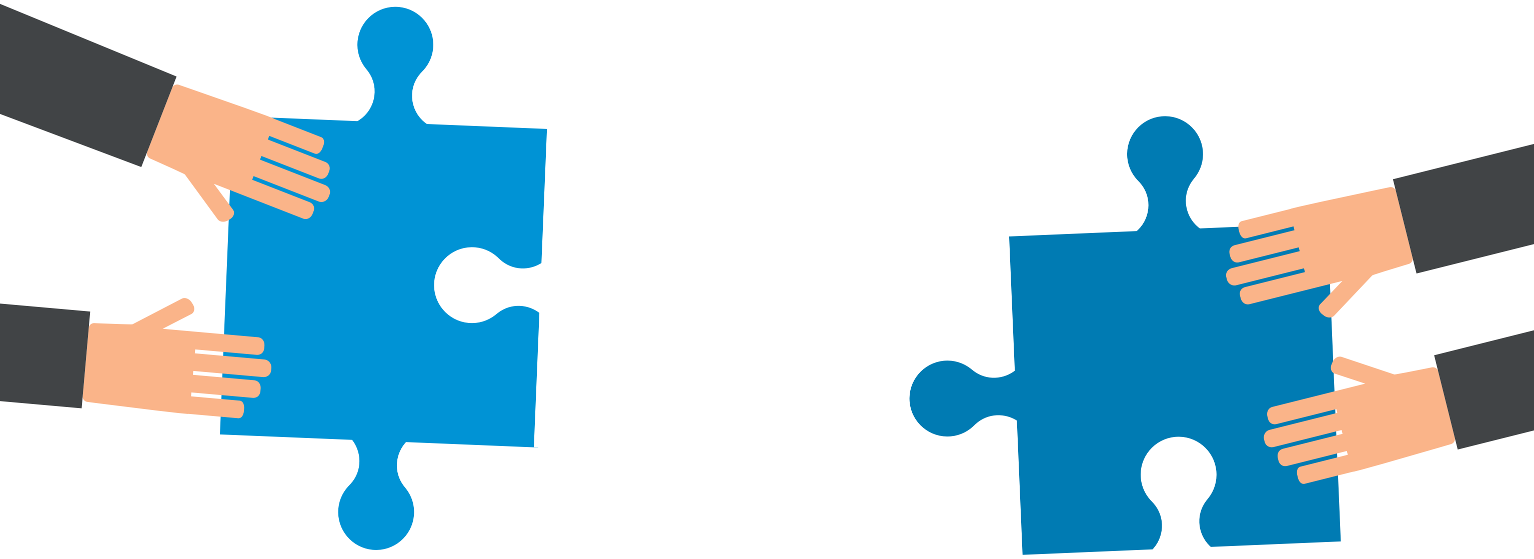
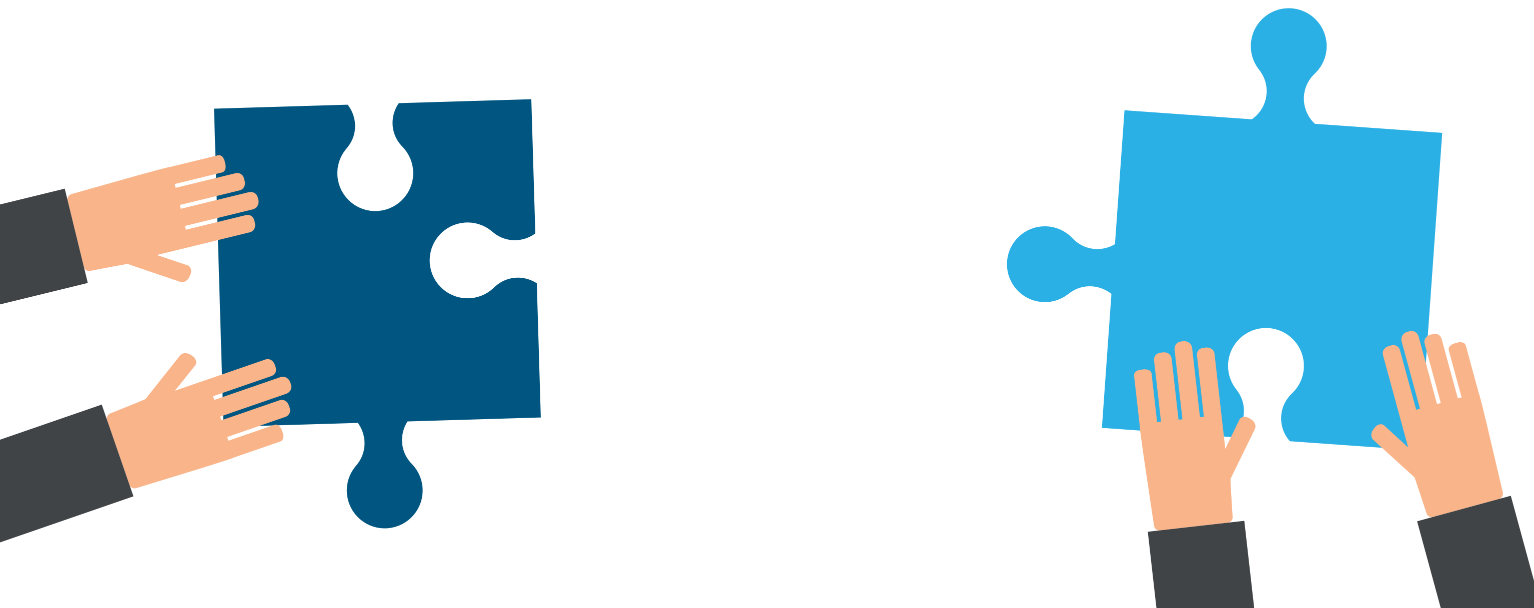
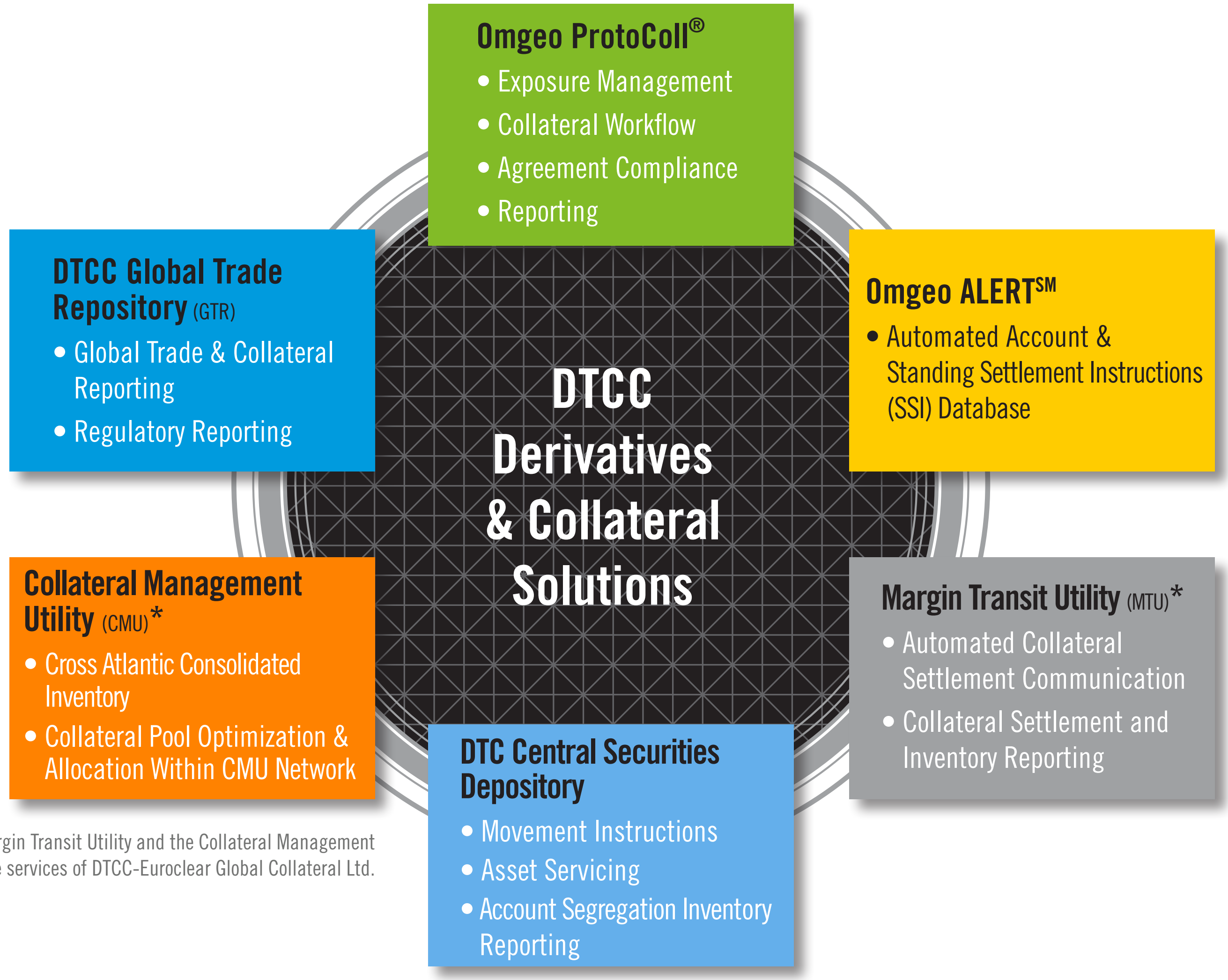
SLT SECURITIES LENDING TIMES

Annual Report 2015
Collateral Management



COLLATERAL JIGSAW
ARE YOU READY TO PLAY THE GAME?





*The Margin Transit Utility and the Collateral Management Utility are services of DTCC-Euroclear Global Collateral Ltd.

MEETING THE CHALLENGES OF DERIVATIVES PROCESSING & COLLATERAL MANAGEMENT

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Do you want to play a game?

Professional solvers of jigsaw puzzles have to compare and contrast puzzle pieces, looking for similarities and differences, before sorting them in to piles and trying to fit them all together.

This is a laborious, manual process and probably perfect for the professional solver who enjoys all the comparing and organising, but for everyone else, there's probably something on TV in need of watching.

Today, collateral management isn't vastly different. Despite the introduction of lots of useful automation, many processes are still manual, while business is increasingly cross-border, counterparties are continents apart, and counting collateral couldn't be costlier.

Yet plans are being executed and solutions launched that are moving this function to the forefront, giving it the investment it deserves and the time it needs.

Collateral managers have to be financial services' puzzle solvers and work out what fits where and why, but they are being given more and more instructions, even if the puzzles are becoming harder to solve.

In these pages you will find everything you'll need to know about the collateral management challenge. As ever, if you have any feedback, don't hesitate to drop us a line.

Mark Dugdale
Editor
Securities Lending Times

SECURITIESLENDINGTIMES

Editor: Mark Dugdale
editor@securitieslendingtimes.com
Tel: +44 (0)203 750 6022

Reporter: Drew Nicol
drewnicol@securitieslendingtimestimes.com
Tel: +44 (0)208 663 9621

Reporter: Stephanie Palmer
stephaniepalmer@assetservicingtimes.com
Tel: +44 (0)203 750 6019

Publisher: Justin Lawson
justinlawson@securitieslendingtimes.com
Tel: +44 (0)203 750 6028

Published by Black Knight Media Ltd
Provident House, 6-20 Burrell Row,
Beckenham, BR3 1AT, UK
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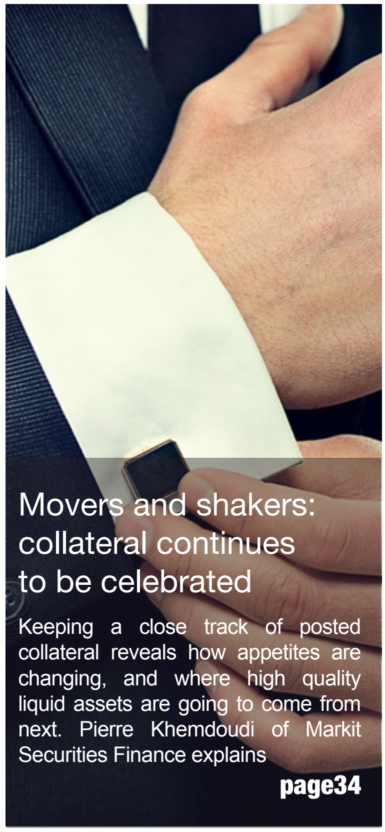


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Building bridges

After a year of businesses joining forces to optimise their offerings, Drew Nicol looks back at some of 2015's most significant highlights

Mandates

Natixis was the first French bank to become a clearing member of **Eurex's** Lending Central Counterparty (CCP), and the bank also joined the company's Over-The-Counter (OTC) Clear.

Natixis is the corporate, investment management and financial arm of Groupe BPCE, one of the largest banks in France. It became the sixth clearing member of the securities lending CCP, while Eurex OTC Clear had gained more than 40 clearing members by January 2015.

The Japanese brokerage subsidiary of Mitsubishi UFJ Financial Group, kabu.com Securities, signed on to **DataLend** for securities finance market data.

DataLend operates on a 'give-to-get' basis, whereby clients must supply their securities finance transaction data in order to access DataLend's aggregated industry data in return.

Japan is the largest market in Asia for securities finance by total on-loan value and the sixth largest globally, according to DataLend.

Grant Thornton UK agreed a collaboration with **Foley O'Neill**, which saw the two firms working together to offer specialist securities finance and collateral management consultancy services.

Foley O'Neill provides specialist, independent financial solutions across a range of financial products, including securities finance, collateral management, foreign exchange and cash or treasury management. The firm is led by Bill Foley and Sean O'Neill, who each bring more than 25 years of market experience gained at financial institutions.

BBVA Group adopted **Broadridge's** Managed Service as a post-trade utility model to support its fixed-income business in the US.

Broadrige provides an integrated service to support fixed-income and repurchase agreement processing, as well as international clearance and settlement, and investor communications services.

The move was intended to help BBVA expand its product offering and enhance its trade processing and risk controls. It will also lead to cost savings.

Broadridge already supported reconciliations processing of equities, cash and exchange-traded derivatives for BBVA, a service it has provided since 2013.

It is estimated that Broadridge technology supports post-trade processing for 60 percent of all US fixed-income trading volumes, including 16 of the 22 primary US dealers.

Its Managed Service offering handled about 16 percent of all US institutional fixed-income volumes in July 2015, a figure that has doubled in the last year.

SEB has successfully expanded its use of **4sight's** Oneworld Settlement system for its derivatives business.

The settlement system enables SEB to process domestic and non-domestic equity and derivative trades on Oslo, Eurex and Nasdaq OMX exchanges.

SEB previously used 4sight's settlement solution for equities trading, but the bank wanted to replace multiple legacy settlement systems across different business lines with a single solution.

The project involved adding the settlement of new product types to the 4sight Oneworld Settlement system, establishing connectivity with a number of CCPs and data migration from SEB's legacy systems.

Technology

4sight launched a triparty functionality to support its securities finance and collateral management system.

The solution supports the triparty process with Clearstream, J.P. Morgan and BNY Mellon, and includes functions for all steps of the process, from agreeing to a running quality value (RQV), to messaging capabilities.

It can also match allocations, allowing users to view them against their respective trades. Users will be able to quickly reconcile mismatches in value of exposures against collateral received, and view the RQVs that need to be booked, changed or cancelled.

The service can also help users to identify triparty collateralised trades, streamlining the booking process.

4sight has added support for in the industry standard vendor-specific versions of SWIFT's MT527 and MT558 messages, and better workflow support for SWIFT MT535 messaging.

This includes improved clarity and reconciliation regarding what a user believes is in a long box, what is actually in it, and what has been allocated.

New features combines data from three triparty providers in to one system, allowing for easier management of collateral.

Murex and **ArcadiaSoft** partnered up to extend the reach of their electronic messaging capabilities.

Murex's MX.3 solution for enterprise collateral management now offers direct connectivity to ArcadiaSoft's MarginSphere, providing straight-through processing (STP) for clients from margin calculation to settlement and accounting.

The solution supports a range of margin calculations optimising the calculation chain across bilateral and cleared, OTC, repo and securities lending products, as well as exchange-traded derivatives.

It also includes the margining requirements issued by the Basel Committee for Banking Supervision and the International Organization of Securities Commissions (IOSCO), while improving the availability of OTC clearinghouses standard methods.

David Radley, global head of sales at AcadiaSoft, said: "We are excited to be integrated with Murex's MX.3 platform to help their clients achieve STP in the collateral management process—a capability we refer to as 'straight-through margining'."

