PROVENANCE

Securitization on Provenance

ABSTRACT

Figure Technologies, Inc., through its affiliate, Figure Lending LLC ("Figure"), a consumer lending originator and servicer, and Provenance, a decentralized distributed stakeholder blockchain for the financial ecosystem, completed the first securitization backed by loans originated, serviced, financed and sold on blockchain. The aggregate collective benefit to the parties (e.g., originator, sponsor, servicer, loan buyer) totaled **over 100 basis points.** This represents potential **savings of over $30 billion** to the $3 trillion annual securitization market. This paper is a case study detailing the drivers of these efficiencies and impact quantification.

INTRODUCTION

On March 5, 2020, Figure sponsored the first securitization backed by loans originated, serviced, financed, and sold using blockchain technology (the "FLOC 2020-1 securitization"). This was an important milestone for three reasons:

1. The securitization was done on an actual production blockchain versus a proof of concept in which the blockchain tracked an off chain deal.

2. It represents an implementation of blockchain across a complex, end-to-end value chain rather than its application to a discrete business process.

3. The benefits of Provenance are quantifiable and meaningful. Figure's objective was not to simply prove a securitization could happen on blockchain, but that it was cheaper, faster and better.

The initial Provenance white paper describes both the conceptual elements of Provenance that make it a compelling technology for the financial services market, and the concrete application of the blockchain as a ledger, registry and exchange. This paper is a case study of a specific use case, and focuses on the real-world manifestations of these elements in the form of cost savings, risk reduction, and revenue enhancements.

TRANSACTION DETAILS

FLOC 2020-1 ($149mm+)					
Class	**CCY**	**Size**	**WAL***	**CE**	**CPN**
A	USD	$127+MM	3.0	15.0%	4.0%
B	USD	$22+MM	3.0	0.0%	N/A

* Assumes 15% CPR to Issuer Optional Redemption

Originator, Servicer, Issuer & Co-Sponsor	*Figure Lending LLC*
Initial Purchaser & Co-Sponsor	*Jefferies LLC*
Initial Purchaser	*Nomura Securities International, Inc.*
Subordinate Note Buyer	*Tilden Park Capital Management LP*
Trustee	*Wilmington Savings Fund Society, FSB*
Issuer Counsel	*Dentons US LLP*
Initial Purchaser Counsel	*Hunton Andrews Kurth LLP*

ABOUT FIGURE TECHNOLOGIES

Figure is a financial technology company co-founded in 2018 by Mike Cagney, the founder and former CEO of SoFi, along with a team of accomplished executives from the financial services and technology space. Figure advisors include former SEC Chairman Arthur Levitt, former FDIC Chairwoman Sheila Bair and former Digital Asset CEO Blythe Masters.

Figure's mission is to transform financial services through blockchain, bringing speed, efficiency and savings to both consumers and institutions. Figure created Provenance and currently provides technical, business development and other services to Provenance, though Figure's influence will lessen over time as Provenance decentralizes through increased usage over time.

ABOUT PROVENANCE BLOCKCHAIN

Provenance is a public but permissioned, distributed stakeholder blockchain for the financial ecosystem. Provenance combines the distributed, trustless and immutable characteristics of blockchain with the function of a ledger, registry and exchange. Introduced in late 2018, Provenance is used by firms such as Jefferies LLC, Tilden Park Capital Management, LP and Medalist Partners, LP, for position management, diligence and surveillance. A number of originators are in the process of integrating Provenance's loan origination software given its technological advantages and ease of use. Over $1 billion of assets have been originated, financed and sold on Provenance, with industry participation and business use cases growing each month.

An overview of Provenance, including architecture and business processes, can be found here.

> *"Blockchain technology will disrupt financial services in ways that unlock tremendous value through improving current processes but also introducing new ways to do business."*
>
> - Jenny Johnson, President & CEO at Franklin Templeton

DEFINITION OF TERMS

We will refer to three key elements of Provenance throughout the paper:

Distributed Ledger: These are identical, synchronized copies of the transactional checksums (hashes) that are maintained by a network of independently managed and maintained nodes. In the case of Provenance, the nodes are hosted by leading financial institutions and service providers such as Franklin Templeton and Experian. Data committed to blockchain distributed ledgers is stored in an immutable, encrypted format.

The Provenance distributed ledger can support complex financial transactions, including the ledgering of cash movements and can also support full file storage to allow documents to be retrieved and validated.

Smart Contracts: These are programs that are stored on the blockchain which execute actions when a specific event occurs. This event can be a document submission, a payment, or compliance with an underwriting standard (e.g., FICO is above 650). Smart contracts contain terms and conditions agreed upon by the participants to render services, transfer assets and record transactions. Smart contracts can be executed systematically between participants without an intermediary.

Omnibus Banks: These are banks that transfer cash among transacting parties on Provenance, and allow for the recording of those transactions to the distributed ledger. They are traditional banks that are integrated into Provenance such that standard banking activities (e.g., processing ACH files and sending wires) can be initiated via an automated interface, and the blockchain is provided with an automated means of viewing and verifying transactions in real time.

