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End to a long wait

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GI/ISF looks at three current applications of the ledger and machine learning that move cutting edge technology beyond proof of concept and into bottom-line savings.

In February, announcing a partnership with Google Cloud in US Treasuries, BNY Mellon claimed its new tool could forecast four out of ten settlement fails before they occurred. The firm's executives pointed to the roughly one in 50 US Treasury transactions resulting in fails: clearly, the cost savings associated with an effective solution like this could be huge.

It was a typical announcement. Barely a week goes by without a new launch that promises millions of dollars of savings from the latest AI or blockchain technology.

The technology – which in BNY's case harness Google's cloud-based machine learning resources, to predict likely fails on the basis of the features of past cases – is intuitively appealing. And for hard-pressed securities lending participants, large payoffs seem close within reach (For example, why couldn't an AI sifting through enough historical data predict future demand and let owners of securities focus their efforts on where they will find the best lending rates). And framed in the terms of the BNY announcement, for the clients of agent lenders or tri-party providers, the business case seems compelling.

Indeed, a few cases where individual vendors and major infrastructure participants are making headway alone have emerged. Global Investor/ ISF looks at examples swapping talk of proof-of-concept to impact onto the bottom line.

1. Matching and machine learning, SmartStream

Applying machine learning to improve matching accuracy can create cost savings of up to 20%, says Nathan Gee, marketing director at SmartStream, which launched its Affinity AI product in October. "If your reconciliations take in millions of transactions per day, can be considerable."

Machine learning allows the automation of once-manual tasks while retaining the dynamic nature of manual intervention. It acts as a virtual user: the more it observes, the more efficient it becomes.

Matching presents a particularly rich set of opportunities. For example, where low quality data fails to identify a broker, an AI can spot this from previous manual matching instances with similar data platforms. "Straight away, your match states can increase and your reporting improves, and you can find which brokers are not providing you with sufficient detail," says Robin Hasson, product manager for TLM Reconciliations at SmartStream.

SmartStream's machine learning plugs into the company's existing reconciliation products, boosting matching rates and removing disruptions and delays created by anomalies, which are now spotted before they get too far downstream.

It also automates static data look-ups that have been managed manually, learning via historical data from manual matching. Where poor information in fields like trade reference, asset identifiers or currency codes are not covered by the static rules, data is predicted by AI and made available to the matching engine.

Transparency around how the AI plugs such gaps helps secure buy-in from client teams, says Hasson. "The system gives a confidence score for the prediction and how and why it reached that conclusion."

Typically, SmartStream conducts a review with a client to identify where the technology offers most bang for its buck. "There's no point using it where you're getting a 99% match rate on payments," he says. Installation involves setting up a few APIs to run on scheduled basis and configuring these with the existing standard processing flow with the technology hosted on the client server or the cloud.

The solution has been evaluated by three clients, one of which is employing it. Adopted at scale, it could yet have a large impact: SmartStream's reconciliation solutions are employed by 70 of the world's 100 largest sell side firms.

2. Machine learning in order management: FIS Global

Elsewhere, machine learning is helping dealers identify the most promising enquiries from hedge fund clients, allowing them to focus their energies on opportunities most likely to lead to business.

Hedge funds bombard their broker dealers with thousands of enquiries every hour with only a tiny fraction likely to lead to orders. AIs can spot the patterns in historical enquiries, adjusting as they change, pulling out the most promising leads based on those that resulted in orders historically.

"These are the ones you want to put to your agent lenders; the rest is noise," says David Lewis, of FIS Global in London, which has been running an AI hedge fund order manager for "a handful" of brokers dealers for roughly a year.

Machine learning also gets round an unintended consequence of automation where the absence of human oversight removes the chance to adjust processing standing settlement instructions (SSI).

Removing people from the process increases efficiency, reduces costs and improves accuracy. But with no eyes on a task, there is no one to gather insights from the data it throws out. Among prime brokers and agent lenders, where the majority of operations are automated, machine learning can provide this missing oversight, learning much quicker than a human would.

Say an agent lender is considering which funds to source portions of a borrow order from. Fund B 'churns' its portfolio more than fund A, turning over positions with greater frequency, something the AI has learned from previous instances where the agent lender used that fund's stock.

On the face of it, fund A would be a better choice: the trade is more likely to continue to duration, avoiding the costs associated with a recall, which include shifting the collateral and reporting the new details under ESMA's SFTR rules. But there are other costs to consider beside those associated with a recall. Consider those arising from delivering the collateral required by that fund or those from the marginal change in exposures to the fund's counterparty. These need to be calculated, weighted and fed into the decision to identify the most economic match.

So far, so algorithmic. There's nothing here that you couldn't build using SSIs. But that would be static. The rules would be based on a set of historical information that would become progressively more out of date. When the world moves on – a fund tweaked its strategy, moving to a longer-term holding strategy for US equities, for example – SSIs get left behind. By contrast, AIs never stop learning.

Lewis sees a time not far in the future where funds occupy different 'smart buckets' - discrete categories, to each of which is attached a price at which it is economic for the agent lender and borrower to trade. Funds may occupy different buckets depending on the asset – as where a fund has a high churn rate for US equities but a low rate for UK Treasuries. They may do so depending on the structure – since a loan, repo or total return swap may carry a different break even for the same fund. Or they may do so for different collateral types – a fee that is attractive for a straight stock trade with a fund may be uneconomical for one using pledge, cash or non-cash collateral.