AcadiaSoft also partnered with **CloudMargin** to provide real-time collateral management communication to their clients.

Using the new link to AcadiaSoft MarginSphere, CloudMargin's clients are able to issue and respond to margin calls, manage disputes and then negotiate and process margin movements electronically with their brokers.

This happens in real-time without sending emails or faxes and prevents the re-keying of data, as well as removing the need to monitor an email inbox.

CloudMargin clients pay a rolling monthly subscription based on actual usage levels and receive a full-featured collateral management platform that, CloudMargin claims, outperforms "the dated million-dollar offerings of the legacy technology vendors".

MarginSphere allows counterparties engaged in collateral management to automate the complete margin cycle.

It is the result of collaboration between AcadiaSoft and the industry's largest financial institutions, which are focused on driving efficiencies and reducing risks through margin automation.

Clearstream and **ICE Clear Europe** collaborated to create a triparty margin collateral management service, linking the London-based CCP to Clearstream's Global Liquidity Hub.

Customers of the Clearstream international central securities depository can use the Global Liquidity Hub to manage margin requirements at ICE Clear Europe, while ICE clearing members enjoy a link, through the hub, to a triparty collateral management solution.

ICE Clear Europe members can deposit securities and use them as collateral, managing their risk exposures in an automated and efficient collateral environment.

The service supports a move to improve stability of capital markets through increased trades. It is designed to help prevent bottlenecks when sourcing the correct high-quality collateral to meet the CCP's margin requirements.

Lombard Risk's collateral management, clearing, inventory management and optimisation solution, Colline, now supports margin requirements on non-centrally cleared derivatives.

Colline maintains pace with global regulatory requirements by ensuring that each release includes functionality to enable clients to meet their regulatory obligations in a timely manner, for all capital market participants including clearinghouses, banks, clearing brokers and derivatives end-users, both cleared and non-cleared businesses.

Colline's OTC clearing functionality has been available since 2010, and has been continually enhanced to meet evolving global regulations as they come into force.

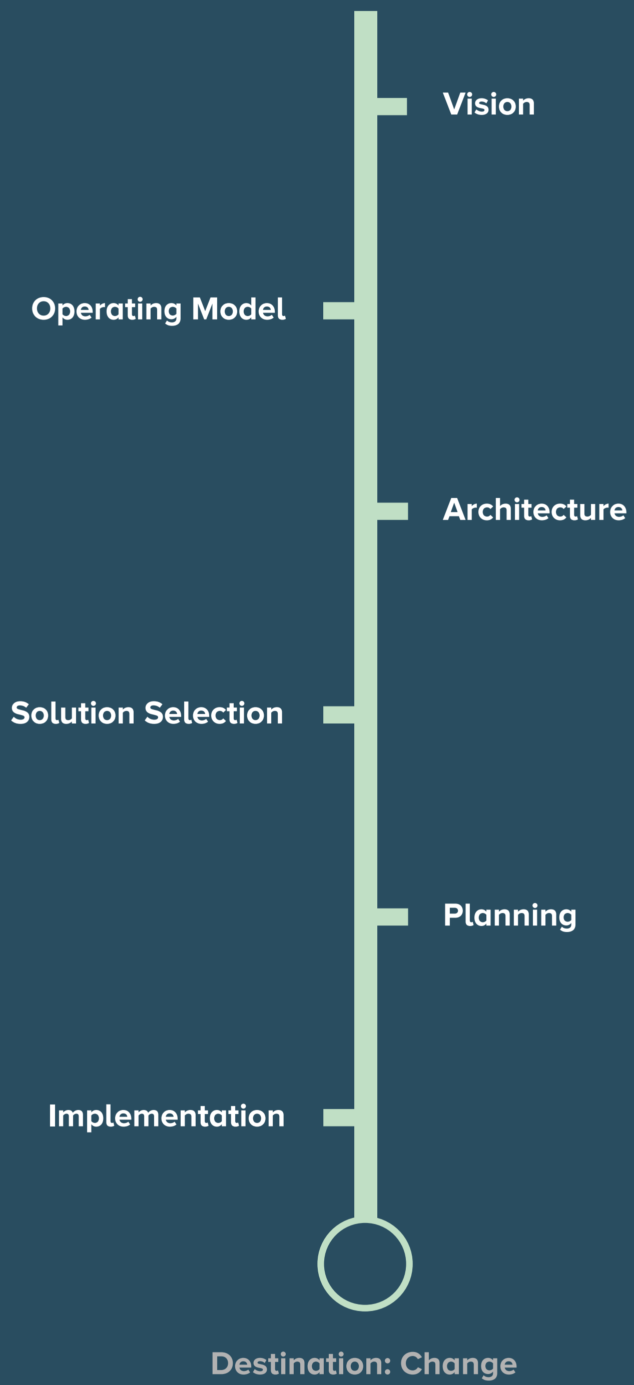
Functionality within the OTC module is similarly enhanced to meet global margin rules for non-cleared OTC business.

Financial information provider **Markit** launched a new initiative, ETF collateral lists, to encourage wider acceptance of exchange traded funds (ETFs) as securities lending collateral.

The lists filter ETFs and highlights those that track assets in short supply on the collateral market. They pick out fixed-income and equity ETFs that track liquid indexes in developed markets, and hide any subscale funds and those that have a market value deviating more than 1 percent from the value of assets held.

Using Markit's ETP Analytics and Encyclopedia solutions, the lists can source more than $516 billion in ETFs that track assets meeting widely-accepted collateral rules.

Helping you find the quickest route to change



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Currently, according to a Markit report, many money market participants don't accept exchange-traded products (ETPs) because of a lack of standardisation in of the criteria and a lack of transparency in the market, plus a lengthy management process for risk departments and triparty agents.

At Markit's London Securities Finance Forum, 43.9 percent of attendees said they do not accept ETPs as collateral, and 12.2 percent said they would like to, but cannot. Only 31.7 percent answered with a straight "yes", and the other 12.2 percent said they do accept ETPs as collateral "on very few occasions".

According to Markit, acceptance of ETFs as an asset class is increasing; aggregate assets under management at about 5,000 funds reached $3 trillion for the first time earlier this year, due to generally strong inflows and markets. However, this has not translated in to acceptance in collateral management, especially in Europe.

Markit developed the solution with industry participants including ETF issuers, securities lending desks and dealers, in order to address the discrepancy.

Currently, the majority of assets that meet the criteria of the lists are listed in North America, but the rules can also be applied to European investors, with $75 billion in assets that meet the criteria identified in Europe.

More that $516 billion in those ETFs identified track assets that are readily accepted as collateral, and the majority of these, making up $480 billion of the assets identified, are equity products.

According to the Markit report, the value of ETF assets in lending programmes has remained steady for the last 18 months, at around $140 billion.

Greater acceptance of ETFs within the wider industry could lead to more ETF assets becoming available through securities lending.

EquiLend rolled out its Next Generation Trading (NGT) securities finance trading platform in the spring.

NGT is a consolidated, multi-asset class trading platform for the securities finance marketplace that allows traders to conduct their entire trading workflow on a single screen.

Using existing trading venues and messaging capabilities, NGT increases trade-level transparency, improves workflow automation and generates efficiencies for the market.

EquiLend began building NGT in 2013 following demand from clients for a consolidated trading system that would enable increased executions, real-time bid/offer negotiation, a more dynamic workflow, and streamlined setup.

With the launch of NGT, EquiLend anticipates capturing a greater share of trades as institutions look for more efficiencies in their securities finance trading activities.

EquiLend and **BondLend** also launched Trade Match, which provides an automated way to compare pre-settlement, cross-product securities finance transactions.

Trade Match reconciles all the trade components of either the start or close leg of each trade type.

The software's exception management reporting prioritises the core pending settlement risk items for the users, helping them to reduce fails and rectify trade economic discrepancies on a real-time basis.

According to the service providers, Trade Match recognises nuances between equity and fixed income clients.

BondLend clients are now able to use reconciliation terms specific to the fixed income business, offering the flexibility to handle different trade types.

Trade Match is also compatible with One File connectivity, EquiLend's new workflow for streamlined build-out to its post-trade services.

The Depository Trust & Clearing Corporation's (DTCC) Omgeo ProtoColl front-end collateral management system was integrated with DTCC-Euroclear GlobalCollateral Limited's Margin Transit Utility (MTU), a solution designed to deliver STP of the settlement of margin obligations.

With this integration, Omgeo ProtoColl clients gained a view of all transactions processed in the MTU from their existing ProtoColl user interface, streamlining margin call activities and enabling better monitoring of the collateral management process from a single interface.

Omgeo ProtoColl uses a rules-based workflow approach, allowing for exception-based processing on reconciliation, counterparty exposure, collateral optimisation, auto-fulfilment of pledged assets, and downstream notification.

MTU is a global collateral processing utility designed to streamline and bring automation and transparency to collateral movements and settlement.

BNY Mellon completed its triparty repo risk reduction initiative in support of the recommendations of the task force for Tri-Party Repo Infrastructure Reform.

As part of these efforts, BNY Mellon reduced the secured credit extended in the triparty repo market by $1.44 trillion, or 97 percent.

This resulted in the practical elimination of such credit in its programme, which was a critical goal the task force outlined in 2012.

This milestone marked the conclusion of a multi-year cooperative effort by BNY Mellon, its clients and other market participants to restructure the US triparty repo market.

In addition to the intra-day credit reduction, BNY Mellon introduced a wide range of enhancements including Automated Deal Matching, which captures instructions independently from repo counterparties and ensures all parameters of a triparty repo trade match prior to settlement.

This enhancement was intended to improve the timing, transparency and accuracy of such trades.

Elsewhere, Auto Collateral Exchange will allow triparty repo trade collateral to automatically substitute securities for cash, significantly upgrading the way collateral is optimised and allocated.

"As the market leader for triparty collateral management, we embraced the task force recommendations and proactively addressed the necessary changes without disrupting the market," said Brian Ruane, CEO of broker-dealer and triparty services at BNY Mellon.

BNY Mellon said its strategic focus on aligning its technology and business teams to develop innovative solutions to complex problems helped drive the transformation of the company's triparty repo offerings.

Murex released a fully overhauled version of MX.3 for Collateral Management, designed to better support sell-side and buy-side financial institutions in optimising pre- and post-trade collateral.

Available as an enterprise standalone solution or integrated with MX.3 trading, risk and back office solutions, MX.3 for Collateral Management provides a single framework for the support of listed, OTC, cleared and securities finance margin process, and collateral optimisation. Fifteen banks are currently deploying the solution worldwide.

Etienne Ravex, Murex collateral product manager, commented: "Legacy systems cannot adapt fast enough to challenges such as real-time initial margin calculation or funding valuation adjustment for pre-trade decision making, collateral inventory optimisation or exploding volumes of calls to be processed. Practitioners need adaptable real-time solutions along the full value chain."

Regulatory developments such as Basel III have reinforced collateral management as a core function of the capital markets value chain, requiring a centralised and unified infrastructure to overcome internal and external inefficiencies.

The new solution introduced a flexible margin engine supporting pre-trade initial margin, a real-time and settlement-aware

Lombard Risk

Provider of cross-product collateral management, optimisation, risk management and regulatory solutions

Collateral Management

COLLINE: Consolidated end-to-end cross-product (OTC derivatives, repo, securities lending and ETFs) collateral management, clearing, inventory aggregation and optimisation.

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- COLLINE OTC has market-leading functionality including a legal agreement repository supporting CSA, SCSA and umbrella agreements, **flexible margin calculation and configurable workflow, reporting and reconciliation.**
- COLLINE REPO and SEC LENDING supports front-to-back margin operations for an institution's repo and securities lending agreements, including optional **mark-to-market calculation and exposure profiling.**
- COLLINE CCP/CLEARING **workflow supporting both** house and client clearing requirements. Validation of **CCP and broker calculations with configurable margin process definition and cash flow management to support** multiple clearing house models on a single platform.
- COLLINE OPTIMISATION **offers a highly configurable** solution to enable real-time algorithmic calculations, **according to user-defined rules, goals and evolving** priorities, to ensure optimal use of assets.
- COLLINE ETF organises, manages and tracks the creation and redemption process of an ETF (Exchange-Traded Fund) – improving an **organisation's operational efficiencies.**
- COLLINE ELECTRONIC MESSAGING - automates **the interaction between financial institutions on** their margining requirements (margin calls, partial **and full dispute notification, real-time visibility of** counterparty actions, interest statements, and collateral substitutions) thus reducing operational risk.

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collateral inventory, an optimisation engine for cheapest-to-deliver determination and collateral assets rebalancing, automated portfolio reconciliation, as well as native connectivity with recognised servicers such as AcadiaSoft, SWIFT for collateral messaging suite, and TriOptima.

Opinion

Asset segregation as proposed under the Alternative Investment Fund Managers Directive (AIFMD) will compromise triparty collateral management and securities lending, according to Ross Whitehill, managing director of **BNY Mellon Markets Group**.

A European Securities and Markets Association (ESMA) consultation paper from Q1 2015 proposed the enforced segregation of alternative investment fund assets across all levels of the custody chain.

This could affect the ability of funds to utilise triparty collateral management services, and to participate effectively in securities lending.

The change also has the potential to affect UCITS funds, depending on regulatory harmonisation with AIFMD.

Whitehill commented: “The impact on funding and liquidity in the market will, we believe, be very significant, affecting growth and investment in Europe.”

The proposed asset segregation rules are intended to protect the interests of investors by preventing assets from being exposed to negative events, such as bankruptcy of a third party.

Whitehill argued, however, that taking this too far by segregating assets down to sub-custodian level could in fact increase, rather than mitigate, counterparty, operational and systemic risk.

“The proposed segregation approach actually increases investor risk along the post trade chain,” he said.

“It also increases systemic risk. This is due to the substantial increase in accounts, a corresponding increase in movements of securities, and in particular the inability of alternative investment funds to function in a triparty environment.”

“There will also be increased settlement and operations risk because market deliveries will be necessary, rather than intra-day book entry books and records management.”

He also said that there would be an impact on pension funds, insurance companies and other non-alternative investment fund counterparties, as there will be no third-party collateral managers available to support related transactions.

Whitehall added: “Collateral management is a highly specialist function and—given the demand for, and likely scarcity of eligible collateral—it is highly unlikely that funds will be in a position to effectively support their collateral management requirements themselves.”

“The removal of triparty collateral management will place an inordinate burden on the funds themselves and their counterparties, forcing them into bilateral collateral management.”

Research

Collateral mobility and the pricing of collateral assets are the biggest challenges for effectively managing collateral, according to a **Euroclear** survey.

The issues of collateral mobility and pricing were each highlighted as challenges by 35 percent of respondents, while lack of standards and dispute resolution also ranked highly, each being cited by 25 percent of respondents.

A drive to standardisation was attributed to a focus on collateral resourcing and optimisation, but 30 percent of respondents said that they still do not have an optimisation strategy in place.

Lack of automation was also identified as a challenge by 20 percent of respondents, as was regulatory change.

A majority, 70 percent, considered collateral transformation to be high on their agenda.

According to the survey, the industry expects a trend towards more relationships, and stronger relationships, among triparty repo participants in the next few years, as related activity between European firms and non-European counterparties doubled from 17.5 percent in 2001 to 31 percent in 2014.

Both buy- and sell-side firms believed there will be greater partnerships between buy-side firms and corporates, specifically in the triparty and cleared derivatives markets.

While 30 percent said that this already happens, 45 percent thought it could happen in a secured funding space.

The survey suggested that the implementation of EMIR is expected to have a heavy impact on collateral management function, with 65 percent of firms agreeing with this.

As OTC derivatives move in to a cleared environment, the increase on daily and intraday margin calls are expected to require more robust strategies.

The survey report was released at Euroclear’s collateral conference in Brussels.

It is based on interviews with respondents from 20 firms and includes input from brokers, banks, asset managers, pension funds and corporates.

A survey of 56 market participants carried out by swaps technology provider **4sight** and consultancy **The Field Effect** has revealed that 32 percent of participants are currently booking synthetic financing transactions such as total return swaps and portfolio swaps.

A further 18 percent said they plan to do the same in the near future.

Firms surveyed included a range of tier one and tier two investment banks and asset managers.

The survey was carried out as part of research for a whitepaper and webinar discussing market trends leading to an increase in synthetic financing, technology challenges and how to define a target operating model in light of increasing volumes and the complexity of synthetic trades.

The paper also discusses the emergence of holistic models incorporating physical and synthetic financing, liquidity and collateral management and balance sheet and capital deployment.

Creating a robust framework around the reuse of collateral in securities financing, and greater transparency through transaction reporting could be the key to preventing financial instability and supporting healthy capital markets, according to a study by the **CFA Institute**.