PROVENANCE VALUE DRIVERS

Provenance stores data in an immutable form that can never be altered, only amended. This has obvious benefits for data integrity and auditability, which are critical for financial transactions. Provenance decentralizes transactions, ensuring that no one entity can dictate "truth". Finally, Provenance replaces "trust" with "truth," authenticating information by source and validating across the stakeholders, reducing the reliance on reps and warranties. Taken together, the distributed, trustless and immutable attributes of Provenance offer the ability to reduce costs, mitigate risks and enhance profits.

Cost Savings

Provenance enables unprecedented levels of automation, certainty and speed that dramatically reduce costs and increase margins. These savings manifest themselves in three ways:

- **Reduced Third-Party Expense:** Provenance records transactions on an immutable ledger, reducing the reliance on third-parties that provide trust and verification. Provenance also allows third-party service providers to rely on automated verification processes, thereby reducing manual processes and administrative costs. Provenance is able to reduce internal and third-party audit costs, as well as reduce the operational costs of traditional service providers (custodians, trustees, etc.).

- **Reduced Operational Expense:** Manual verification procedures performed by an auditor are replaced by automated software routines known as "smart contracts," reducing staffing costs, completion timelines and manual reconciliation errors. Smart contracts are stored immutably on the distributed ledger, ensuring auditability, consistency and the highest standard of data integrity.

- **Reduced Capital Expense:** Asset ownership is recorded and assets are transferred on Provenance, enabling real-time, riskless trade settlement. This supports greater velocity of capital, reduced settlement and counterparty risk, lower working capital requirements, and higher return on equity.

Risk Mitigation

True data, certainty around transactions and the elimination of counterparty failures reduce risk for originators, investors and warehouse lenders. The benefits here manifest themselves in four ways:

- **Increased Data Certainty:** Data added to the distributed ledger can be authenticated by the source provider, eliminating the need to trust (and audit) the data. Once added, data and transactions are stored immutably, ensuring they can never be altered.

- **Increased Diligence Certainty:** The use of automated smart contracts enables auditing of credit rules for every loan at the point of origination. Exception reports clearly flag deviations from credit and underwriting policies.

- **Increased Settlement Certainty:** Provenance acts as a unified registry. Instant, bilateral settlement eliminates counterparty and settlement risk, and allows for timely delivery of asset

- **Increased Compliance Certainty:** Smart contracts audit regulatory requirements, which allows for prompt remediation in the event of a breach, and provides an immutable audit trail.

Revenue Enhancement

Greater transparency, reduced friction in transactions, and innovative new options for structuring financial assets deliver enhanced revenue opportunities to the securitization ecosystem. These are realized in three ways:

- **Improved Transparency:** With a single source of truth accessible to all permissioned participants, information asymmetries and time delays are eliminated. Assets trade on real-time data rather than 30+ day remittance reporting cycles. This creates a level playing field with less information uncertainty, improving primary and secondary market liquidity.

- **Reduced Friction:** Automated trade settlement procedures, including simultaneous transfers of cash and legal ownership, greatly reduce the back-office time and expense required to buy and sell assets. This allows for improved liquidity, lower transaction costs, and subsequently tighter asset spreads.

- **Innovation:** Blockchain technology creates new options for structuring financial assets and makes existing options more efficient. Fractionalized ownership, for instance, becomes far easier to implement, making illiquid assets more accessible. Lower cost and operational friction to securitize assets allows for smaller, bespoke transactions, which previously were not economically viable to create.

CASE STUDY

The FLOC 2020-1 securitization provides a case study to demonstrate the value of blockchain through the lifecycle of a loan, from origination to securitization. To date, Figure has demonstrated over 100 bps in measurable efficiencies through the use of blockchain, and could demonstrate up to an additional 100 bps of value ($30B annually) to the securitization market as efficiency gains in a rated transaction, deal execution and secondary market pricing are proven out.

Blockchain Margin Improvement (117 bps)
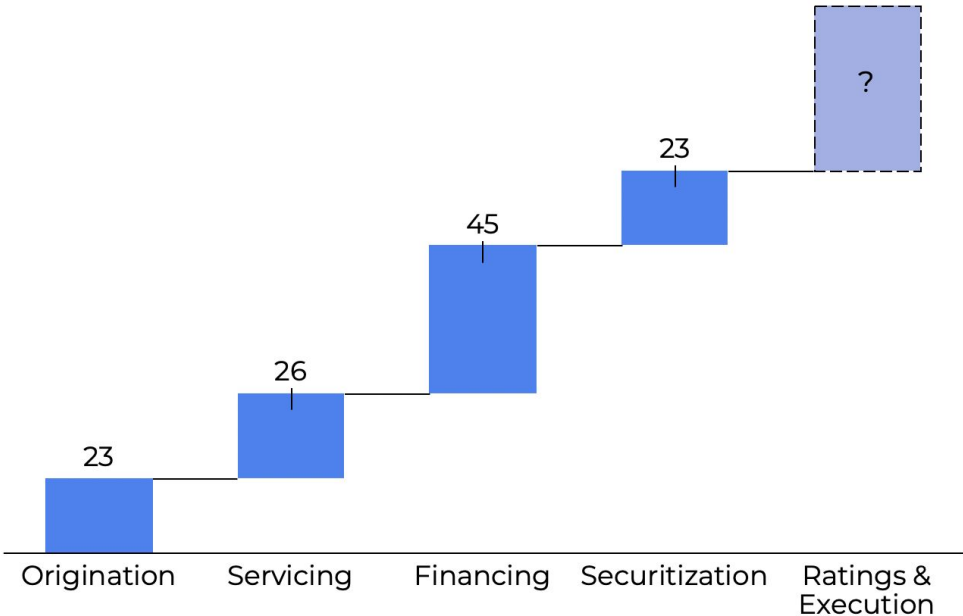
Each stage of the value chain drives margin improvement so we will examine each of the first four stages individually: **Origination, Servicing, Financing** and **Securitization**. Figure will evaluate forecasts for margin improvements in the execution and ratings stagings with subsequent issuances. We will begin with a detailed description of how these processes were migrated onto Provenance, and then quantify the efficiencies of doing so for each of the first four stages of the life cycle of a loan.