3. Efficiency gains from Distributed ledger technology (DLT): HQLAx

Elsewhere, DTL is being used to take a bite out of up to €3.65bn in unnecessary compliance costs banks are paying to manage Liquidity Coverage Ratios (LCR).

According to a recent report from Basel Committee on Banking Supervision, the average Liquidity Coverage Ratio of Group 1 banks is 138%. This corresponds to €13.4trn of HQLA, or €3.65trn more than they need to hold according to the 100% LCR required by regulations. Oliver Wyman estimates the opportunity cost of holding €3.65trn back for the LCR that could more profitably be used elsewhere is roughly €3.65bn.

The main reason the buffer is so much larger than it could be, is because collateral management is slow and clunky. Specifically, banks must build in capacity for the delays from slow operational processes and settlement fails.

HQLAx, a securities lending platform that has been live since the end of 2019, harnesses the blockchain to eliminate many of these inefficiencies. It does so by allowing two parties to transfer the ownership of securities between them without an equivalent transfer between their chosen custodians.

HQLAx operates a digital collateral registry: a blockchain-encoded set of ownership records. Below it sits the existing custody and settlement infrastructure – namely Clearstream, Euroclear and JP Morgan.

BNY Mellon, BNP Paribas and Citi will connect later this year, meaning the lion's share of European collateral is covered. Above it sits the market place on which execution occurs.

With each of the six tri-party agents and custodians plugged into HQLAx, a transfer of ownership is recorded in real time on the blockchain record, without any need to change the settlement location of the securities. That means no settlement process. And no delay.

Exactly what the delay might be depends on which of the 40-or-so CSDs in Europe is housing the securities. In this cat's cradle of infrastructures, a legacy of the national silos that traditionally controlled the settlement process, moving a security from one CSD can easily take one or two days.

The ownership transfer is both immediate and simultaneous. So it removes the intraday credit exposure inherent in Free of Payment deliveries – where the party who goes first has a credit exposure until the second party completes – and the balance intraday liquidity requirement inherent in Delivery versus Payment – where intra-day cash positions consume liquidity.

Without the need for settlement, the instantaneous transfer of ownership allows banks to cut back the buffers used to protect against delays. "This gives users the ability to move around more freely, meaning they don't have to build in the scenarios in which it is delayed," says Nick Short, HQLAx's chief operating officer.

As well as reducing credit exposures and liquidity requirements intraday, HQLAx also reduces the operational risk from fails. Because as long as the basket is pre-collateralised, a fail is impossible. In future, this digital ownership record will be good for onward trades: the basket of securities provided by bank A to bank B can be employed in a subsequent trade between bank B and bank C with the same guarantee against failure.

HQLAx is reluctant to attach a number to the cash it can save its initial set of clients as it establishes its platform in Europe. But Oliver Wyman estimates that 10% - 30% of bank's HQLA buffer requirements are driven by intraday liquidity needs, and that proactive management of intraday liquidity can lead to sizeable reductions in a bank's intraday liquidity requirements of up to 25%. It estimates that every €1bn of HQLA costs banks roughly €10m in lost opportunity costs per year to hold. There is clearly a decent chunk of change to be saved.

4. OCC

Elsewhere, DLT is being used to support derivatives central counterparty clearing and settlement services by Chicago-based clearing house Options Clearing Corporation (OCC), in a new platform could begin testing as early as next year.

While not yet live, with \$132bn worth of securities lending transactions the platform is likely to be one of the world's largest enterprise-wide applications of DLT when it launches.

Matthew Wolfe, Executive Director for securities finance at OCC, says that DLT is particularly well suited to the detailed bilateral nature of stock loans. “DLT allows users to track a securities lending transaction through all its steps through the entire life-cycle via a single immutable ledger. Transaction activity as well as the state of the contracts – current and historical – can be seen by parties that have adopted a node which allows them to monitor the shared ledger.”

With OCC able to check details from the lender and the borrower align, errors will be identified before, rather than after the fact. “It means that OCC has full contract details allowing for more complete novation. And the new system must handle a wider variety of life-cycle events including changes to rebate rates, recalls and buy-ins,” he says.

In early demos with a sample of OCC clearing and non-clearing members, users said that they were very supportive of the new system and highly likely to adopt it. Some said they would adopt the technology immediately; others said they were likely to start using the information provided by the ledger to compare with their existing records.

Harnessing gains

The existing solutions from SmartStream, FIS Global and HQLAx are already improving efficiencies for securities lending participants, with the impacts flowing through the bottom line. And early signals from the OCC DLT-enabled platform are that users are aware of the difference it can make.

But adoption of AI and DLT solutions would benefit considerably from co-ordinated industry efforts, which remain fixed on prioritising standardisation.

“Distributed ledger technology (DTL), blockchain, and the tokenisation of collateral are second-order opportunities that could exist for the securities lending market once the foundations of digital standardisation have been laid,” wrote Citi’s Philip Winter, current Chair of the ISLA Digital Steering Group titled, in a March paper published by ISLA and Linklaters.

This could soon change. ISLA’s Common Domain Model, which will offer a template for transaction events allowing trade and other key information to be shared using a standard set of fields, is close to completion. Its Clause Library & Taxonomy for the core Global Master Securities Lending Agreement (GMSLA) is due to complete later this year. With these bolted down, innovation is likely to follow fast.