The study found that this kind of framework could mitigate the build-up of excessive leverage. It also suggested that transparency could be improved through reporting transaction data to trade repositories and investors, with 47 percent of respondents agreeing.

It also called for increased standardisation and simplification of issuance structures, with 55 percent of professional investment respondents identifying a need for this in order to improve the ease and certainty of enforcing ownership rights and creditor protections

Here, the study also recommended improvements in transparency through initial and ongoing disclosure to investors.

The study found that 25 percent considered the potential default of Chinese wealth management and trust products the greatest systemic risk, while 23 percent considered collateral management risks the biggest concern.

Respondents in the Asia-Pacific and Europe, Middle East and Africa (EMEA) regions believed that regulators should be treating transparency and disclosures in shadow banking activity as a priority.

The CFA Institute conducted the study as banks are addressing new capital regulatory requirements and slow balance sheet growth, and as shadow banking is increasingly viewed as a potential systemic risk for the finance and investment industry. **SLT**

Teenage kicks

Collateral management is on a journey of self-discovery, exploring a world across borders and taking on roles it never knew it could. Stephanie Palmer reports

Collateral management is going through some changes. Coming in to widespread use in the 1990s, it is reaching the adulthood of financial services functions as it tackles challenges of new regulations and cost pressures, and grows from a background player to an entity in itself. Like all adolescents, it's striving to be taken seriously—albeit without the emotional turmoil and with significantly less acne.

The financial services world is a small one ripe for discovery, with many firms working across borders and over the course of 24 hours. As various regulations and restrictions have been implemented in different regions, collateral management functions have had to grow and develop quickly in order to accommodate the global variations—while creating extra efficiency to keep costs down.

On the face of it, market players on both the buy and the sell side appear to have made swift changes to manage the change. But Simon Lillystone, a consultant at SmartStream, suggests that, actually, collateral management has been a global activity for some years already: "Many firms, even if they're just working on a regional rather than a global basis, are using online systems that help them to handle margining in different locations."

"Of course, big firms might have multiple collateral management departments dotted across the globe."

He suggests that the real difference is the increased interest in collateral managers' activities, putting more pressure on them. With this comes technical development and futuristic solutions for managing collateral and margin, which were not previously deemed necessary.

Lillystone says: "The aspect of reporting has become far more important, as well as the way that reporting is delivered across the firm. We are starting to see more use of the web and the intranet, and more solutions emerging with web-based components."

Andy Davies, CEO of CloudMargin, agrees with Lillystone's sentiment, suggesting that technology is the best way to mitigate the ever-increasing risk of non-compliance, leading to improved visibility and, ultimately, control.

He says: "With different regulations within different jurisdictions, firms need to have a better grasp of the international aspects of collateral management. With correct technology in place, buy- and sell-side firms can easily keep up with industry changes—integrating a system that allows them to mitigate risk, minimise human involvement where necessary, lower back-office costs and stay compliant."

The roll-out of Target2-Securities (T2S) across Europe also serves to make cross-border asset management that bit easier, with central securities depositories (CSDs) launching new initiatives with custodians and a European network taking shape between now—the first wave went live on 22 June 2015—and 2017.

Martin Seagroatt, director of marketing and product innovation at 4Sight, says: "The

plumbing of the system is now in much better shape than in the past. Individual firms on both the buy side and sell side now need to think about how their own systems interact with this new environment in order to maximise the benefits of it."

He adds that, while some firms are reacting to this and implementing collateral management solutions to "fill recognisable and known gaps", some are taking their time and avoiding reactionary change.

"Others are moving more slowly, reviewing how the need for improved collateral and inventory management fits within shifting trading strategies and the 'new markets'," he says.

Cross-border access to assets may have advantages, but it's not without its challenges, either. The same regulations that have pushed collateral management to the forefront of the financial services agenda also mandate 'keeping-an-eye' on assets.

In the post-crisis industry, it's somewhat frowned upon to misplace collateral, especially if it isn't strictly yours. While in the past assets may have been rehypothecated several times, now tracking assets is of utmost importance, and, conversely, collateral might actually have less reach.

Lillystone says: "Rehypothecation can make tracking tricky. The worry is that collateral is going around the houses between many parties that are using it to support each other. You could end up receiving collateral that was part of your own initial offering."

"Regulators have said that firms won't be able to rehypothecate more than once, which puts an extra fly in the ointment when trying to manage positions, and whether you have the right to use them."

He adds: "It's partly servicing, partly awareness, and partly knowledge of how assets can be used effectively. Some assets are technically out of reach, posted to a custodian. Managers will need to get those back at some stage, and they will need the tools to do that. That is where the buy-side has come of age."

Ted Leveroni, executive director of strategy and buy-side relations at the Depository Trust & Clearing Corporation, adds to this, saying: "Leveraging global infrastructure is key in order to track the global movement of collateral. It simply cannot be done by relying on in-house solutions alone."

"The collateral lifecycle spans many relationships and counterparties, from trading partners to custodians to CSDs. Community-based standards and solutions need to be leveraged in order to accurately track and process collateral efficiently."

And ultimately, it is this efficiency that can lead to an improvement on returns.

It may be imposed by regulation and pose an inconvenience to collateral managers, but, as Seagroatt says: "There is great value in knowing where the firm's collateral assets are, why they are there, and whether they are truly available for re-use."

"While it is a significant undertaking, implementing a single global view of assets and exposures can provide a significant return on investment through more efficient allocation of collateral and improved view of risk," he says.

"Furthermore, it can provide enormous benefits in a crisis where assets need to be sourced and allocated quickly."

Lillystone says that the shift has also made a difference to the power dynamic, giving buy-side participants more control over their collateralisation programmes and access to their own valuations.

Where previously they would have had to rely on the sell side to determine the valuations of exposures and collateral obligations, now, using their own valuation tools and collateral management solutions, "they're in a much better position to ask for their collateral back".

With valuations on the table and talk of trading, the question of whether collateral management functions even still belong in the back office is a point of contention. It's early days yet, and many firms are doing it differently.

Leveroni says firms are breaking down their internal collateral management siloes and moving to a more centralised approach in order to provide services across broader business lines. He says: "The industry has been talking about a centralised service model for collateral management for several years, but not many firms had committed to it until recently."

Seagroatt sees collateral management as, primarily, a service function. He maintains that the practice of using excess collateral to generate returns should be considered its own function, or as separate to the buy side. However, he also notes that collateral management is a risk mitigation tool, and so should remain "tightly aligned to the businesses it supports and to managers of a firm's liquidity and assets".

Davies, on the other hand, says: "I don't agree that collateral management has moved on from being a back office function. To a certain extent it's a myth that it's moved on—the functions of the back office have simply become more important."

According to Davies, the rise of collateral management has simply come as a response to buy-side challenges: regulatory constraints, changes in technology, and the risks of manual processes. He points out that these are all "classic operational issues".

"Certainly outside of the sell-side firms, there's no way it could be a separate business," he says. "It's a consequence of products that firms are trading—not an entity in itself."

Acknowledging the confusion that surrounds it, Lillystone suggests that while collateral management is a risk-mitigation tool, and largely belongs in the middle office—at least in a traditional sense—as it receives information from trading desks and settlements alike, its position can vary between firms. What he can clarify, though, is that collateral management isn't what it once was.

He says: "In the past, cash was the predominant form of collateral, so management was quite a simple activity. Now, many firms realise that first and foremost they're going to have to make use of different types of assets, such as securities and equities, and they're going to have to be much smarter in their allocation of their assets, whether they're retained for trading, for collateral, or for preservation and capital adequacy purposes."

"Collateral management itself is becoming bifurcated. On one side is the margining, with the collateral manager negotiating with the counterparties on what the margin requirement is. The other aspect is the actual collateral management—the servicing, allocating and optimising of the assets across the organisation."

Lillystone adds that, while collateral management is breaking away, adopting new responsibilities and, arguably, taking on a life as a business in itself, it is also changing its focus.

"The new aspect of central clearing is having a big impact on liquidity because firms are not only having to provide initial and variation margin—often on a currency-by-currency basis—they're also having to do gross margining rather than net on their trading exposures," he says.

"They have to give away their assets as collateral where those assets can't be re-used, and that has an impact on capital and liquidity, making management that bit more difficult, and liquidity a growing issue."

With opinions and approaches varying across the industry, it's perhaps no surprise that collateral management is having something of an identity crisis. But if there is one constant, it's the recurring theme of risk management, protection and buffering against another financial crisis.

While some might take a 'been-there-done-that' approach to global crises, most are taking measures to ensure that they'll survive another, and in doing so are avoiding that eventuality.

Leveroni predicts that collateral calls will increase in correlation with new regulations, no matter where they may be implemented.

He says: "Firms are deploying more robust technology, leveraging industry standards in communication and data flows, and turning to infrastructure providers who historically have the kind of industrial-strength technology that can scale to the degree that many predict will be required."

According to Lillystone, some are still approaching new regulations with a 'wait and see' attitude, just as they would any other risk management process, but he also names reconciliations as an important point, saying: "Firms have to have the right tools to make sure that their view of their collateralised world, both centrally-cleared and uncleared, is the same as their counterparties'."

While Seagroatt places importance on "effective backup and recovery procedures … including automated failover and hot standby procedures", Davies says firms are "putting a lot more effort into proof of concept and an evaluation of the platform before they buy it", testing platforms in various scenarios before they even make a commitment to them.

With cross-border exploration, swift personal growth and lessons in the value of rules and regulation, this coming-of-age story is not the first of its kind or the last, and there is still plenty to learn yet. But the collateral management growth spurt certainly has the attention of the industry.

"With cross-border exploration, swift personal growth and lessons in the value of rules and regulation, this coming-of-age story is not the first of its kind or the last, and there is still plenty to learn yet"

As Lillystone says: "All roads are turning towards collateral management at the moment."

Like any teen worth his salt, collateral management is cropping up in every conversation and dividing opinion wherever it goes. Whether its here to stay or just a phase remains to be seen, but didn't all financial services functions go through this themselves? **SLT**


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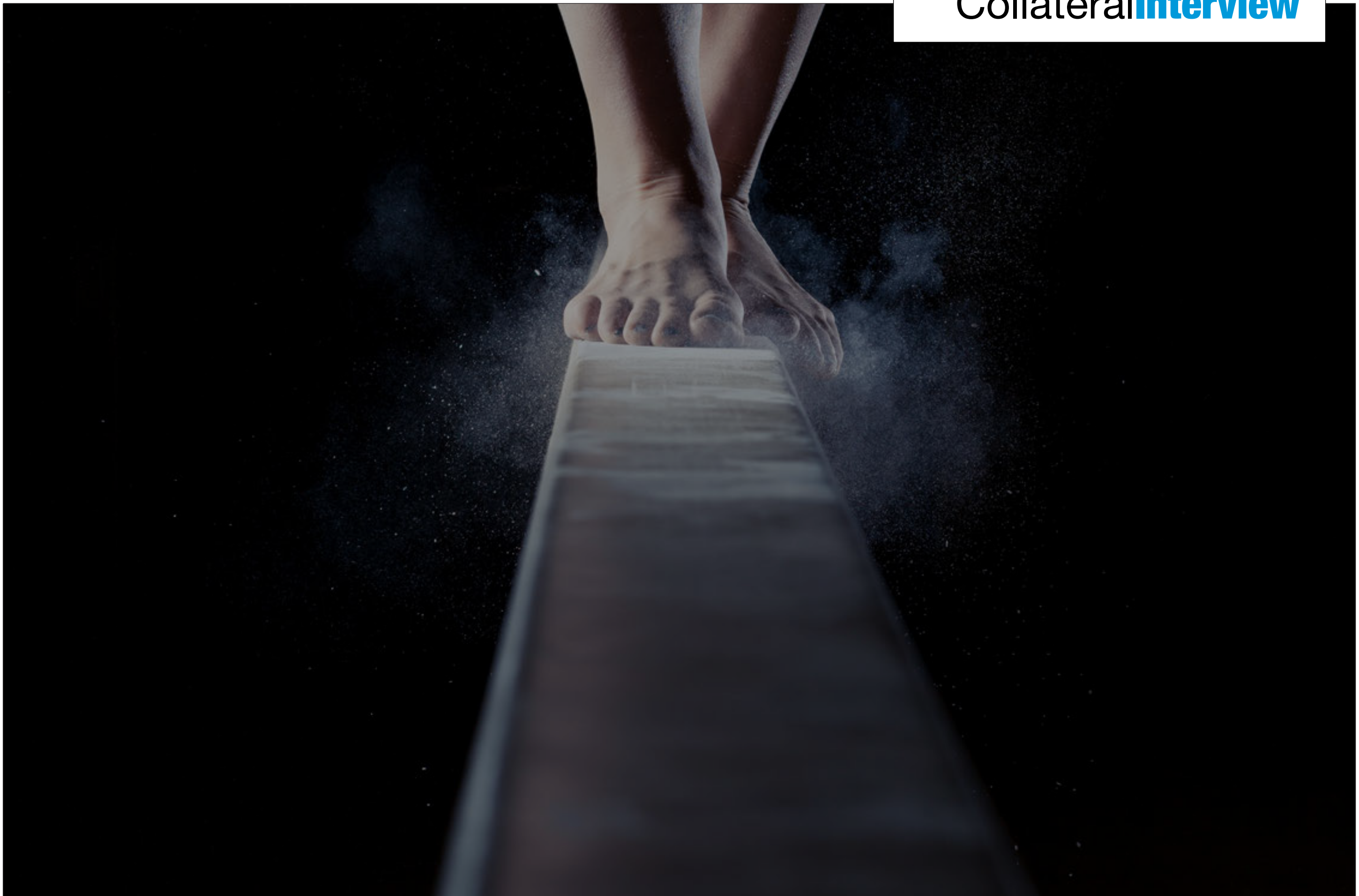

Balancing act: collateral climbers and drivers

Paul van de Moosdijk of Dutch beneficial owner PGGM gives the pension fund's perspective on collateral changes around the world. Mark Dugdale reports

Who is being hit the hardest by more stringent collateral rules?

In general we observe decreased liquidity and appetite for repo business over time. Contradictory to this, banks that are relatively cash rich are moving away from transformation via repos as the return is too low.

Furthermore, banks are moving to single currency credit support annexes as balance sheets become more expensive, and this is operationally much more efficient.

Pension funds, through their strategic allocation, are generally cash poor (but rich in high quality liquid assets, or HQLA) and need cash to fulfil these collateral cash obligations. This creates an undesirable situation with decreased liquidity and increased costs for the underlying pensioners.

Which of your assets are attracting more attention than they did before?

We observe that banks still very much want to engage in upgrade trades: pension funds lending HQLA are moving down the quality ladder and accepting riskier assets, as availability in quality assets is seemingly decreasing.

Typically, as a pension fund we are not being compensated for the additional risk. One important risk is liquidity: being able, as a pension fund, to raise timely liquidity to maintain the strategic allocation.

How have the securities lending and repo businesses reacted to the regulatory and market demands placed on collateral?

It is the general ability of banks to intermediate and provide a balance sheet that affects us. Bigger asset managers have a relative advantage as they can leverage other business to force banks in to less returning activity, such as repo.

We view this as an increasing problem as we are faced with transformation requirements to meet variation and initial margining, and to invest our cash safely with HQLA as collateral.

It is often said that intermediaries are being hit the hardest—is this fair, and why? On the flipside, what new opportunities are you seeing opening up for them?

Intermediaries are the ones directly affected. We see they are actively taking measures and rethinking their business models based on the new regulated world. This changes the way we operate as an asset manager for pension funds.

How will new laws such as the Securities Financing Transactions Regulation, reduce risk and open up opportunities?

At PGGM, we favour new regulations that add value to increased transparency and are risk reducing. The focus for us is to make sure the end client (pensioners) are not paying the bill. We are therefore very keen on liquidity in the market and associated costs provided by banks, as typically they are the window to the market and we are largely dependent on them. SLT

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Getting the basics right

Solutions aimed at informing decision-making, rather than making the decisions, will yield the best results, says Ed Cockram of 4sight

For those who have recently been asked to delve into their collateral management setup, it is quite often an eye-opener. As a back-office function, it has often been outsourced or under resourced. On closer inspection, it soon becomes evident that twentieth-century processes are leaving the firm open to significant and very real operational risks. In no other function would the location of large pools of cash and securities be recorded on Excel spreadsheets or moved around by faxes.

In contrast, a common vision proposes a future of state-of-the-art systems gathering up all the unencumbered assets and predicting all potential exposures. Collateral technology solutions can then allocate everything accordingly, in a way that minimises costs and maybe even turns a profit.

The reality that is achievable is somewhere in between. Most important to note is that building a collateral management function is a series of steps. You have to get the basics right to be able to do the final steps.