ORIGINATION

Provenance has primarily been designed to support the origination of financial assets directly on the blockchain itself. Provenance can also support asset tokenization (i.e., the representation on-chain of an asset that exists off-chain).

Origination on-chain means that immutable digital records of the documents that define the asset are stored on Provenance, ownership of the asset is done through Provenance registry and disbursement of funds to the consumers is directed by smart contracts stored on Provenance.

Blockchain Origination Process Flow
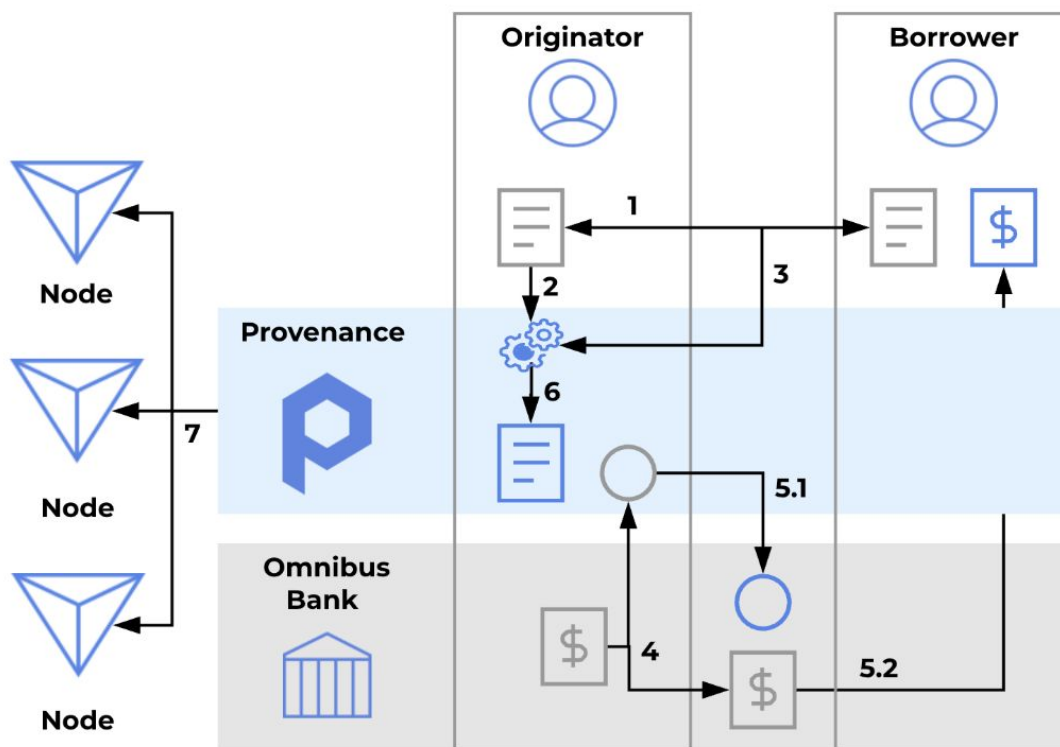
1. **Application:** The borrower electronically completes and submits an application to the lender. The originator pulls data (e.g., FICO, income, property valuation) from third-party sources to use in the origination process. Some of this data is cryptographically signed by the third-party provider. This allows the originator to prove definitively to any downstream loan purchaser that the data has not been altered and was provided by the stated source.

2. **Underwriting & Offer Creation:** The originator underwrites the loan, creates an offer and submits a loan file with all required documents and data to Provenance.

3. **Borrower Acceptance:** The borrower accepts the terms by signing the credit agreement and other required documentation electronically.

4. **Issuance of Stable Coin:** Once Provenance receives the completed loan file, it instructs the omnibus bank to hold funds in escrow and delivers a stable coin to the originator to represent these funds.

5. **Funding:** The stable coin is sold back to the bank with instructions to release fiat from escrow to fund the loan. The sale of the stable coin creates an immutable record of the cash movement linked to the transaction.

6. **Verification:** For each loan product, a series of smart contracts have been written to verify adherence to the originator's credit guidelines (e.g., FICO > 680, LTV < 80%). These smart contracts are transparent and auditable by third parties to ensure they match the credit box and other preset credit and compliance criteria and are returning accurate results. Because the smart contracts themselves are committed immutably to the blockchain, any party using them to verify a loan file can be confident the output of those smart contracts has not been altered and the original audit is still valid.

7. **Recording:** The hashed representation, or record, of the loan files is stored immutably on Provenance. Records stored on Provenance allow for seamless verification that digital loan documents are unaltered and verification of the ownership of the asset. This streamlines the process of transferring loan documents to buyers and custodians by reducing the need for repetitive diligence and verification. Provenance supports the storage of complete files, allowing them to be viewed by permissioned parties. Provenance automates much of the work of document custodians in this way.

