Clearstream played the role of Custodian A, Northern Trust played the role of Custodian B, and the Clearstream tokenisation platform was leveraged.

Experiments 6 and 7:
DvP transactions via two tokenisation platforms

Objective
This experiment modelled a situation in which both market participants have a wallet on different platforms, and aims to show this via two different cash legs, Swift gpi for global fiat payments and Swift simulated RTGS for domestic fiat payments. The experiment will show that the need for end-of-day reconciliation is removed and attempts to estimate the other aspects of the ensuing cost savings and processing acceleration in a more complex environment by using two tokenisation platforms.

Figure 4: DvP transactions via two tokenisation platforms



The experiment flow
The diagram above illustrates the high-level process for use case 6 (two tokenisation platforms on different blockchain environments while the payment of the fiat currency is on Swift gpi or the enhanced Swift platform, with the following steps:

1. The Seller instructs Custodian (A - Northern Trust) to sell the tokenised asset and the Buyer instructs the Custodian (B - Clearstream) to buy the asset.
2. Instructions are sent by the Custodian to SETL via Swift, and SETL matches the information received.
3. SETL locks the token on Platform A (Northern Trust's) where it is registered.
4. Once the payment has been confirmed and received by the seller's custodian, SETL instructs to de-tokenise the asset and then informs the Custodians via Swift that the asset has been de-tokenised. The Seller is notified of this operation by their Custodian.
5. The Buyer's Custodian instructs SETL via Swift to tokenise the asset on a second platform (Tokenisation Platform B – SETL's).
6. Once the token has been created, SETL informs the Buyer's Custodian via Swift that the asset has been tokenised on Platform B. The Buyer is notified of this operation too by their Custodian.

Note, the cases in which we used two tokenisation platform over RTGS is not depicted here for the sake of simplicity and similarity. However, it is worth noting that the roles of Custodians, and the tokenisation platforms have been altered for each use-case:

- In the RTGS use case, Northern Trust played the role of Custodian A, Citi played the role of Custodian B, and Northern Trust's and SETL's tokenisation platforms were leveraged.

Conclusion and next steps

Through these successful experiments, we were able to simulate primary token issuance and secondary market transfers of tokenised bonds/equities and cash using a number of different tokenised asset platforms and cash settlement types (gpi, RTGS and CBDC), utilising Swift's infrastructure as a means of accessing these platforms and orchestrating transactions. This illustrates that we can achieve interoperability between "old" and "new" payment worlds – namely RTGS/gpi and CBDC settlement, real traditional assets and the analogous tokenised asset, etc.

In addition, we demonstrated that we can enable the creation, transfer, redemption of tokens and update of balances, irrespective of the platform in which a wallet is held. We were also able to explore and show some of the theoretical benefits of digital assets and tokenised securities, such as fractionalisation, increased transparency, programmability and automation, faster and more efficient settlements, easier reconciliation and greater liquidity.

Centered around interoperability and standardisation, our key findings were as follows:
Interoperability can be achieved without being prescriptive on technology. In this series of experiments, we used four different DLT environments – three for securities and one for CBDCs. By clearly defining standard operations, we were able to execute a wide variety of use cases based on business outcomes rather than technical compatibility.

To achieve an interoperable tokenised assets market, consistent messaging is vital as the preferred option of communication for interoperating between traditional and tokenisation platforms and traditional and new securities processes.

Standards play a crucial role in interoperability. When dealing with new ways of representing cash and securities, it is essential that a common naming convention and meaning is adopted between participants. A token represents a right conferred to the holder and for tokens to be fungible between market participants there must be an assured understanding that those rights transfer between a buyer and seller.

Messaging standards may need to continue to evolve to support tokenised assets. The messages used in the experiments benefited from the upcoming 2022 Standards Release changes for settlement and reconciliation messages. New field formats give much higher precision to the decimals needed when an asset is fractionalised into smaller units. The new field option allows users to have wallet addresses instead of safekeeping accounts.

Standardised APIs can easily emulate ISO 15022 message interactions in a faster and more flexible manner, without compromising security, authentication, encryption or standardisation.

Split settlement (when cash and securities in a DvP transaction happen separately in two different locations and timings) can be fast, secure and reliable in hybrid configurations. This is both in a RTGS cash settlement or a regular cross-border cash movement, even when multiple correspondent banks are involved, thanks to gpi.

Atomic settlement can happen in the case of tokenised assets being settled against CDBCs, even across multiple platforms (e.g. when the token is issued in a platform, traded in another one and settled in yet another one).
Fractionalisation can be successfully demonstrated, with assets fractionalised through tokens that were then able to be used in transactions in the same way as non-fractionalised tokens.

Next steps

As a next step, we would like to invite the community's feedback on these experiments.

In the experiments, Swift users benefitted from the single connectivity window and leveraging the same core components of the Swift network to transact with multiple asset classes and with multiple payment options, co-existing with new assets and processes linked to tokenisation.

Possible options that Swift is evaluating for further development include:

1. **Offering the services demonstrated in the experiments as a product to Swift customers.**
2. **Initiating a follow-on set of experiments to test additional use cases**, such as exploring reporting or asset servicing scenarios.
3. **Evolving data dictionaries for API connectivity for tokenised asset platforms** so that firms can benefit from standardised communication.

Want to learn more?
To provide feedback, or if you would like to learn more about our tokenised assets experiments and solutions, please reach out to your Swift account manager or contact innovate@swift.com.

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About Swift
Swift is a global member-owned cooperative and the world's leading provider of secure financial messaging services. We provide our community with a platform for messaging, standards for communicating and we offer products and services to facilitate access and integration; identification, analysis and financial crime compliance. Our messaging platform, products and services connect more than 11,000 banking and securities organisations, market infrastructures and corporate customers in more than 200 countries and territories, enabling them to communicate securely and exchange standardised financial messages in a reliable way.

As their trusted provider, we facilitate global and local financial flows, support trade and commerce all around the world; we relentlessly pursue operational excellence and continually seek ways to lower costs, reduce risks and eliminate operational inefficiencies. Headquartered in Belgium, Swift's international governance and oversight reinforces the neutral, global character of its cooperative structure. Swift's global office network ensures an active presence in all the major financial centres.

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