What are the basics?

This varies a little, depending on what aspects of the function might be outsourced, who has liability if processes don't go as planned, and whether or not non-cash collateral is involved. However, the basic principle is that collateral management happens at the junction of inventory management and exposure management. In order to know how to best cover an exposure, you have to collate your entire inventory together into a single system.

In order to know what exposures need to be covered, you have to bring all the relevant exposures and margining rules together into a single system. To then automate any of this process further, you need to be able to trust that both the views on inventory and exposures are correct, complete and up to date.

Inventory management then is more than simply listing securities and assessing how many the firm holds. In order to utilise assets efficiently, it is important to know where they are, why they are there, whether they are truly available for re-use and when they need to be returned. In order to move them, straight-through processing (STP) is required, as well as the tracking of settlement statuses. Collateral that is not received is not collateral. The hardest part is the collation of the inventory, given that both buy-side and sell-side firms tend to have assets held in many different places by a wide range of internal or external systems. The success of collateral management can often hinge on bringing these disparate sources together without losing fidelity on details such as location or settlement status.

Exposure management faces similar challenges, where different trade types might fall under a single contract but are maintained in different systems. Here, success hinges on being able to combine these exposures into the correct contractual groupings and apply the relevant margining rules. Although most trade types base margining on the positions and prices from the previous close of business, many involve intra-day updates and same-day margining. This requires a robust solution that can both handle the information flow and generate alerts when the process breaks down.

Once you have brought both inventory and exposure management together into a single system, then the automation of tasks comes into play, along with analytics to measure and refine performance. Essentially, the firm now has a consolidated view of its available assets and liabilities.

This can also provide a strong base for securities finance and synthetic finance. It allows the firm to leverage off the collateral management function to make a profit on spare assets or to work to minimise exposure liabilities.

Automating the basics

Once the collateral desk is confident it can see the complete picture of available collateral and match it off against all of the exposures, there are a few more steps before automation can begin.

Collateral schedules need to be soft coded into the system. You can't assign or accept collateral if you don't know what the schedule will allow. Sceptics of automated collateral management will quickly point out at this stage that unless you precisely model the schedule, it adds no value. This is indeed correct.

Passing an eligible security but not checking the concentration rules will still leave you with ineligible collateral. You don't get half points for missing the field goal by half an inch. It is vital to also apply haircuts correctly. Providing too much collateral bears the same risk as not receiving enough.

STP for settlement and static data starts to become essential as the scale of the operation grows. As volumes increase, manual verification and updating quickly become impractical. However, no algorithm can allocate collateral if it doesn't know what or where it is. Likewise, the collateral solution must update exposures and the system needs to know when margining is to occur.

At this stage, it is worth noting two further key points. Firstly, to optimise, you must assign a ranking to your collateral and exposures. Any automation in allocation of collateral must involve some methodology for selecting which types of collateral to pledge first. Likewise, for exposures, adjusting the order of collateral and exposures can greatly change the outcome.

A common methodology is to apply costs to the collateral, either as basis points or represented in a ranking system. Exposures may be ranked or grouped and ordered based on a secondary factor, such as the amount of margin the firm must pledge.

Secondly, any algorithmic setup must recognise different scenarios. Take, for example, handling the morning margin call for collateral the firm needs to pledge the following day against a likely stable exposure.

Given time and adequacy of collateral, it is appropriate to find the cheapest to deliver and attempt to settle in multiple shapes in order to keep costs down. This is opposed to a late day exposure with limited time left in the settlement cycle. In this scenario, the preferred collateral is that which is available and can be agreed and settled reliably and quickly.

Can I set up my optimisation engine?

With the basics set up correctly, and care taken to automate further detail, you can now start to implement algorithms to automate collateral pledging. Ideally, collateral inventory and exposures are in the same system, or the firm has tightly integrated the margining systems with the collateral optimisation engine.

In order to establish the algorithm, a set of rules need to be agreed, such as:

- When to run;
- Which exposures to include;
- How to treat these exposures;
- What pools of collateral to use; and
- What rules to use in allocating the collateral.

It is useful to also distinguish between short-term and long-term optimisation.

The objective of short term is to avoid obvious mistakes, which are more costly than any optimisation (for example, pledging cash when there is an alternative, or pledging a security you need in the future but will not get back).

The objective of the long term is to analyse your long-term collateral requirements and manage them better. Of course, not everyone has sizeable long-term exposures. In this instance, the asymmetry of the International Swaps and Derivatives Association's (ISDA) credit support annex (CSA) is important: limited right of substitution means you have to use recall/pledge. So, the volatility of the netting agreement portfolio drives the churn, ie, how quickly you can change how you collateralise an agreement. If you think what you are using to collateralise would be better used somewhere else in a month's time, and can only expect to change 5 percent of the collateral in the meantime, you are left with a sub-optimal solution you cannot change.

It is important to note that the ISDA CSA, derivatives central clearing margin, and specific structured derivatives creating collateral exposures make up most of the long-term exposures to consider.

Furthermore, the system needs to have exception handling built in. This includes rules around how to handle exposures that have not been updated prior to the optimisation engine running. Such an exception highlights the crux of the issue: removing any outdated exposures from the engine can greatly alter the allocation of the collateral. This could also potentially leave the collateral manager without suitable collateral for a manual processing run later on.

Given that there are various types of exposure, it is likely that the firm will require several algorithms to run at different times against different groups of exposures. It is vital to employ a strategy to ensure that suitable collateral is available to cover each pool of exposures.

The collateral manager should also consider collateral stability and rehypothecation. It is operationally impractical and poor relationship management to switch collateral frequently where it is delivered bilaterally. In addition, the firm cannot pledge encumbered collateral and collateral whose recall period is inside that of the recall rate from a given exposure, without risking borrowing costs or short fees when the pledging counterpart recalls.

Questions to ask include how to treat pending collateral, and where shapes have been recalled or pledged to the firm but have not yet settled, should they be labelled as 'at risk of failed settlement' or excluded as 'at risk of under-utilisation of assets'? These steps, ie, segregating exposures and collateral pools, can result in a sub-optimal allocation, however. Full optimisation can only occur where the system knows all exposures and all collateral at a single moment in time. In practice, this only happens in two circumstances.

Both require a scenario in which collateral pledges require no actual settlement in order to re-allocate. The first would be where all collateral pledges by a firm occur in a single triparty agent. The second would be for a firm that only makes internal collateral pledges. An example of this is an agent lender allotting collateral pools between clients. Most triparty engines employ their own optimisation engines against their own specific static data. An optimisation engine here would need to be built around mimicking the triparty agent for little added value.

In practice then, outside the world of agency lending, the dream of a single click optimally handling the entire margining process is but a dream. The allocation of collateral tends to occur piecemeal throughout the day as exposures are verified or changed and settlement progresses.

Back to spreadsheets?

Not necessarily. Spreadsheets come in two flavors: simple and un-scalable manual-based tallies or complex automated arrays of nested worksheets. In reality, these are undocumented and unsupported systems. Neither method is sustainable in a growing business or in the event of high stress scenarios.

Just because optimisation algorithms cannot provide a single-click, all-dancing solution doesn't mean there is no value. In reality, there are groups of exposures to match against pools of collateral that, with a little manual monitoring and intervention, can still greatly benefit collateral managers if they can reduce the time spent on manual allocations. Further, there is great value in utilising optimisation-type algorithms to sandbox scenarios and monitor the effectiveness of the current processes. Indeed, any detailed stress test should not only show the results of stressing the exposure and collateral values, but it should also include what type of collateral the firm might need to make up for any shortfall.

One of the greatest challenges for a collateral management desk is to get a handle on the total collateral needs for the day ahead. It can then assess what collateral to hold back and which to use first. Output from collateral optimisation sandbox runs can provide valuable insight into such decision-making.

Where is the market today?

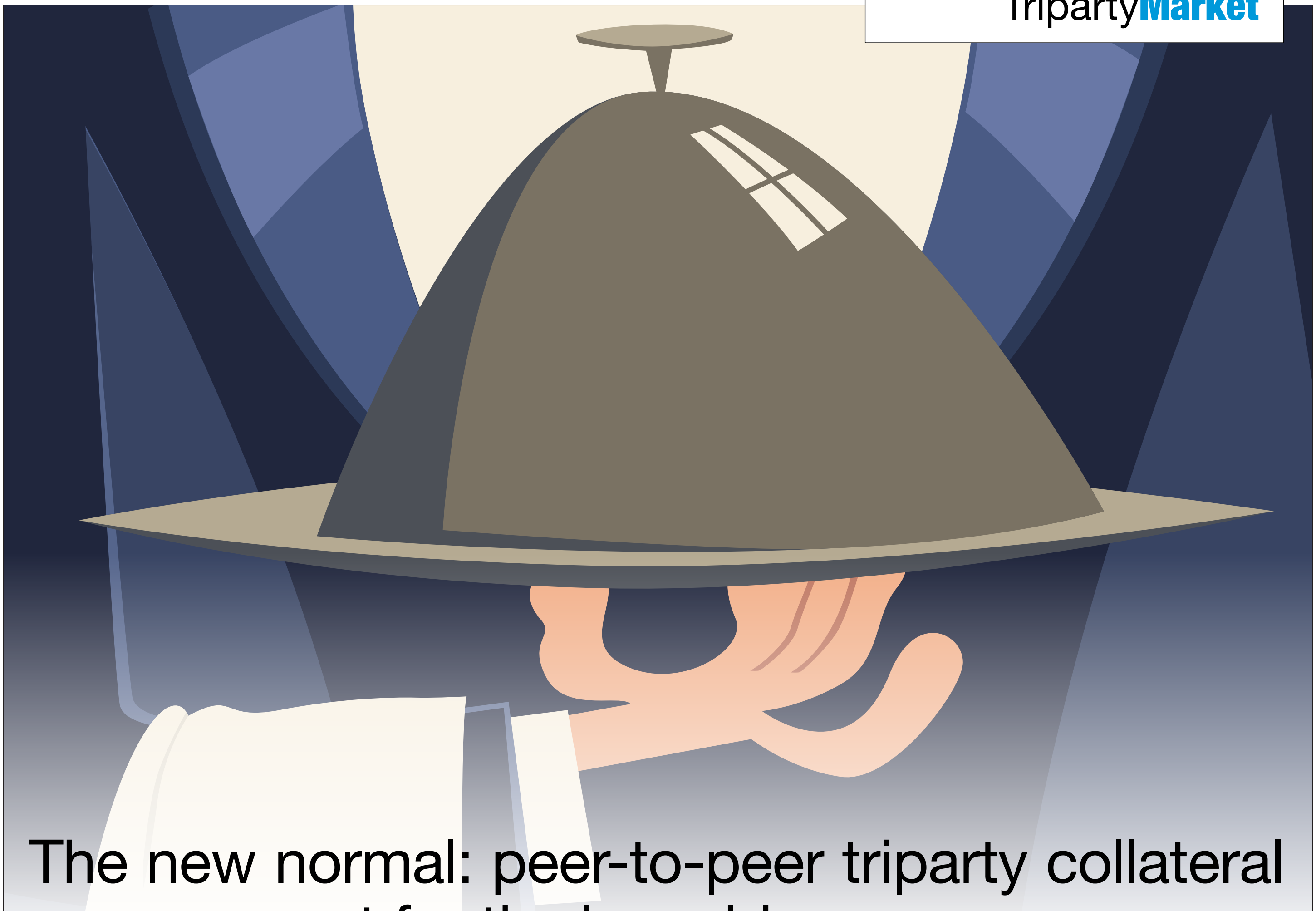
It would appear that most firms are still at various stages of sorting out the basics and improving the additional automation steps. The added demands of regulatory compliance and adapting to central clearing of derivatives are also placing a strain on IT budgets. On that note, it is perhaps a little early to predict where and how widespread use of optimisation engines will come into play.

The development of triparty, collateral services and inter-firm margining messaging services will lead to further changes in practical day-to-day operations. Small changes such as extensions to settlement and payment cycles will also alter the possibilities. Therefore, the value of any solution at hand today must consider its ability to adapt to future demands.

Luckily, there are plenty of well skilled and credit-crisis schooled collateral managers out there who have been managing this process with minimal automation for decades. Solutions aimed at informing their decision making, rather than attempting to make the decisions for them, are likely to bring the best results to the firm. **SLT**

Ed Cockram
Product consulting director
4sight Financial Software

"The development of triparty, collateral services and inter-firm margining messaging services will lead to further changes in practical day-to-day operations"



The new normal: peer-to-peer triparty collateral management for the buy side

Collateral is the currency of the capital markets and flows through more transactions than ever before. The buy side is looking at a new horizon, where new thinking, approaches and strategies are key to a successful future, says Staffan Ahlner of BNY Mellon

The financial crisis demonstrated that collateral is critical to managing liquidity, counterparty, credit and market risks. In the years following the crisis, regulators worldwide have defined the use of collateral in various markets. With these new regulatory guidelines, financial institutions worldwide are now focused on managing collateral as a front-office function to drive performance improvement and manage risk.

Structural shifts in the market are changing business models in the financial industry. We have seen how the cost of capital has reduced trading activities of broker-dealers and banks, making them more selective in how they choose to use their capital in triparty transactions. This change in behaviour has a significant impact, because the demand for triparty collateralised transactions has not gone away but instead has shifted to the buy side. Though we have not yet seen the full impact of the various regulations, the larger, more sophisticated buy-side clients are increasingly exploring how to utilise triparty for their collateralisation needs, looking to the techniques that the sell side has been using over the past two decades.

Traditionally, the buy side participated in triparty programmes as collateral receivers, collateralising their non-cash lending or serving as cash providers in a triparty programme. Pre-2008, there were some large hedge funds entering the market as collateral providers, but the buy side remained predominantly in the collateral receiver camp. Today, buy-side firms are more frequently becoming collateral providers as balance sheet constraints of some sell-side firms prevent them from entering into triparty transactions.

As always, the financial market shifts and finds alternative ways to gain efficiencies. In this case, it's the emergence of the interest in a peer-to-peer triparty model, in which buy-side firms are both the collateral provider and receiver. In this brave new world, the buy side needs to look at collateral management holistically in order to succeed.

Triparty efficiencies

The triparty market was developed by sell-side demand to create an efficient collateral technique, and sell-side firms have for decades been perfecting how they operate and gain efficiencies. The efficiencies of triparty are mostly realised in the repo and securities lending markets. According to the International Securities Lending Association's (ISLA) Securities Lending Market Report (December 2014): "Triparty collateral management is [an] intergral part of non-cash collateral management. Of the estimated €850 to 900 billion of non-cash collateral received by lenders the vast majority was held and managed by specialist triparty collateral service providers."

The efficiency and success of triparty collateral management lies in its operating model and scale. The triparty operating model includes the ability to settle collateral on a books-and-records basis which provides settlement efficiency while reducing settlement risk. With this books-and-records model, the triparty mechanism allows the collateral provider, whether from the buy side or the sell side, to effectively trade its securities inventory and use its fully paid-for securities as collateral with reduced settlement risk. Scale allows a triparty collateral manager to invest in automated processes that can be utilised by its participants (buy side or sell side) at a lower marginal cost compared to the triparty participants investing in their own collateral technologies. Triparty also allows for full traceability of any collateral transaction in the triparty system.

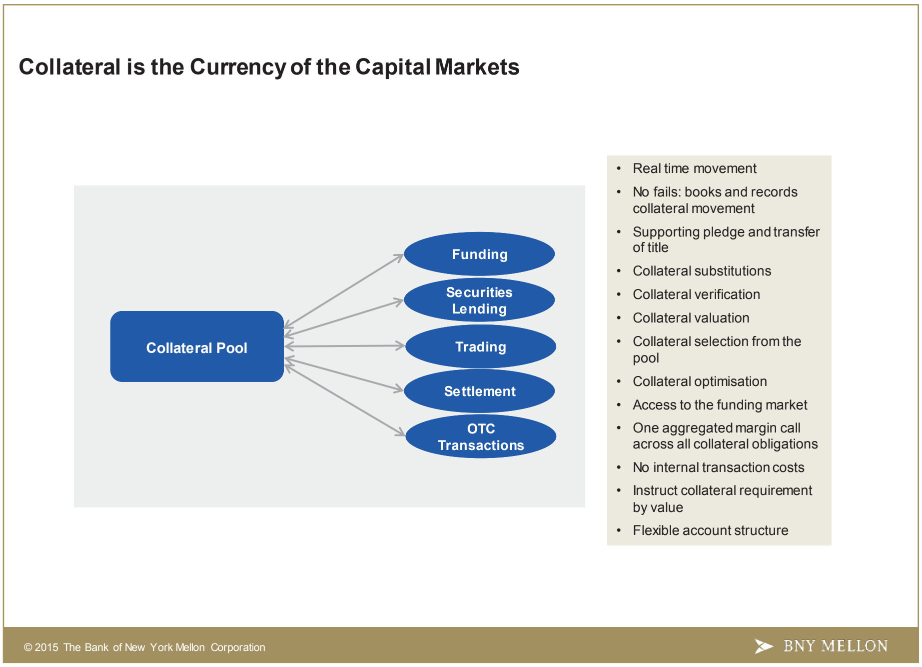
Challenges for peer-to-peer triparty

What are the challenges in this new buy-side peer-to-peer triparty environment? Some challenges will be similar to those experienced by the sell side, such as the ability to post initial margin and raise financing for variation margin. Other challenges will be unique to the buy side, such as those involving scale and the efficiencies built in response to it. More buy-side participants are entering into triparty transactions, but they haven't built up the volumes experienced by the sell side. With high volumes of triparty transactions, the sell side has developed the internal processes, systems, reporting and expertise required to operate efficiently, whereas many buy-side triparty participants traditionally handled triparty transactions as part of a securities lending programme through their custodians.