At this point, the loan has been "originated on chain," meaning that the asset itself was created and lives on Provenance. The record of the definitive documents defining the loan is stored on chain. The legal registry of ownership (the originator, in this example) is stored on chain. The proof of funding is stored on chain. This sets the stage for realizing a number of efficiencies both in origination and downstream through financing and sales/securitization.

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Origination Efficiencies

Originating a loan on blockchain enables the originator to eliminate third-party intermediaries, reduce operational expenses, and utilize capital far more efficiently. Figure generated 23bps in origination savings for loans and securities in the FLOC 2020-01 securitization.

Reduced Third Party Expense: Provenance serves as a platform that holds the assets, eliminating the need for third-party vaulting services. In addition, Provenance provides the servicing platform (described below). This means that loans originated on Provenance are simultaneously set up to be serviced, eliminating the need for an originator (or subsequent buyers) to pay servicer onboarding fees.

Reduced Operational Expense: Figure has been able to demonstrate significant savings by eliminating the need for many labor intensive quality control (QC) processes through the use of smart contracts to create validation reports (including loan disclosure documents, minimum DTI and FICO, maximum CLTV, etc).

Increased Data Certainty: Immutable validation reports and records of funding activity reduce the risk of errors or fraud in the underwriting process.

> *"Nomura is proud to have been a lead underwriter on Figure's inaugural securitization on Provenance. Provenance is leading the way toward creating a more accessible securitization market, one where smaller issuers may securitize assets at a lower cost than the traditional model."*
>
> - Sanil Patel, Managing Director of Nomura Securities International

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SERVICING

Provenance automates the servicing function for performing loans through a similar use of smart contracts that initiate cash transfers, record the receipt of payments, and amortize the loans.

Blockchain Servicing Process Flow
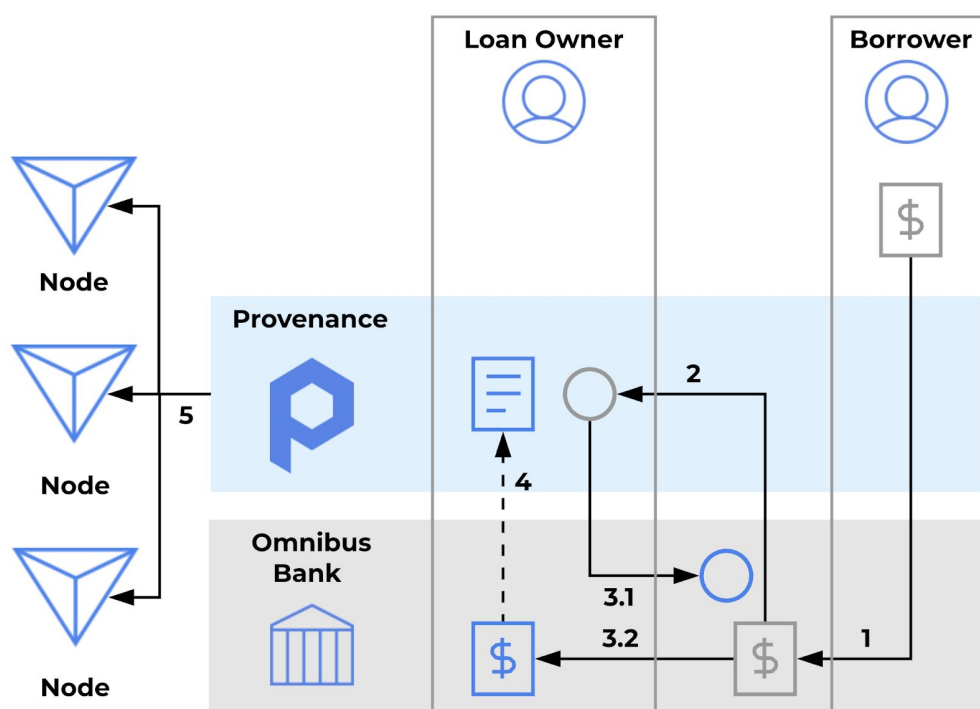
1. **Statement and Payment:** On the payment date, a smart contract directs the omnibus bank to process an ACH file to retrieve the payment from the borrower's linked account (a large majority of Figure HELOC borrowers have signed up for auto-pay). A smart contract could be built to generate a statement for the borrower in advance of the payment date. This statement could be sent directly to the borrower, or the data can be delivered to the servicer's statementing engine.

2. **Issuance of Stable Coin:** When the borrower's payment is received by the omnibus bank account, Provenance instructs the omnibus bank to hold funds in escrow and delivers a stable coin to the servicer to represent these funds.

3. **Disbursal:** The stable coin is sold back to the bank with instructions to release fiat from escrow to the servicer. The sale of the stable coin creates an immutable record of the cash movement linked to the transaction.

4. **Amortization:** A smart contract simultaneously allocates the payment to principal and interest, and amortizes the balance according to the loan terms (inclusive of the impact of late or early payments).