In this new environment, where the buy side will become more actively engaged in triparty collateral management outside of traditional securities lending, participants will need to effectively manage collateral. This includes efficiently allocating collateral, mobilising inventory and sourcing through various liquidity and financing tools. Yet another challenge in this new peer-to-peer environment is that not all buy-side firms are equal. They have different trading patterns, asset holdings, risk appetites and regulatory guidelines that they need to follow.

The buy side is facing a complicated collateralisation environment. The traditional method of delivering collateral bilaterally across a custody network and agent banks has, up until now, been a common choice, but with the increased complexity, there is a need for increased efficiencies similar to those experienced by the sell side. We suspect this is why we are seeing increased interest from buy-side firms to enter into the triparty market as collateral providers.

With all of these challenges, a successful collateral management programme for a buy-side participant depends on building up internal knowledge and infrastructure, or outsourcing functions to a collateral management service provider and leveraging this provider's specialised expertise, processing and technology. Buy-side participants can turn to an experienced third-party triparty collateral manager, such as BNY Mellon, for guidance and support. For example, BNY Mellon combines its broad-based knowledge of buy-side trading activity, portfolio composition and operational requirements with its collateral management



technology services and reporting capabilities to build triparty programmes that can work for the diverse group of pension funds, hedge funds, insurance companies and asset managers that comprise the buy side. We can take each client's individual operating model into account and implement a triparty programme that can work with its trading and portfolio needs and individual risk profile.

The currency of the capital markets

While the regulations that requre collateralisation of additional financial transactions are not yet in full force, assessing and preparing for the changing marketplace is essential. We see an increased interest in peer-to-peer buy-side triparty arrangements. The key to developing an efficient and successful approach to triparty collateral management involves looking at it holistically rather than focusing on a particular transaction type or the need to interact with a new counterparty. The collateral markets are similar to an ecosystem, where the inhabitants are interconnected and interdependent in many ways. A regulation that may not affect one buy-side participant might affect its counterparty and upset the delicate balance of a triparty collateral relationship.

It is important for buy-side institutions to understand the implications of market reforms, assess their readiness and be proactive. Buy-side institutions are not alone in this new environment, and they can work with third-party collateral managers to structure a triparty programme that leverages scale and expertise while acknowledging individual portfolio, trading and risk profiles.

Collateral is the currency of the capital markets and flows through more transactions than even before. The buy side is looking at a new horizon, where new thinking, new approaches and new strategies are the key to a successful future. **SLT**

Collateral management: a checklist

- Do you have the processes in place to determine which collateral to use and where?
- Are you evaluating the operational aspects of holding collateral?
- What are your strategies for optimising collateral and posting more efficient collateral against your obligations?
- Are you ready for the operational challenges of managing more collateral for transactions?
- Do your plans cover the adequacy of collateral relative to your posting needs?

The views expressed within this article are those of the author only and not those of BNY Mellon or any of its subsidiaries or affiliates.

Staffan Ahlner
Global head of collateral management
BNY Mellon

Why did the collateral cross the road? To get to the other balance sheet

Market participants would do well to look both ways before letting their collateral out of their sight, says SWIFT's Guillaume Boland. Mark Dugdale reports

Have you seen collateral movements and instructions increase?

On the one hand, we are seeing traffic for triparty operations growing by 25 percent for the seventh consecutive year.

This traffic is mainly pushed by triparty agents in Europe (Clearstream and Euroclear) and the need for financial institutions to outsource, as much as possible, the burden of intraday collateral valuation, margin calls, and so on.

On the other hand, regulations are pushing for more automation of over-the-counter (OTC) derivatives that need to be centrally cleared. For this reason, SWIFT is working with the industry—mainly central counterparties (CCPs) and clearing members at this stage—to enhance the current process and establish a common standard (ISO 20022).

We now have one CCP and two clearing members using the solution to fully automate the margin process.

What are the effects of more businesses becoming collaterised?

With more businesses becoming collateralised, there becomes a much stronger need for automated and standardised workflows, particularly as these financial firms will want to effectively meet margin call requirements. At this stage, there is still too much manual processing in the collateral management process, which will not be sustainable in a near future.

As volumes continue to grow and the types of collateral continue to diversify, new tools, approaches and technologies will be necessary to streamline the vast amount of information generated during the collateral management process.

Now more than ever, collateralisation has become a useful tool for risk managers, but with more businesses moving in this direction, information related to collateral needs to be standardised and automated, or else many managers may find themselves in a bottleneck of unstructured data waiting to be manually processed.

Reporting on collateral will be a knock-on effect, too. We are seeing an increasing need for collateral reporting in order to track, in almost real-time, the availability of collateral pools. Finally, we are seeing more and more collateral management applications, all proposing customised products to fit customers' expectations. The financial technology space is coming alive in this sector.

Which regulations are you seeing affect collateral the most, and which businesses are they hitting?

The regulations having the biggest impact on the collateral management function are probably the European Market Infrastructure Regulation and the Dodd-Frank Act in the US.

These represent a big shift in the way collateral is handled, particularly moving bilaterally exchanged OTC derivatives to a cleared environment. The firms must now go from an ad-hoc to an intra-day cycle to pledge collateral.

For the remaining non-centrally cleared OTC derivatives, the Basel Committee on Banking Supervision (BCBS) and International Organization of Securities Commission will also require initial margin to be posted, which will also affect the collateral management process with higher volumes.

Finally, the Capital Requirements Directive IV includes two key elements affecting the collateral: firstly, the liquidity coverage ratio (LCR) requires banks to have sufficient high quality liquid assets to undergo a 30-day stress test; and secondly, the net stable funding ratio (NSFR) calls for banks to hold a minimum amount of stable funding over a one-year period.

These two ratios mean that a substantial part of collateral will have to be kept encumbered on the balance sheet. Firms will have to be able to mobilise collateral quickly, aim for a global asset inventory and reduce the manual process to the lowest level in order to offset the impact that these regulations will have on the cost of collateral.

How much more pressure will this put on collateral management?

With collateral management now at the forefront of many business discussions, these changes are putting tremendous pressure on the function. We see institutions 'getting ready' to support important business growth. For example, intra-day margin calls are expected to rise by 500 percent to 1,000 percent.

Can you elaborate?

This is usually part of an important project that is putting pressure on businesses, as of right now.

The market will adjust eventually, but this process takes time and will certainly need to be tweaked at some point to make sure firms stay up to date with regulations and maybe new processes that need to be put in place.

How is SWIFT developing its own collateral management solution to meeting today's needs?

We are working closely with our community to put in place a common understanding of the flows that are needed. We have set up a best practice and implementation guide, both for triparty instructions and for margin messages on ISO 20022.

SWIFT is mostly used already for collateral posting (free of payment instruction of securities for collateral or cash instruction).

Our participants can leverage the SWIFT infrastructure already in place to avoid multiple communication channels.

For a non-connected institution we also provide a low-footprint connectivity package called Alliance Lite2, which provides a cloud-based connection to the SWIFT network and related applications and services.

Finally, we are working with collateral management application providers to enable them on SWIFT standards.

Collateral management technology, to the outsider at least, looks like its undergoing rapid innovation—would you agree with this?

I definitely agree. We see more and more financial technology in the market. This offers a wide-range of solutions to help standardise and facilitate the collateral management process. **SLT**

Clarity is coming

BCBC/IOSCO margin requirements, collateral utilities and more come under the spotlight, as Richard Enfield of DTCC tells Mark Dugdale

It feels like collateral management is getting busier—is that right?

Most certainly it is. Between the move to central clearing, requirements surrounding exposure reporting and reconciliation, and emerging requirements from the Basel Committee on Banking Supervision (BCBS) and International Organization of Securities Commission (IOSCO) for margining on non-cleared derivative transactions, firms are struggling to keep pace.

These changes have an impact on not only the counterparties to the trades, but also on service providers supporting the derivatives and collateral process. Firms have to decide a strategic approach to managing the new process flows, volumes and complexity. When you have to consider the integration touch points and what you have to do, it gets very complicated. Essentially, the entire derivative and collateral process is moving from a deep back office, highly manual process to an automated approach to proactively managing collateral. There have been significant changes in a very short timeframe.

What's your focus right now?

We are focused on the margin requirements for non-centrally cleared derivatives from the BCBS and IOSCO. There is still a significant lack of clarity in the requirements, and development and delivery require lead-time. Market participants such as us have to understand the requirements, develop to fulfill them, deploy, and conduct testing.

While we support a significant percentage of the requirements, some of the development really can't start until the BSBC/IOSCO rules are better defined and cross-border differences are addressed. Our clients are going to be swept up in these rules in just over a year, and further regulatory guidance is needed. It's not just straight development either. Systems supporting the process must be integrated with other systems, processes, reporting and compliance. All of those pieces have to come together within 13 months, which is not a lot of time considering the magnitude of the impact of the proposed regulations. What's more, these rules have to be interpreted and implemented by national regulators, which all have their own agendas.

Our other area of focus is the collateral utility that Depository Trust & Clearing Corporation (DTCC) is developing with Euroclear, which will support the entirety of the collateral process. The Margin Transit Utility (MTU) is designed to deliver straight-through processing to the settlement of margin obligations. Omgeo ProtoColl is being integrated with the MTU, so our clients will gain a view of all transactions processed in the utility from their existing ProtoColl user interface with real time updating of settlement/fail information.

What will this achieve for ProtoColl clients?

It's one thing to integrate the systems and pass information back and forth, but it's another to present the results of that information to an end user in a way that he or she can act upon. That is our primary focus for ProtoColl—making sure that we are looking at all of the industry initiatives, all of the different players supporting the collateral process, and making sure that our clients' ability to stay on top of the collateral process is as efficient as possible.

> "ProtoColl, as a commercial layer on top of the MTU, is well positioned to enable our clients to leverage the utility, because we are highly involved in understanding how it's going to work"

What is the attraction of utilities?

They are industry owned and governed. The goals of utilities are very different from commercial product offerings, although that is not to say that they are at odds. ProtoColl, as a commercial layer on top of the MTU, is well positioned to enable our clients to leverage the utility, because we are highly involved in understanding how it's going to work and integrating the communications with our collateral offering. Another utility, AcadiaSoft's MarginSphere, provides solutions to the industry around collateral that involves margin call communication and pledged asset transfer notification as part of a broader offering. ProtoColl is already integrated with a number of components of MarginSphere.

We feel that a lot of the automation that we have already brought to market enables our clients to streamline their collateral process and leverage these utility offerings as they come to market, building on the components of our products that already exist and are utilised in the market.

How would you say collateral management is changing?

In many respects, firms are still coming to grips with the requirements and there is a debate around where the collateral management process belongs, whether it's a front-, middle- or back-office operation, and I think there isn't a single correct answer. It depends on the firms and how they operate.

Some firms are more actively managing their inventories because they need to. A traditional asset management firm, for example, that has to maintain a certain amount of liquidity to meet redemption requirements does not have the same concerns about having to optimise its asset usage because it probably has enough high quality liquid assets to satisfy its immediate margin calls. Whereas, a firm that does a lot of repo and securities lending has multiple draws on its assets, which is a different ball game. It has to be more active in the way that it manages its balance sheet so that it does not run the risk of one area using inventory that had been earmarked for another.

That is why we see different solutions in the collateral process, because some front-office solutions have to have a collateral component to help the portfolio managers with their inventory, while others do not. No matter what is best for a particular firm, all firms engaging in derivative transactions have one thing in common—margining on all open exposures is coming. **SLT**

Richard Enfield
Executive director, product management, collateral management
DTCC

Collateral management challenges in a post-financial crisis world

Big data can deliver tangible value to collateral management and the wider organisation, say Giles Kenwright and Mike Payne of Delta Capita

In the aftermath of the global financial crisis, banks and their collateral management departments continue to face a number of growing challenges. The need for good quality collateral to protect against counterparty default has never been more evident. At the same time, the pressure on banking margins has been intensified due to requirements for higher levels of regulatory capital, reduced levels of risk appetite among many investors and continuing global competition. Continued regulatory scrutiny has also led to the need for many processes and procedures to be tightened.

Prior to 2008, collateral management was primarily an issue for back-office support. Now, it has become a necessary part of the trading profit and loss, where additional revenue and financing can be raised. Those financial institutions that can efficiently manage and optimise their collateral and use it effectively will stand to gain against their competitors.

The 2015 International Swaps and Derivatives Association Margin Survey indicated that cash still accounts for well over 70 percent of collateral used for non-cleared over-the-counter derivative transactions. This will become an increasingly expensive source of collateral as global interest rates rise. While there have been some increases in the levels of securities pledged as collateral over the years, these still remain at low levels, with government securities continuing to be preferred over other asset classes. The level of securities pledged and the asset class mix is likely to change over the coming years as banks refine their collateral management processes.

However, improving the efficiency of collateral management processes often requires a number of obstacles to be overcome.

Collateral optimisation

Collateral optimisation is required in order to ensure banks deliver the least expensive assets to each counterparty based upon, each counterparty's schedule, while complying with regulatory constraints such as Basel III and International Organization of Securities Commissions requirements. These typically stipulate the need for high quality liquid assets and haircuts for most other collateral.

An increasing focus on rehypothecation limitations will 'lock-up' collateral, thereby limiting its re-use and providing additional constraints. Operations teams also have to contend with an increasing number of substitution requests generated by front-office demand or automated optimisation algorithms, further complicating the process.

Historically, collateral has been managed in silos, with each desk, such as equity derivatives and stock lending, managing their own collateral pools. In order to be more effective, banks have realised that they must have a firm-wide holistic view of collateral in near-real time.

With access to timely and precise information, coupled with the appropriate analysis tools, banks will be able to provide a pre-trade optimisation assessment to give traders an accurate view of stock availability and the cost of the collateral associated with a trade. This trade optimisation is particularly important in short selling markets in order to manage cost and adhere to local regulations. Delivering collateral effectively can therefore have a profound impact on the trading desks' efficiency.

For many banks, however, the data on collateral and the applications that maintain and analyse this data are often fragmented across geographic and business lines. The first step in optimising collateral management processes is therefore to ensure the technology supports a centralised and real-time view on the collateral that exists across the organisation.

Big data and analytics

The need to process ever-growing data sets that are high-volume, high-velocity and high-variety is not unique to collateral management or financial institutions, and the term 'big data' is now widely used to categorise the challenges, approaches and tools that have evolved to address this.

The size, complexity and velocity of the data processing task required to adequately support effective collateral management and optimisation processing within a medium to large financial services firm, typically falls into this big data category and firms can benefit from the tools and techniques that have been developed in recent years.

Big data solutions are available from commercial suppliers and as open source product offerings. The tools include: data appliances, which combine hardware and software for integrating and analysing enterprise data, both structured and unstructured; analytics and data storage platforms for distributed processing of very large data sets; and NoSQL databases providing enterprise wide document-oriented, fixed schema-less database platforms with analytics tools built-in or integrated.

Use of these tools can assist with the integration, processing and analysis of the large distributed datasets that contain collateral information across the organisation, providing a consolidated view for collateral optimisation and management purposes. This data may not be in the traditional relational format and can be more easily stored and analysed with big data tools.

These tools typically provide a layer of abstraction over the underlying sources of data, and can therefore be implemented in an evolutionary manner, rather than requiring a complete replacement of existing technology infrastructure. This improves time to market and reduces implementation risk and cost. In time, migration to big data storage platforms, which typically store and process data more efficiently, should help to bring down technology costs.

A 2014 Economist Intelligence Unit survey, Retail Banks and Big Data: Big Data as the Key to Better Risk Management, spoke to 208 risk management and compliance executives at retail, commercial and investment banks, in 55 countries across six continents. Of those surveyed, 29 percent from retail banks, 43 percent from commercial banks and 28 percent from investment banks highlighted liquidity and credit risk as being their biggest challenges, and also the best for potential improvement with big data analytics. Almost all of the banks are investing in big data to improve their risk data, but those that considered themselves better than average were moving more aggressively.

In a Euromoney article published in January 2015, it was reported that Goldman Sachs is investing $15 million in a big data analytics start-up, which is building what Goldman believes to be the largest database in the world of timelines and precedent events that affect markets. This will create statistical observations from which patterns can be found, as well as supporting complex queries on market scenarios.

The regulators are also improving their capabilities to process and analyse large volumes of data. It took four months to piece together the sequence of events that led to the flash crash in 2010. As a result, the US Securities and Exchange Commission (SEC) is developing the Consolidated Audit Trail (CAT), designed to archive and analyse 50 billion records a day. When implemented, the system will track every stock quote, order and trade. CAT will pull data from the 18 US public stock and options exchanges and the dark pools run by banks that do not currently have to immediately report data to the SEC.

There are few industries as dependent on data and its completeness, accuracy and timeliness as financial services. Every trade, every settlement and every calculation has data associated with it, usually across front-, middle- and back-office systems. Today, management, driven by the regulations such as BCBS 239, are asking to see their data holistically and then to be able to make informed decisions. Technology departments are being asked to deliver systems that provide these advanced capabilities, including data quality and lineage—monitored for continuing quality assurance.

Collateral optimisation is a specific opportunity that firms are beginning to address in order to reduce the cost of collateralising and financing the business. Critical to their success will be their ability to take a firm-wide view of the available collateral and yet take an incremental approach to the implementation of the new technologies. Once firms have invested in big data capabilities, the technology can be leveraged to benefit other business areas.

Firms are facing an increasing workload to keep up with the evolving regulatory reporting directives. It doesn't matter if it's the US Dodd-Frank Act or the European Markets Infrastructure Regulation, financial firms' compliance and technology departments are under pressure to continually improve data quality. Large firms that are registered in multiple jurisdictions have to comply with many overlapping reporting requirements. Only by changing the way that firms work will they be able to meet these demands.

The current siloed approach to data—consolidation in spreadsheets, manual reconciliation and reformatting for submission—is neither accurate nor timely. To improve, firms have to change the way they look at their systems. The new technologies can help in taking control and firms that invest in big data analytical capabilities will begin to use the regulatory demands as an opportunity to gain a better insight into their business.

Risk managers continue to struggle with the volume and complexity of the data as firms add markets and increase trade flow. They must perform complex and comprehensive analysis of credit, counterparty and market risk, which many struggle to complete before markets reopen the following day. Once the need for real-time risk and margin increases, many firms will need to address their existing inflexible and expensive systems. While tools and techniques are making big data easier to adopt, its implementation is still not a trivial undertaking. Nor is success guaranteed. With the right business-aligned analysis framework, however, big data can deliver tangible value to collateral management and the wider organisation. Firms that grasp this challenge and harness their data effectively will undoubtedly reap the benefits. **SLT**

Mike Payne
Associate partner
Delta Capita

Giles Kenwright
Associate partner
Delta Capita

Movers and shakers: collateral continues to be celebrated

Keeping a close track of posted collateral reveals how appetites are changing, and where high quality liquid assets are going to come from next. Pierre Khemdoudi of Markit Securities Finance explains more

In light of the new regulatory landscape that is currently reshaping the capital markets, it is safe to say that the demand for collateral is set to increase in the coming years.

The Dodd-Frank Act and European Market Infrastructure Regulation (EMIR) have mandated a higher need of collateral for over-the-counter (OTC) derivatives, while Basel III has increased the need for high quality collateral. The estimates on how much collateral will be needed are quite disparate and range from a mere $200 billion to a staggering $4 trillion. This trend has seen industry participants become increasingly pragmatic when looking at collateral (see Figure 1).

The overarching theme coming out of the recent Markit Securities Finance Forum was that regulation holds as big a sway as ever over the securities finance industry's behaviour. As a result, the lenders that are most able to adapt to regulatory developments stand to see a strong demand for their assets.

One particular area of change that was singled out, by both panellists and delegates, was general collateral balances, which have fallen out of favour in the wake of recent capital regulations such as Basel III. The higher cost to the balance sheet is causing borrowers to increasingly ration high-cost collateral, which benefits the lenders that are willing to lend out on more pragmatic and favourable collateral terms.

These regulatory requirements are a key driver for the rise of the use of non-cash collateralised loans.

Securities lending: balances versus non-cash collateral on the rise

Securities lending balances versus non-cash collateral now account for almost 60 percent of the overall market, compared to only 38 percent in 2007. This trend reflects the rising cost of cash funding and the wave of balance sheet regulation that has made non-cash collateral popular in the seven years since the financial crisis (see Figure 2).

This shift has been growing across the world, including in markets and asset classes that previously traded exclusively on a cash basis.

Although some asset types are now almost exclusively traded versus non-cash collateral, the upward trend in acceptance of non-cash collateral balances is visible across the board (see Figure 3).

The asset class that has seen the largest jump in the proportion of loans collateralised against non-cash since 2007 is governments bonds. Some 68 percent of government bonds are now traded versus non-cash collateral, more than twice the proportion that was seen eight years ago.

Even US equities balances, which have historically been overwhelmingly a cash collateralised market, are experiencing this trend (see Figure 4). The asset class has seen the proportion of non-cash collateralised balances rise significantly since 2012, driven by the pressures on balance sheets. Non-cash collateral transactions now account for 35 percent of US equity balances and this figure is growing fast (+10 percent over the last five months).

Although non-cash collateralised loans have surged in popularity over the last few years, the value of the relatively less capital-efficient cash collateralised loans has remained relatively flat since the start of 2009. This represents a massive atrophy in real terms given the recent strong market run.

US-domiciled beneficial owners, which are less able to accept non-cash collateral, are likely to be on the losing side of this trend as their utilisation of US equities has fallen to an all-time low of 4.5 percent recently, down from 6 percent three years ago.

This reinforces the premise that the lenders that stand to benefit the most from today's regulatory regime are those with the ability to be pragmatic about the collateral they accept. Currently, non-US-domiciled beneficial owners have more than 6.5 percent of their US equities out on loan, which is significantly higher than their US peers.

US dollar triparty: equities on the rise

The popularity of non-cash is not limited to securities lending as the US triparty repo market has been experiencing a similar fondness for non-cash balances (see Figure 5). From July 2014 to July 2015, the share of collateral usage has shifted significantly in favour of equities, whose market share has increased from 8 percent to nearly 11 percent. This has driven the growth in balances given the fact that the aggregate value of all cash collateralised loans has remained relatively unchanged.

The total daily trading volumes across all collateral types only increased slightly over the same period (see Figure 6). In comparison, equity collateral volumes increased by a significant 50 percent, from $13 billion to $19 billion.

Data collected by Markit Securities Finance also shows that this increased interest in equity collateral has been accompanied by a reduction in value weighted average margin requirements from 108.5 percent to 107.2 percent.

Weighted average margin requirements over the same period for all outstanding collateral positions of other major collateral types, including US treasuries and agency mortgage-backed securities, were virtually unchanged (see Figure 7). This shows that lenders are increasingly getting comfortable with accepting equity collateral.

A new source: the case for ETFs as collateral

This growing acceptance of equity collateral coincides with the rise of exchange-traded fund (ETF) adoption. The growing acceptance of ETFs has been demonstrated by the fact that the aggregate assets managed by 5,000 or so funds reached the $3 trillion milestone earlier this year, off the back of strong inflows and buoyant markets (see Figure 8). However, this could provide some short-term challenges due to the fact that ETFs are not widely accepted as collateral.

The lack of ETF use as collateral was highlighted at the Markit Securities Finance Forum, where more than 55 percent of polled delegates stated that they didn't accept or post ETFs as collateral. Another 12 percent stated they would use ETFs as collateral on very few occasions.

The main reasons for the very limited use of ETFs as collateral lie in both the challenge of their broad classification and the inability to systematically see 'under the hood' in order to methodically manage their risk characterisation.

As a consequence, ETFs are being dealt with on a line-by-line basis in collateral schedules, making it an operationally expensive process to manage. Additionally, from a collateral management point of view, the inability to use them as collateral renders them 'dead assets' in a balance sheet optimisation exercise, despite the fact that their underlying assets have been in hot demand in recent years.

In an effort to alleviate the 'shadow' cost of capital carried by this industry challenge, Markit has consulted with exchange-traded product (ETP) and securities lending market participants to come up with a rule based approach that aims to highlight ETFs tracking assets that are already widely accepted as securities lending collateral.

The inaugural ETF collateral lists highlight fixed income and equity ETFs that track liquid developed markets. The lists also screen out subscale funds and those whose market value deviates by more than 1 percent from the value of the assets held by the fund.

The lists leverage Markit ETP's Analytics and Encyclopaedia solutions and highlight more than $516 billion of assets that currently meet widely accepted collateral management rules (see Figure 9).

Most of the assets held by the funds are equity products, which make up $480 billion of the current collateral lists. The largest fund on the lists is the SPDR S&P 500 tracker, which has more than $180 billion of assets under management and whose average share price has, in the past, deviated by less than 1 basis point from its net asset value.

The provision of standardisation and a rule-based approach on ETFs' classification for collateral will allow capital markets to better manage and understand the assets they hold or post, strengthen operational efficiencies, and help balance sheet optimisation. **SLT**

Pierre Khemdoudi
Managing director
Markit Securities Finance

Figure 1: Estimates of Additional Collateral Needed for OTC Centralised Clearing

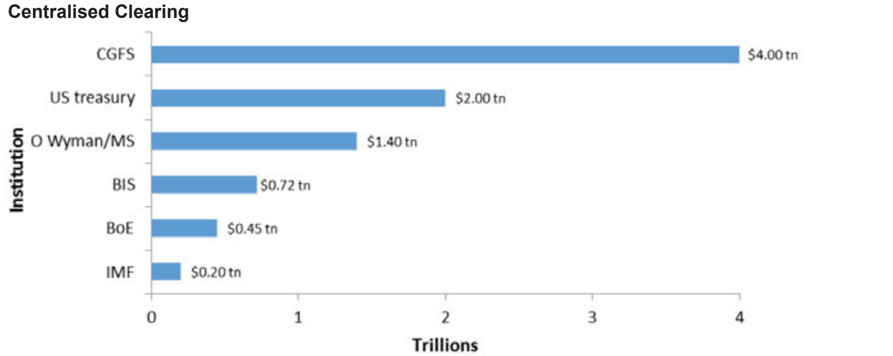


Figure 2: Non-Cash Collateral Variance (All Securities)

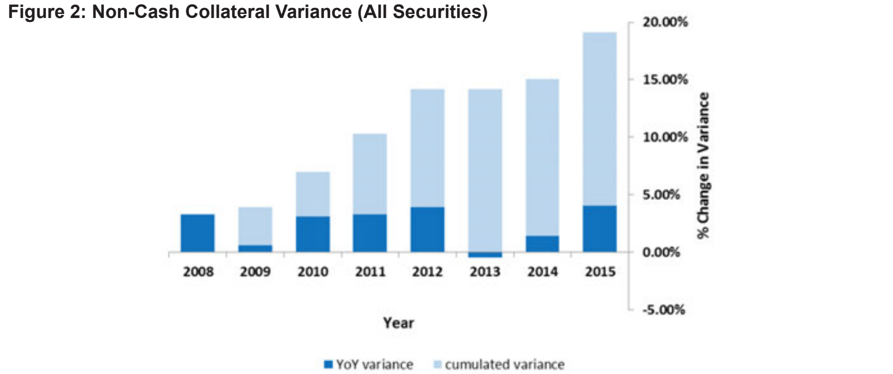


Figure 3: Proportions of Non-Cash Collateral

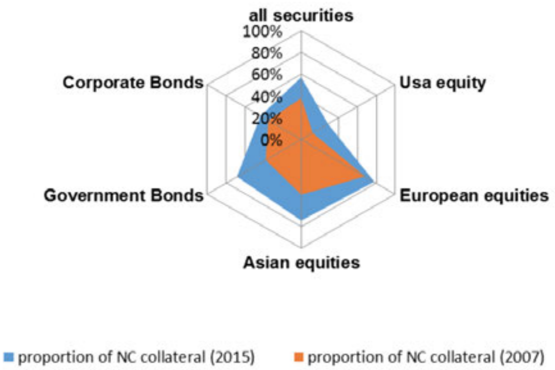


Figure 4: Non-Cash Collateral Variance (US Equities)

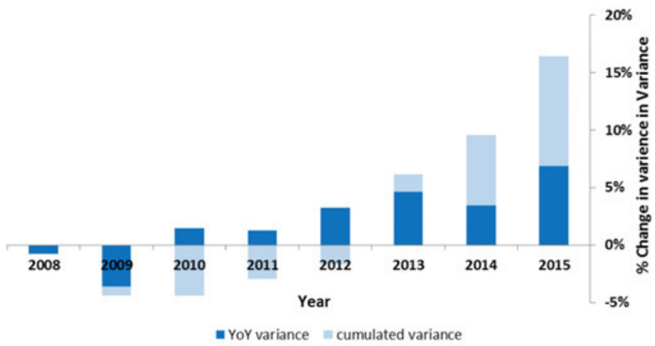


Figure 5: Equities as Share of Total Collateral Allocations

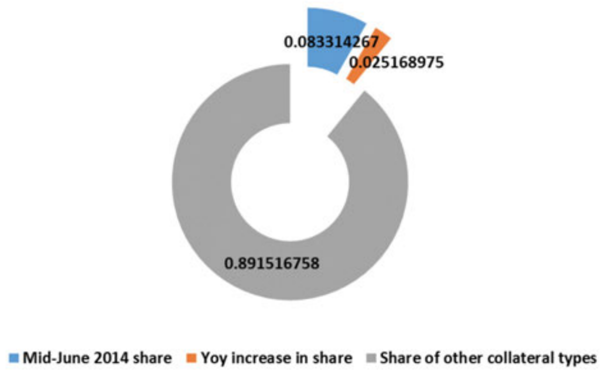


Figure 6: Daily Equity Collateral Trading Volume

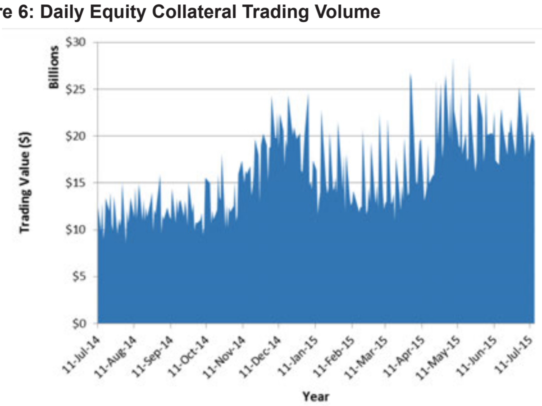


Figure 7: Weighted Average Margin

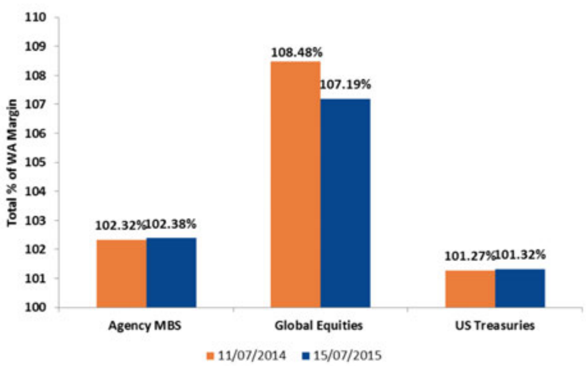


Figure 8: Growth in Annual Assets Under Management

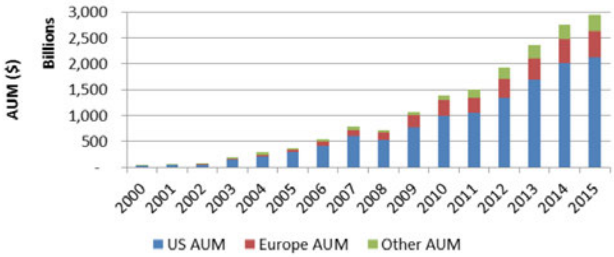
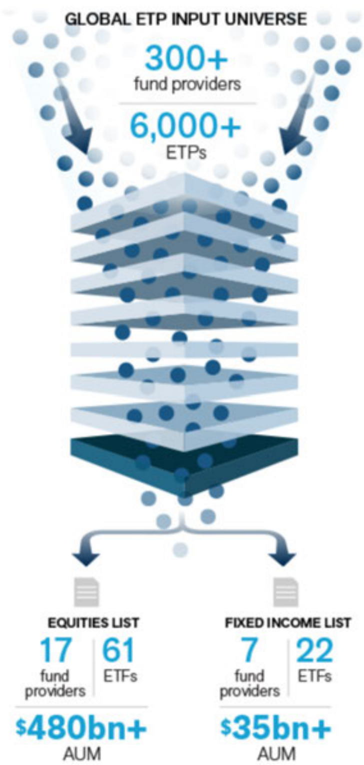


Figure 9: Markit Exchange-Traded Fund Collateral Lists



Solving the collateral challenge

The market as a whole is going to need more collateral, and will have to learn to deliver it with greater frequency and efficiency. Ricky Maloney of Eurex Clearing summarises the key suggestions on how to address these challenges

Asset managers, pension funds and the like are being forced to re-evaluate their derivative hedging or investment strategies to the extent that collateral cost implications form part of the pre-trade function. In considering those costs the market needs to become as efficient in terms of identification, selection and delivery of collateral as it possibly can.