5. **Recording:** Each of these actions is recorded to Provenance as they occur: the receipt of payment, the amortization of the loan, and the disbursement of funds to the entitled parties. This provides daily visibility into loan performance (payments can be seen the moment they arrive), and a single source of truth reflecting all payment touchpoints for the asset.

Provenance hosts the smart contracts and integrates the financial infrastructure (e.g., the omnibus bank) that allows for the movement of funds, and records the resulting ledger entries to the blockchain. Provenance is not, however, the servicer. Rather it is a technology platform the servicer uses to operate elements of its business.

While performing servicing can be completely automated, borrowers will inevitably have questions or will need to restructure their loans in ways that require human interaction. These touch points will continue to be provided by the servicer.

Servicing Efficiencies

Servicing on chain allows for operational expense savings, improved capital efficiency, and greatly improved performance transparency. Figure and FLOC investors realized at least 26 bps of servicing benefit for loans in the FLOC 2020-01 securitization.

Reduced Operational Expense: Provenance automates most activities related to the servicing of performing loans: the initiation of cash transfers and the amortization of loans. This can drive the marginal cost of servicing a performing loan to virtually zero. It can also streamline the handling of non-performing loans, although those savings are not estimated in this case study.

Increased Capital Efficiency: Principal & Interest payments from borrowers can instantly be routed on to the party entitled to receive them, rather than wait up to 30 days for the next remittance cycle. This can translate to less interest incurred on a warehouse line for an originator, or the ability to reinvest proceeds more rapidly for an investor. For securitizations, which must wait until the monthly disbursement date for in order to accurately run the cash flow waterfall, Figure is exploring ways to sweep cash into higher yielding vehicles in order to enhance bondholder returns.

Increased Data Certainty: All parties subscribe to a "single source of truth" that contains every payment event in the life of a loan, eliminating many of the data reconciliation issues common to a multi-party database architecture. Originators, loan holders and trustees today maintain distinct databases for distinct purposes. These frequently get out of sync, resulting in hours of analysis to identify discrepancies. Provenance provides servicing expense savings in this area.

With Provenance, not only is everyone looking at the same data set, but if a question does arise, the nature of a blockchain–where data can only be appended, never altered--ensures a comprehensive audit trail.

Improved Transparency: Borrower payments made to the omnibus bank account can be immediately reflected on the chain and visible to loan holders. A borrower who misses a timely payment is immediately categorized as late. Potential buyers can see the status of every loan in a pool as of the minute they are evaluating a purchase, rather than relying on data that arrives on a 30-day remittance cycle. This real-time transparency into payment data leads to buyers being able to run daily analytics (e.g. Intex) which will lead to better liquidity in bond and residual trading, leading to better execution.

We have not quantified the benefits of this increased transparency, but believe that they will manifest themselves in better analytic products and better price execution.

Figure Lending LLC, as performing servicer, moves non-performing loans to special servicing if the borrower is 60+ days delinquent, enabling the loan to be addressed by a third-party servicer that specializes in late stage collections. This allows a lender to benefit from the efficiencies of automating servicing of performing loans while maintaining a high-touch program to address delinquent loans.

Example of Provenance Payment History File

PAYMENT HISTORY
011C9AC2-0DA0-402F-A8E2-1E242A4E4ABC

PAYMENT TYPE	PAYMENT POSTED	PAYMENT EFFECTIVE	PAYMENT AMOUNT	PRINCIPAL PAID	INTEREST PAID	ENDING PRINCIPAL	ENDING TOTAL
MONTHLY_PAYMENT	04/10/2019	04/10/2019	$1,283.69	$897.09	$386.60	$58,050.61	$58,050.61
MANUAL_PAYMENT	04/08/2019	04/08/2019	$1.00	$0.00	$1.00	$58,947.70	$59,308.46
MONTHLY_PAYMENT	03/11/2019	03/11/2019	$1,284.69	$917.30	$367.39	$58,947.70	$58,947.70
MONTHLY_PAYMENT	02/11/2019	02/11/2019	$1,284.69	$858.79	$425.90	$59,865.00	$59,865.00
MONTHLY_PAYMENT	01/10/2019	01/10/2019	$1,284.69	$866.22	$418.47	$60,723.79	$60,723.79
MONTHLY_PAYMENT	12/10/2018	12/10/2018	$1,284.69	$914.80	$369.89	$61,590.01	$61,590.01
MONTHLY_PAYMENT	11/13/2018	11/13/2018	$1,284.69	$854.20	$430.49	$62,504.81	$62,504.81

SALES AND FINANCING

Financing loans on chain takes full advantage of blockchain's improved transparency, automation of manual diligence processes and rapid bilateral exchange that eliminates the need for third-party intermediaries. Figure originated approximately $150M in HELOCs that backed the FLOC 2020-1 securitization, financed them through its Jefferies warehouse facility on Provenance, and sold the loans to a third-party investor who then contributed the assets back into the securitization on Provenance.

Blockchain Warehouse Pledging Process Flow
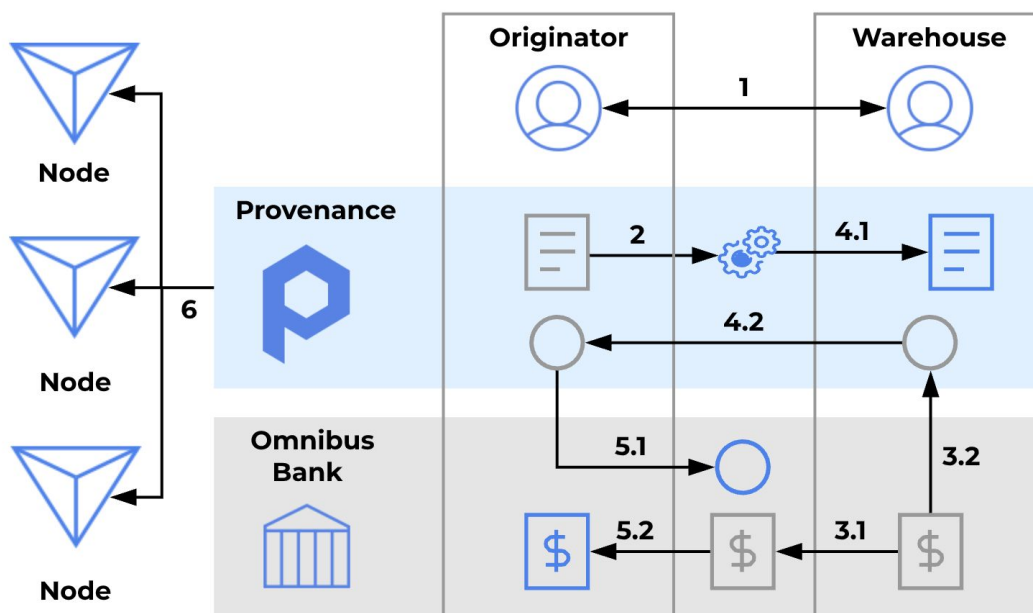
1. **Creation of the Warehouse:** The originator and warehouse lender negotiate the terms of the warehouse facility. The terms of the warehouse such as advance rate, credit terms, concentration limits and borrower base restrictions are encoded in a smart contract governing the warehouse facility.

2. **Propose Pool and Verification:** The originator proposes loans for pledging to the warehouse. This permissions the warehouse lender to see the complete loan files and payment history that are stored on the blockchain. Smart contracts can evaluate the loans against the defined terms of the warehouse facility. In addition to verification of individual loans, smart contracts can evaluate overall pool characteristics in order to ensure the proposed loans do not violate defined concentration limits or other criteria.

3. **Approval:** Once the individual loans and their impact on the overall warehouse facility have been approved, Provenance calculates the appropriate disbursal based on the advance rate of the warehouse and then instructs the omnibus bank to hold funds in escrow and delivers a stable coin to the warehouse lender to represent these funds.

4. **Execution:** Provenance completes the pledge: the stable coin is moved from the warehouse lender to the originator. The pledged loans are simultaneously encumbered in Provenance, preventing the originator from selling or pledging them to another facility, and ensuring they serve as collateral for the warehouse.

5. **Disbursal:** The stable coin is sold back to the bank with instructions to release fiat from escrow to the originator. The sale of the stable coin creates an immutable record of the cash movement linked to the transaction.

6. **Recording:** The hashed representation, or record, of the transaction is stored immutably to the distributed ledger. Records stored on Provenance allow for seamless verification that digital loan documents are unaltered.

In addition to advancing cash and encumbering the assets for the benefit of the warehouse facility, Provenance can handle the ongoing operational functions. Borrower payments will be swept from the collection account referenced above into the warehouse facility's account as long as the loans reside in the warehouse, and the interest accrued to the originator (to be paid once the loans are redeemed back from the facility) will be calculated based on the outstanding advance amount.

Loan Sales follow the same process, with the exception that execution involves payment in full for the loans, and permanent change in legal ownership from seller to buyer.

> *"We are happy to partner with Provenance to bring to market a deal that meets the needs of our clients utilizing their innovative technology"*
>
> - Brian McGrath, Jefferies Head of Securitized Markets Group

Financing Efficiencies

Provenance drives significant efficiencies by increasing transparency, automating manual diligence processes and enabling bilateral exchange between counterparties without the need for the traditional intermediaries, resulting in lower cost, lower risk and faster settlement during the warehouse pledging and loan sale process. This resulted in 45 bps of value throughout the financing process for loans in the FLOC 2020-1 securitization.

Reduced Operational Expense for Originator: In a traditional transaction, the originator wishing to pledge or sell a loan will often need to ship physical documents to the counterparty's custodian for review. In addition to being costly in both time and money, the process can be error prone. Originators have indicated they typically experience a high error rate in loan selection. With loan files stored directly on the blockchain and the ability to permission access to select counterparties, both the expense and errors are reduced.

The cutting and review of loan tapes is another key step in the transaction process that is streamlined or eliminated. The originator can permission the transaction counterparty to view all loan data in the Provenance Marketplace interface, rather than downloading loan tapes and sending it via email. All documents supporting each loan are available to view directly from the loan tape, rather than as distinct physical or PDF files that must be cross-referenced with the loan tape. All parties viewing a pool read data from the same record on the blockchain, meaning any changes to the loan status, such as payment history, are immediately available to the counterparty, as opposed to a traditional process in which the lender would need to download and send an updated loan tape.

For the warehouse lender, the loan tape review is accelerated or eliminated by smart contracts, which automatically flag any loans not meeting the agreed terms. Over time, it is anticipated that this review will become entirely automated, but should the loan funder wish to dive deeper into specific loans, all of the supporting loan files are directly available from the loan tape. Several buyers currently use this transparency to drill down into the individual line items on a borrower's credit report or to view the source application for data not typically included on a summary loan tape.