There are a lot of excellent papers available on collateral optimisation—many with the common recommendation to centralise collateral inventory. It is not unusual for firms to have multiple pools of collateral spread across various custodians and collateral management systems, or agents. To have an efficient and optimal view of collateral, firms must be able to see it at once, and in one place.

Cross margining: part of the solution

That, however, is just the starting point. Reducing collateral requirements demands maximum efficiency, and while some efficiency for cleared product margin requirements is possible by aligning listed clearers with OTC clearers, many clients are looking to achieve additional efficiency through cross-product margining within a central counterparty (CCP). This combination of both listed and over-the-counter (OTC) derivatives within a single account may achieve significant risk reduction, dependant upon correlation, therefore requiring a lower margin.

Further efficiencies can be gained through the utilisation of collateral inventory that is perhaps otherwise unused. Eurex Clearing accepts more than 25,000 products as collateral. This enables clients to utilise a wider range of assets for collateral purposes, as opposed to their highest rated assets, or cash, which could be put to better use elsewhere, seeking alpha.

Eurex Clearing has access to the European Central Bank refinancing window and so is able to exchange securities collateral for cash at times of defaults and of stress. The clearinghouse is therefore able to negate the requirement to sell collateral assets in a depressed market, which would drive asset values down further, leading to additional margin calls that would further propagate pro-cyclicality.

Having identified their optimum collateral, clients' considerations should then turn to how efficiently and securely that collateral can be delivered to the CCP. The importance of this should not be underestimated, and in this respect, Eurex Clearing sets the standard.

A single margin call

Eurex Clearing makes a single margin call across all asset classes, per currency, each morning, meaning that clients can satisfy their overnight margin calls for all exchange-traded or OTC derivative activity, as well as any securities financing obligations, with just one payment, per currency.

The second advantage to clients is the opportunity to deliver collateral directly into their clearing member accounts within Clearstream. Available within Eurex Clearing's individual segregated account, 'direct delivery' negates the requirement for a clearing member to act as a pass-through agent for client collateral, and by utilising this method registered customers can reduce a leg of transit risk when paying and receiving collateral, and reduce the associated collateral processing charges.

Furthermore, there is optionality on how those Clearstream accounts are constructed, at the central securities depository (CSD) level, either individual (sub)-accounts have to be opened per Eurex Clearing collateral pool or multiple Eurex Clearing collateral pools can be linked to the same (sub)-account. Where the latter is chosen, security collateral is allocated to the respective Eurex Clearing pool by way of asset tagging. This provides for operational and collateral processing efficiencies.

It is very important to remember that even with tagging, while security collateral is held in one account at the CSD, at Eurex Clearing, the security collateral holdings are clearly segregated at the individual segregated account level. The asset protection remains exactly the same regardless of the account construct at the CSD.

In addition to the efficiencies already mentioned, clients of Eurex Clearing have a tremendous opportunity to take advantage of a CCP offering that not only provides the opportunity for cross margining, be it product or portfolio, but also affords the capability of satisfying margin requirements by utilising Eurex Clearing's securities financing platforms.

Opportunities for the GC Pooling and securities lending markets

Leveraging Eurex Repo's GC Pooling market, which has been live since 2005 and currently sees up to 115 participants executing repo transactions to the order of some €80 billion per day, GC Pooling Select Invest (secured funding for corporate clients) seeks to aid buy-side clients in meeting their variation margin commitments.

The variation margin must be paid in cash in the underlying currency of the derivative and for fully invested clients such as pension funds, which are typically short of cash, this can be a problem. GC Pooling Select Invest goes a long way towards resolving that problem. In becoming a direct participant in this market segment, buy-side clients can exchange assets for cash via a market executed repo trade, the cash proceeds of which can be used to cover a client's variation margin requirement.

As soon as the trade is executed, Eurex Clearing immediately steps in as the counterparty to both sides of the trade and counterparty exposure is therefore with the CCP, rather than to the bilateral counterparty. The capital impact of this trade will be significantly lower compared to a bilateral trade.

GC Pooling Select Invest also allows cash providers to enter into repo transactions and the securities received can be utilised to cover their margin requirements across the CCP as a whole—this is termed as collateral reuse.

Continuing the securities financing theme, Eurex Clearing's Lending CCP allows clients to clear securities lending trades, a trend that is being strongly promoted by banks as they look to reduce balance sheet pressures. Centrally cleared financing trades also have a greatly reduced capital cost when compared to bilateral trades.

The Lending CCP simplifies a client's multiple-counterparty credit structure to a single CCP relationship for all novated loans, improving distribution for borrowers and lenders with restrictive counterparty parameters while maintaining bilateral trading relationships.

Furthermore it provides transparent and standardised risk management and default procedures, guaranteeing the return of the loan and collateral securities and offering protection from counterparty default.

Choosing the right type of segregation and safety

Identifying an optimal collateral strategy is one thing, ensuring its safety in the event of a default is something else altogether. Eurex Clearing offers net and gross margin under three types of segregation:

- Standard omnibus segregated accounts;
- Multiple omnibus segregated accounts; and
- Individual segregated accounts.

Eurex Clearing was the first CCP to develop an individual segregation model in accordance with European Market Infrastructure Regulation requirements, which provides gross segregation of a client's actual assets and highly likely porting. As registered customers' positions and collateral are fully segregated, in case of a clearing member default, the positions and collateral can be transferred without the consent of the insolvency practitioner appointed to the defaulted clearing member's estate, enabling clients to continue their trading activities.

Eurex Clearing additionally allows clients an extended period to find a replacement clearing member if they are unable to port immediately. Alternatively, clients can elect to close out their positions to receive the collateral. Eurex Clearing, under the individual segregated account model, guarantees to return, or deliver to a replacement clearing member, the actual collateral provided by clients.

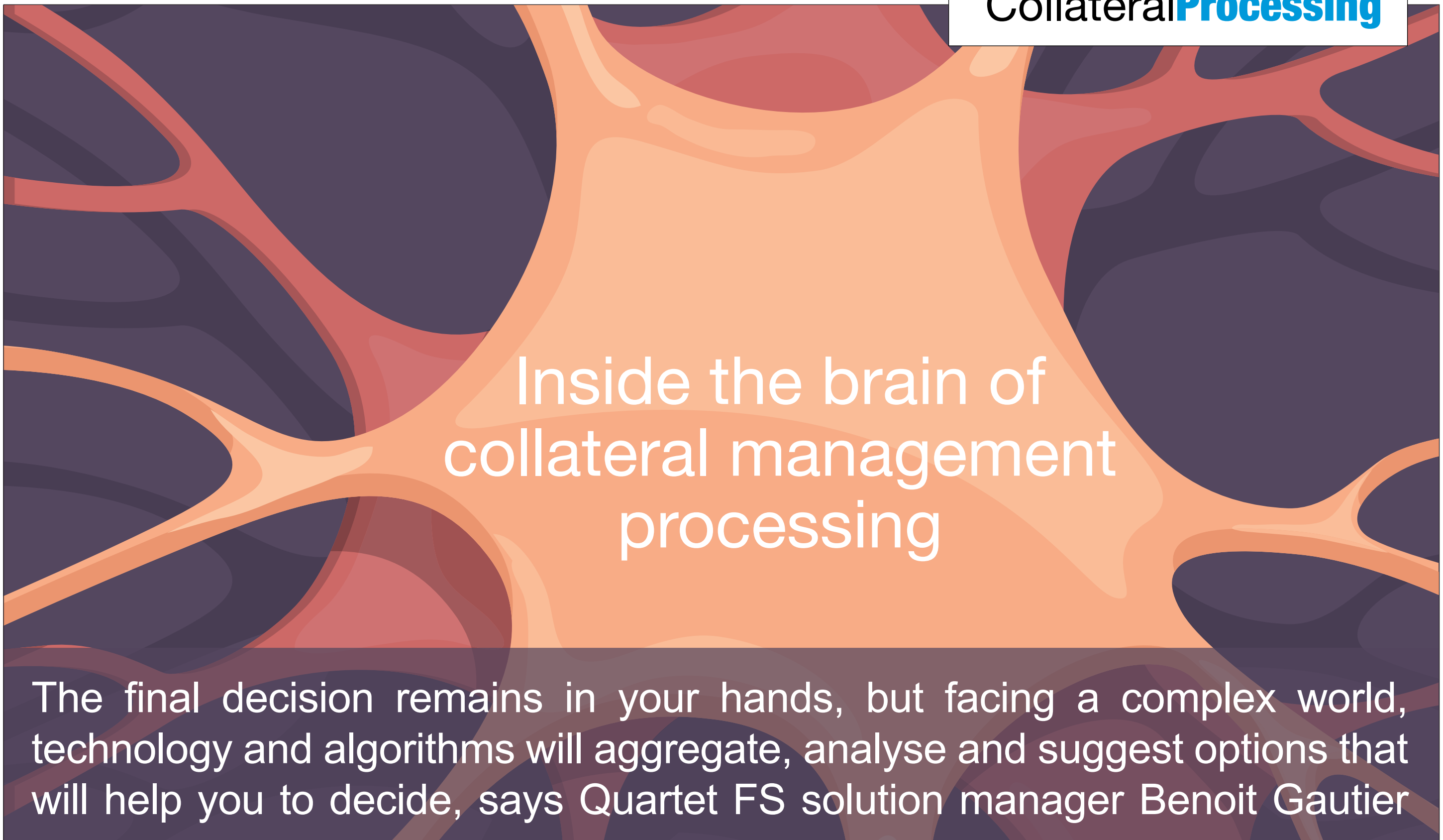
What the future will bring

Eurex Clearing continues to enhance its collateral services. For example, in 2014, it launched the direct collateral transfer service for individual segregated accounts, extended cut-off times for cash collateral recalls, automated distribution of the admissible securities list and implemented real-time distribution of collateral movement reports on an event-driven basis.

In the second half of 2015, Eurex Clearing will further enhance its direct collateral transfer service by connecting to Clearstream's triparty platform, enabling individual segregated account clients to benefit from the auto-allocation and auto-substitution service for security collateral.

In recognising the collateral management challenges that clients face, Eurex Clearing is working hard with those clients to address those challenges and to provide appropriate solutions. The fully integrated product set, and the collateral and financing efficiencies described herein, allied with the asset protection capabilities, make Eurex Clearing a very powerful proposition indeed. **SLT**

Ricky Maloney
Buy-side clearing sales and relationship manager
Eurex Clearing



Inside the brain of collateral management processing

The final decision remains in your hands, but facing a complex world, technology and algorithms will aggregate, analyse and suggest options that will help you to decide, says Quartet FS solution manager Benoit Gautier

Let's think about how we, as human beings, function—and how we process data.

All the time our body's sensors (internal and external) collect and monitor dozens, hundreds, if not millions of bits of information. This sensory data is collected from multiple and various sources such as nerves, eyes and ears. Without a command centre capable of receiving, aggregating, interpreting, understanding, controlling and analysing this massive flow of information, it would be wasted. What good is an eye's retina if it just receives a light signal but doesn't pass it on?

Data is sent to a command centre and, for humans, this is the brain and its role is to collect and analyse data as it is received, and to decide if and what action is required. If, for example, the signal transmitted from the eye's retina is seen as dangerous, the response is urgent.

Every second, consciously or unconsciously, our brain processes an incredible number of records, targets and their priorities. Vital functions, such as breathing and blood pressure, which are 'mission-critical', are given higher priority while other processes have lower ones—they could be likened to the longer-term hourly, daily, weekly or yearly tasks we choose to achieve, according to our work, family and life drivers as well as our known limits.

We humans operate in a constantly changing environment, and are dependent upon the last available information at our disposal. The brain is expected to use those inputs (and constraints) to find, or adapt when needed, the optimal solution: one that suits both our immediate and long-term goals.

While ensuring and controlling the smooth running of vital functions, our brain is effectively analysing various options to find (or adapt if needed) the most efficient way to reach our objectives. By doing this, for every instant of our life, our brain is acting like an optimiser for us.

The support of technology in the decision-making process

Sadly, our brains have limits, which is why we welcome technology to support decision-making and actions when they occur. Even if the limit to humans' brains is not known, it is hard to envisage Neil Armstrong on the moon without the help of technology—despite his professional training.

Every parent knows the difficulty in deciding on a family holiday destination. You begin by listening to the wishes and priorities of your family members. The little one just wants to build sand castles on the beach, the teenager wants to go to Berlin, and your partner would love to relax in a sunny Italian city. You also have to take into account 'hard' constraints such as visa requirement, inoculations, country security restriction, costs, school holiday dates, and on and on. All you want is to keep everyone happy so you can enjoy your vacation. Facing this Everest, you may just opt to take your car and go for an adventure.

But, usually, you will try maximising the opportunity to spend quality time together while minimising the risk of disappointing your loved ones or breaking 'hard' rules (for example, affordability). You begin by reading hundreds of brochures and travel reports, calling several travel agencies and hotels, but now you will probably need some help from technology.

Effectively, the numerous research engines with their clever algorithms will help you find and compare various locations, travel or sleeping options and their associated costs. Decision-making and action processes become a lot easier. With all of the information to hand, you are well-equipped to review the proposed output options with your 'clients' and, hopefully, you soon agree on a satisfactory solution for all (including the bank manager) while keeping within the hard constraints.

Today, in your own city, to go from A to B, you are more than likely to check and use apps that will suggest different route options based on your preferences. Even for the most knowledgeable and proficient people such as Neil Armstrong, the travel agent or you in your own city, algorithms are there to find the appropriate options with their cost and benefits.

The final decision remains in your hands, but facing a complex world, technology and algorithms will aggregate, analyse and suggest options that will help you to decide.

Collateral optimisation: the cortex of collateral management processing

In recent years, it has become evident that the complete cycle of collateral management is moving away from a 'nice-to-have' option to a 'must-have' as financial services institutions experience a significant increase in regulatory change, clearing fragmentation, regional offerings, the International Swaps and Derivatives

Association's (ISDA) new standard credit support annex (CSA), unstable markets, reduced liquidity and more complex client requests.

It is acknowledged that a lot has been done in:

- Improving processes and making organisational changes;
- Building systems and infrastructure to get a rapidly aggregated inventory view;
- Digitisation of legal documents and/or collateral schedules; and
- STP automation for booking and settlements.

With the above mandatory bricks in place, the focus has moved to collateral optimisation to complete the chain.

As for us humans—using our brain as a powerful optimiser—we expect it to be able to continuously control the vital functions, propose the most efficient way in which to reach various targets, and to react quickly should changes occur, all while assessing and minimising the risks through anticipation.

At its core, the objective of the optimisation paradigm is to find the most efficient (path) allocation of assets (source) against collateral requirements (target), respecting a given set of rules.

These rules may be 'hard' constraints, such as eligibility criteria, rehypothecation rules, concentration limits, capitals or liquidity regulatory requirements (the vital functions), or 'soft' ones, such as operational limits on the number of movements that can be processed, particular business drivers to keep some particular assets, investment opportunity to take into account (for example, in the repo or securities lending market), or specific 'organisational-silo' organisation of the inventory.

Choosing the most efficient collateral path in a universe of possibilities

The collateral world seems to have an infinite number of possible paths as you and your clients require more flexibility and sophistication whilst regulators continue to evolve the rules.

Beyond minimising the cost, another objective is to consider the liquidity potential of the inventory available in order to maximise the profits

Also, whether by choice or by regulation, institutions have more counterparties, clearing brokers and custodial relationships than ever before. The complexity of these relationships makes it very difficult to see what assets you hold and what is available to meet particular obligations.