VALIDATION DATA
605CE05C-EA52-4C03-A9D6-02FD39230FFB

APPRAISAL	VALID
CLTV JUNIOR LIEN	VALID
CREDIT DISCLOSURE	VALID
DTI - FICO 640 - 739	VALID
DTI - FICO 740	VALID

DEBT-TO-INCOME MUST BE LESS THAN 43% FOR FICO 640-739

The qualitative benefits of improved data transparency and granularity likely exceed the cost savings estimated in this case study.

Reduced Operational Expense for Warehouse Provider: Third-party due diligence is one of the most significant expenses that Provenance has reduced, saving both time and money.

For residential loans such as home equity lines of credit ("HELOCs") and mortgages, due diligence providers can charge between $200 and $400 per loan audited, and auditing rates can range from 25% (for many warehouses) to 100% (for loan purchasers). The same loan is often diligenced multiple times as it moves from warehouse to loan sale and ultimately securitization, a purely duplicative effort.

With Provenance, smart contracts have been written to perform almost all of the tests done by a traditional diligence firm (e.g., FICO Threshold, DTI Threshold). These smart contracts can themselves be diligenced by a trusted third-party to ensure that they perform correctly and can then be used to automatically diligence every loan originated according to the defined criteria. Rather than diligencing thousands of individual loans, one set of smart contracts can be diligenced a single time. This could dramatically reduce the diligence costs associated with a securitization.

Increased Diligence Certainty: Provenance dramatically limits loan defects loss. With automated testing at both the origination and financing stages, it is possible to dramatically reduce defects. Since absolute perfection is impossible, when defects do occur, they can be identified and resolved more rapidly than would be possible in a traditional process.

Additionally, Provenance mitigates risk by preventing the double pledging of assets to multiple warehouses or double sale to multiple buyers. This again stems from Provenance's function as both the custody platform and legal ownership registry for all assets on the blockchain. As soon as an asset is pledged or sold, this event is reflected on the ownership registry as either an encumbrance or an ownership change.

Loan Sale Efficiencies

Similar to the benefits for warehousing, the registry and bilateral settlement inherent in Provenance offers three distinct savings for loan trading. First, loans settle instantly, dramatically reducing risk-based capital to cover settlement risk. This allows counterparties to trade regardless of credit profile. Second, instant bilateral settlement means no clearing agent, fewer back-office staff and no "dead" capital. Finally, there is no custody transfer cost.
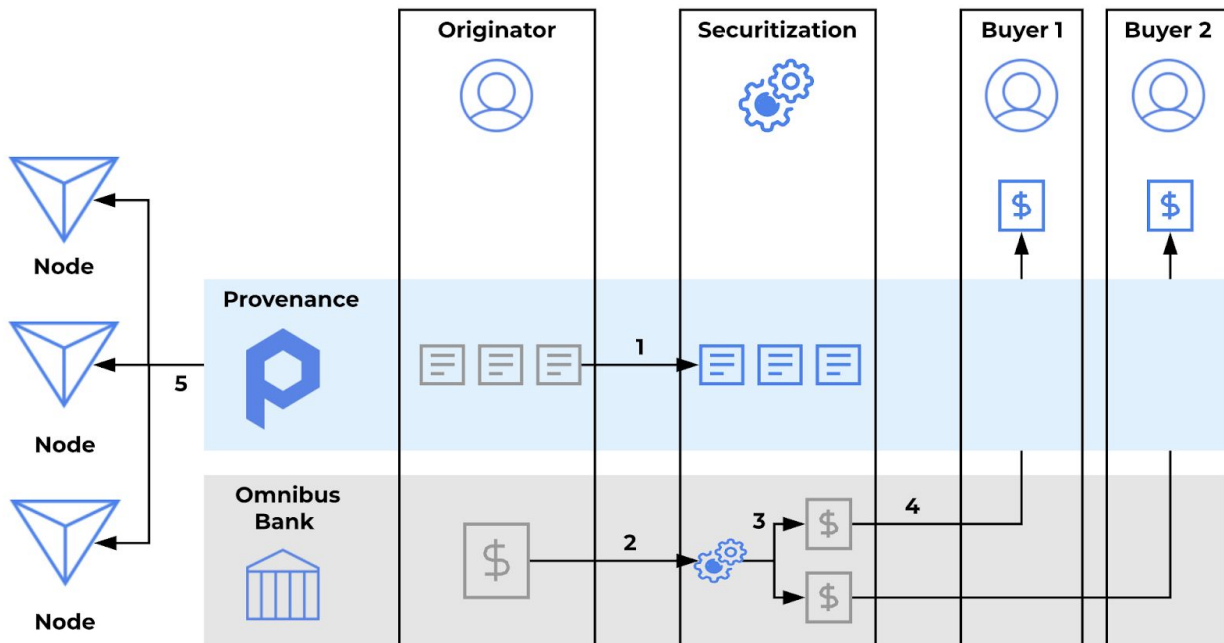
SECURITIZATION

Securitization refers to the pooling of loans into a bankruptcy remote SPV, and the issuance by such SPV of a security backed by the pool of loans. Provenance can automate diligence processes during the creation of a securitization, increase transparency into underlying assets and perform operational responsibilities of the legally required trustee, payee agent and other intermediaries in a securitization.

Blockchain Securitization Process

1. **Pool Creation:** A securitization smart contract is created on Provenance and ownership of the loan pool is transferred to the securitization trust. Smart contracts can verify that the loans were originated in accordance with the credit criteria in place at the time of origination and that all relevant loan documents are included in the loan file.

2. **Servicing:** Loans are serviced using Provenance (as described above) and payments are remitted to the securitization trust. Servicing data is automatically updated daily, giving investors the ability to access up-to-date servicing data at all times.

3. **Calculation of Payments:** Smart contracts calculate payments due to bondholders based on the waterfall formulas and amortize the bonds.

4. **Remittance of Payments:** The smart contract's waterfall calculations are sent to the trustee who remits the payments to investors.

5. **Recording:** The hashed representation, or record, of each smart contract above conducted on Provenance is stored immutably to the distributed ledger.

While the sweep of principal and interest into the collection account can occur daily, payments to bondholders will occur monthly as the waterfall calculations depend upon the total cash received for the period.

"Provenance has the potential to bring massive improvements to the industry, across asset originators, the buy and sell side, as well as regulatory benefits and better consumer protections. In particular, it will provide loan-level transparency around the quality of securitized assets and a clear, unalterable record of ownership—two things that were sorely missing during the financial crisis."

- Sheila Bair, former Chairwoman of the FDIC & Figure advisor

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Securitization Efficiencies

Securitization on Provenance reduces operational and third party costs, and improves asset transparency, resulting in 23 bps of value in the creation and management of the FLOC 2020-01 securitization. Reducing the cost of securitization can increase access to financing and make smaller deals economical.

Increased Diligence Certainty: The loans that constitute the underlying collateral – or at least a significant sample – are traditionally run through due diligence once again before they are purchased by the trust. In FLOC 2020-1, the cost of diligence was significantly reduced because Provenance made the loan files readily accessible and were already initially audited by smart contracts. The cost savings could be increased in future securitizations as more smart contracts are developed and relied on by third-party auditors.

Reduced Third Party Expense: Most of the underlying loan documents can be held through Provenance, eliminating the need for a third-party custodian to physically hold or board such loan documents. Provenance further supports custodial services by providing an immutable record of the transaction document history.

Many of the operational responsibilities performed by the trustees in a securitization, such as disbursing funds or producing and distributing reports, can be automated and performed on chain thereby reducing their operational expenses and enabling them to reduce fees charged on a transaction. For example, Provenance automates the process of building and distributing the noteholder report which is typically produced by the trustee and hosted on the trustee's website. Instead of accessing the report on a third-party website, the noteholder report can be viewed directly on Provenance alongside other relevant servicing information on the securitization.

Improved Capital Efficiency: In the future, the real-time visibility into payments and collateral can lead to daily remittance of cash from the waterfall, significantly reducing the cost of lost float to bond and residual holders.

CONCLUSION

As the first ABS securitization utilizing blockchain, FLOC 2020-1 made significant strides in quantifying the benefits of this new technology for the lending and securitization market. It demonstrated the benefits of digitizing legal documents associated with a financial asset. It proved the feasibility of re-packaging these assets into a financial structure (i.e., the bonds issued by the securitization trust). It successfully engaged established large, reputable industry players as warehouse

lender (Jefferies), initial purchasers (Jefferies, Nomura), issuer counsel (Dentons), and subordinate note buyer (Tilden Park Capital Management) in the execution, demonstrating that blockchain can be integrated into existing business models.

While this case study has quantified over 100 basis points in value creation deriving from the use of Provenance, it covers the process only through the issuance of an unrated securitization. Furthermore, additional benefits could be realized in the rating process, through lower costs and potentially lower subordination requirements, and in primary and secondary market price execution. These will be the subject of future case studies.

In addition, with more examples of ABS issuance, it will become possible to estimate the value of the qualitative benefits provided by blockchain technology. As noted in the introduction, blockchain technology unlocks value for market participants in three ways: cost reduction, risk mitigation, and revenue enhancement.

Because costs are the easiest of these to quantify this case study tended to focus on this metric, although there may be more value in the other two categories.

While we did touch on risk mitigation, there is far more opportunity to explore this topic. The ability of smart contracts to automate base-level analytic functions related to due diligence was discussed, but far greater value may be unlocked by new analytic tools that can be built on top of the far more granular data now available. With daily payment history easily accessible on a loan by loan basis, automated modules can be written to predict the likelihood of default or propensity to pre-pay with greater accuracy, allowing servicers or investors to respond proactively.

Revenue enhancement is potentially the most exciting opportunity presented by blockchain, although this will require more real-world examples to quantify. We expect lower transaction cost and faster settlement times to improve secondary market liquidity. Greater asset underwriting certainty and performance transparency should lower perceived risk and improve pricing.

Finally, the combination of increased transparency and reduced friction with the ability of smart contracts to handle sophisticated transaction logic unlock the potential for new and innovative asset classes. Figure is actively exploring and developing solutions for loan participation, fund administration, supply chain finance, sharia compliant assets and more.

As an industry, we are just at the beginning of our ability to realize the full potential of this new technology.

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