For any firm, it is rapidly becoming a daunting task to find an optimal way to pledge the most efficient collateral from an inventory of thousands of assets to meet collateral obligations across thousands of CSAs.

All financial players are now running hundreds if not thousands of stressed and extreme simulations to control credit, market and liquidity risks. Similarly, to find and validate the most efficient collateral pledging strategy, it is anticipated that organisations will require an ever-growing capacity to see impacts of multiple options in a constantly (and near real-time) changing environment with many moving parts, such as liquidity, ratings, market data and CSAs.

Recently, the Basel Committee on Banking Supervision and International Organization of Securities Commissions introduced new rules that require a review of the bilateral CSA terms. Despite the relevance of the issue and the expected remaining size of non-centrally cleared derivatives market, very little theoretical guidance is available to quantify the costs and benefits associated with different collateral rules.

Re-negotiation of high volumes of bilateral CSAs will require a complicated and careful balancing exercise between regulatory obligations and commercial benefits, which will require extra capacity to run optimisation scenarios.

When even the most senior travel agent is using technology to propose best options with infinite choices available and adherence to multiple constraints and drivers agreed with their client, how can we expect collateral managers without the full support of strong technologies and algorithms in the middle of such a complex, moving and fragile web of obligations and relationships to succeed without it?

Having achieved progress in the collateral management process, technology and mathematics are more critical than ever to actually run the core optimisation process.

This requires a flexible framework enabling end-users to configure their optimisation preferences, coupled with algorithms, to arrive at the 'optimal' answer in as fast a time as possible to test and simulate collateral strategies and options.

To make this a reality, a performant optimiser must be able to produce pledged and available collateral projection in a matter of seconds or sub-second timescale.

Open, customisable and performant framework for the collateral optimisation centre

The goal of a collateral optimiser is to solve the complex problems of collateral pledging strategy efficiently according to company rules and requirements.

Thus, in order to solve the collateral problem, the solution must be flexible enough to fit any number use cases and be fast enough to react in near real-time.

At first glance, finding the optimal allocations to pledge requires brute force exploration of all possible outcomes. While the requirements and restrictions can easily be represented as linear programming constraints, the time to execute this type of exploration will most likely expand exponentially even when fed through an efficient optimiser.

To address this, Quartet's Collateral Optimisation Accelerator transforms the collateral optimisation conundrum into a graph theory exercise, so we are able to solve the problem using efficient algorithms, whilst maintaining the flexibility required for diverse real-world use cases.

The foundation of our optimiser is a minimum cost/maximum flow algorithm that has been developed to handle the intricacies of the collateral optimisation problem.

This allows an organisation to speed up initial development and deployment to meet their individual requirements, which thereafter can be enhanced and adapted.

However, as good as the cortex can be, it requires the other parts of the brain and body to match its speed.

Algorithms will not provide best support to the chain if other components are not aligned. The solution is only as good as the weakest link.

Add to the Collateral Optimisation Accelerator, the recognised expertise and performance of Quartet FS in real-time loading, aggregation, query and monitoring engines as well as "What-if?" scenario capability, you get a suite of high-performant, open components to match your collateral management needs today, tomorrow and into the future.

- Active Pivot Server : to aggregate, process and query data
- ActivePivot Sentinel: to monitor and control data and process
- ActivePivot Live: to visualise, analyse and share inputs or outputs data

Having entered your family wish list into the holiday optimiser along with your hard constraints and softer restraints, you await the results. As your family can't be in Italy and Berlin at the same time so it suggests a two centre holiday. A city break in Berlin followed by a relaxing beach holiday on the Amalfi coastline at Ravello. You don't want to travel all that way with your little one and you find out from your teenager that he only wanted to go to Berlin because his friend wanted to go there.

No problem: you re-configure the optimiser and it suggests you to substitute Berlin by inviting his friend along with you. You argue that the teenagers will amuse each other leaving time for you to relax and enjoy the sunshine. Here you are—everyone is happy, which makes you happy. Now to optimise those local wines with your favourite Italian dishes. **SLT**

Collateral management: a new era

SunGard and Sapient Global Markets examine how the function is changing

The post-crisis banking regime has obliged financial institutions to make connections between previously distinct classes of risk. The traditional view of a sequential flow of risk has been replaced by an infinite, interconnected loop with collateral and liquidity at the center alongside risk weighted asset considerations.

In particular, change is being driven by the central clearing mandate introduced by the European Market Infrastructure Regulation (EMIR) and the Dodd-Frank Act in the US, together with upcoming rules of Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) on margin requirements of non-centrally cleared derivatives.

Margining effectively transforms counterparty credit risk into collateral, and hence liquidity risk. The new regime creates a symbiotic relationship between collateral management and the management of risk weighted assets (RWAs), for example, netting and collateral is much more recognised by the forthcoming standard approach for counterparty credit risk (SA-CCR, BCBS 279).

The industry is addressing these regulatory-driven changes through a clear trend towards the centralisation of collateral management functions. Typically, the first step towards enterprise collateral management is the creation of a central inventory of assets that may be deployed as collateral, combined with a centralised view of collateral requirements across the trading book and multiple asset classes.

Across the industry, collateral management as a function is changing from an operational cost centre into a profit centre located in the front office. In fact, some practitioners define collateral as a new asset class that will ultimately be traded on organised markets.

The collateral optimisation imperative

As collateral and resource management becomes established as a dedicated business line, it has become more obvious that optimisation is on the menu.

Traditionally, improvements in collateral management have focused on the operational efficiency of the workflows surrounding margin calls and the automation of these workflows. Industry utilities in the form of reconciliation and margin-call messaging platforms have greatly reduced the operational effort required to manage collateral, particularly in the bilateral over-the-counter (OTC) derivatives market. Meanwhile, the collateral platforms offered by central securities depositories (CSDs) shorten the collateral settlement cycle, reduce settlement risk and allow a broader range of holdings to be mobilised as collateral.

Together, these innovations oil the cogs that are driving the next generation of collateral optimisation techniques. The new techniques are increasingly business driven rather than operationally driven. In today's environment of increased capital costs and an intense scrutiny of balance sheets usage, minimising the cost of the collateral required to support a given volume of business is critical to the profitability of financial institutions.

Collateral requirements affect every part of the trade lifecycle. A variety of optimisation approaches must therefore be deployed to minimise the amount of collateral required to support any given set of activities and to minimise the cost of the collateral that is deployed.

It helps to think through these optimisation approaches in terms of a collateral optimisation value chain, consisting of three distinct phases:

- Pre-trade optimisation to minimise the margin requirements and related costs of a given new deal by identifying the optimal broker/central counterparty (CCP) or bilateral counterparty;
- Ongoing optimisation that seeks to minimise the amount of collateral required to support a given portfolio through cross-margining, trade compression and the backloading of trades to clearing; and
- Post-trade optimised collateral allocation to minimise the funding or opportunity cost of the collateral deployed.

Collateral plays a particularly important role in the accurate pricing of OTC derivatives.

Over the last few years, a number of tools, known collectively as XVAs, have evolved to help traders manage and price risk at the inception of a deal. Credit valuation adjustment (CVA), debt valuation adjustment (DVA), funding valuation adjustment (FVA) and the newest addition to the family, capital valuation adjustment (KVA), all reflect certain expected lifetime costs or benefits that dealers need to consider as they calculate pre-deal prices.

Collateral reduces counterparty risks and so has a significant impact on these valuation adjustments. Collateral optimisation, and particularly pre-trade optimisation, therefore represents a step beyond the determination of XVA.

The goal of pre-trade optimisation is to bring together all the cost implications of a trade before its execution.

A new trade will generate certain collateral funding requirements throughout its life, and these can be estimated based on the trade itself, the margin portfolio it will fall under, and the set of eligible collateral and haircut rules governing that portfolio.

The expected collateral funding requirements can then be calculated using collateral transfer pricing techniques.

For buy-side firms, cost transparency helps to compare the different clearing options and to understand profit and loss effects before the trade is executed. It enables the front office to make more sophisticated decisions, engage in more profitable trades and ultimately improve the bottom line.

For sell-side firms, pre-trade cost transparency is a core component in the accurate pricing of derivatives. Building sophisticated pricing models that implement the expected future collateral costs of particular trades is an essential skill when pricing and marketing derivatives.

Better cost control and the ability to price in future costs on a real-time basis will ultimately give firms a major competitive advantage. Various pre-trade techniques have evolved over the past few years, and at the forefront is the concept of 'cheapest to clear'.

'Cheapest to clear' and six essential questions

For centrally cleared transactions, the cheapest-to-clear concept represents the major component of pre-trade optimisation.

The goal of the approach is to help firms compare the different clearing venues and their respective costs in terms of six essential questions:

- **What are the fees for centrally cleared transactions?** The fee comparison includes the processing fees required by a CCP as well as the fees charged by the clearing broker. The comparison is relatively simple to generate since the fee structures applied by brokers and CCPs are transparent. Both volume-dependent and fixed costs need to be displayed and can therefore form part of the pre-trade cost assessment. With broker fees rising as a result of the tighter leverage ratio requirements imposed by banking regulators, the importance of fee comparisons is likely to increase.
- **What are my future initial margin requirements?** Strictly speaking, this question belongs within the topic of XVA analysis, however, the answer is fundamental to the cheapest-to-clear concept so we include a brief discussion here. The pre-trade approximation of initial margin requirements requires a sophisticated approach involving a live simulation of each CCP portfolio. Based on this simulation, the impact of a new trade then needs to be defined at the portfolio level. The purpose of the initial margin calculation is to determine the portfolio/CCP that will minimise the overall initial margin requirements, and also to adjust the deal pricing to reflect the cost. The comparison per portfolio or CCP is a key component in the selection of a central clearing venue and needs to be incorporated into the overall cost equation. An approximation can be performed using the concept of incremental initial margin, for which most of the CCPs offer calculation modules. Although incremental initial margin is calculated on a portfolio basis, the concept assumes that initial margin is constant over the lifecycle of the trade.
- **What are my future variation margin requirements?** Comparing future variation margin requirements involves forecasting the variation margin of a trade before the trade is executed. The result is dependent on whether the CCP allows portfolio- or cross-product margining and on the composition and quality of the portfolio at a particular CCP. Another component of the analysis is the potential for conducting portfolio compression or close-out trades. Future variation margin requirements are simulated after considering cross-product margining, portfolio compression and the potential for close-out trades. Finally, funding costs are added to margin requirements and discounted.
- **What is the default fund contribution?** Default fund contributions are calculated using proprietary calculation models developed by the CCPs. The contributions are based on a number of specific variables and therefore it is reasonable to make a pre-trade comparison of the costs associated with the contribution. The specific methodology for deriving the contribution is generally not disclosed to the markets. However, direct clearing members or clearing brokers sometimes have partial access to the default fund contribution calculation models or have their own models, allowing them to estimate the amount likely to be demanded. Non-direct clearing members should therefore make use of the services offered by clearing brokers or CCPs to consider default fund contribution costs on a pre-deal basis.
- **What are my real collateral costs?** After fully assessing the impact of a trade against each possible CCP in terms of collateral requirements, firms must translate these requirements into their likely internal costs and compare them. The implied collateral cost of the trade should take into account the available collateral inventory and any opportunity costs. Depending on the CCP's haircut schedules, it may be cheaper to clear the trade through a given CCP even if the simulated requirements are higher than for other clearing venues.
- What are my current counterparty limits? As for any optimisation process, all internal and regulatory constraints should be considered. In a holistic approach, all possible CCPs should be assessed after taking into account the relevant exposure limits. The optimal strategy may even be to split the trade across several counterparties.

Pre-trade collateral optimisation is a powerful tool for controlling the cost of collateral associated with a new trade. Our discussion has demonstrated how a pre-trade cheapest-to-clear analysis can help a firm decide which broker and CCP to use for a new trade, in order to minimise the incremental cost of collateral.

As new rules are implemented that govern the margining of non-cleared OTC derivatives, these same principles will become relevant for bilateral trades and the selection of optimal counterparties.

The principles are not only relevant for pre-trade analysis. Ongoing margin optimisation analysis can help identify opportunities for the compression or backloading of trades in order to reduce overall portfolio-level margin requirements.

Post-trade: mobilising the inventory

The final set of levers in the collateral optimisation value chain is applied after the trade is made, with the key aim of optimising the allocation of collateral assets.

Collateral inventory optimisation allows the firm to post the 'cheapest-to-deliver' collateral after considering funding capacity and liquidity ratios. The most advanced algorithms identify within a single process the collateral that should be posted, and the collateral that should be kept, with the aim of minimising costs and maximising liquidity.

Recent studies performed by both Sapient and SunGard demonstrate that significant savings can be achieved through the optimal allocation of available collateral, and that these savings can be quantified. Post-trade optimisation results vary according to agreements quality, inventory structure and internal funding costs. Our studies demonstrate that improved performance in the range of 3 to 10 basis points can be achieved on a typical bank portfolio of collateral requirements and inventory, after implementing a collateral optimisation programme.

The benefits offered by collateral optimisation techniques go beyond minimising costs. The same techniques can be used to maximise the liquidity potential of the available inventory. This is increasingly important because the liquidity coverage ratio and net stable funding ratio introduced by the Basel III regulators represent binding constraints on short-term and medium- to long-term liquidity strategies. The ratios force banks to set aside a larger amount of liquid assets or to curtail businesses that consume liquidity. Collateral optimisation, on the other hand, mobilises liquidity and allows firms to conduct more business. **SLT**

Managing margining

What is the best way to work through complex calculations while remaining flexible? Andy Davies and Charlotte Griffiths of CloudMargin take a look

The 2008 financial crisis and the years following have had an unprecedented and drastic impact on the perception of collateral management and the importance of its processes—most importantly, how operations execute their work. The regulatory demands born out of the crash have seen a rise in central clearing for over-the-counter (OTC) derivatives, use of trade depositories, tightening eligibility criteria, Basel III capital charges and a change of internal counterparty credit risk management practices, to name but a few constraints pushing operations departments to their limits.

Regulation enforcement continues to create challenges and pressure on the day-to-day workflow of asset managers, as well as heighten awareness to stay compliant with regulators, avoiding the fines, penalties and the huge reputational damage non-compliance incurs. The profound operational changes are highly demanding for those asset managers who have never before had a structured collateral operation in place to manage and collateralise their OTC derivatives, and companies need to be in a position where they can strategically evaluate their data management, and then implement a solution to meet these strenuous demands. Not only do firms need to keep up with these changes, but these financial institutions also have to comply with many regulations, which on the face of it often state the same thing but can differ greatly in the detail.

The use of swap execution facilities (SEFs), a current regulatory requirement in the US that firms have to begrudgingly abide to, is a prime example of a significant market change born out of the 2008 crisis. The Dodd-Frank Act sought to reform and regulate OTC derivative markets by mandating reporting to trade repositories and clearing on central counterparties (CCPs), as well as pushing trades onto regulated platforms wherever possible. Although the purpose of SEFs was to improve transparency and reduce the size of opaque OTC markets, one could suggest that the fragmentation of the market into multiple SEFs has created needless costs and inefficiencies that are affecting the ability of asset managers to trade, due to ever growing complexities and differences between jurisdictions.

In the UK and the rest of Europe, market participants now need to provide in-depth reports to meet the requirements for transparency set upon them by a number of regulatory constraints. European Market Infrastructure Regulation (EMIR) trade repository reporting for derivatives is but one, an expensive and onerous process that firms in the US not subject to EMIR can avoid.

Although an effective technology solution with direct links to numerous trade depositories can alleviate the strenuous demands put on buy-side firms, there are still radically different trade reporting requirements in different jurisdictions and these can be difficult to tackle.

These requirements of different jurisdictions have created unwelcomed disturbance. Cross-border regulations are an ongoing and almost tedious discussion currently being held in the financial services industry and it is not uncommon for buy-side firms to stop doing business with parties from other jurisdictions until those brokers have established legal entities within their own jurisdictions.

Unsurprisingly, with regulatory deadlines constantly changing and the phased implementation dates being pushed back, regulations can often seem unmanageable. It is hard enough for firms to know what they need to do and when, let alone have a technology solution in place to facilitate it.

Without adequate resources, operations cannot carry out important functions such as managing margin requirements effectively or efficiently. Already complex margining calculations will become even more complex and pressure will start to increase for firms trying to take control of their collateral management. Add in the variety of regulations across multiple jurisdictions that can change depending on a range of different business scenarios and managing collateral efficiently almost seems an impossible feat.

The demands of regulatory changes needn't be a hindrance on operational departments if they equip themselves with the right technology to tackle the challenges head on. This is where disruptive technology solutions with very fast development cycles come into play. Firms, especially those operating across different jurisdictions, should be looking for a variety of key elements when it comes to dealing with collateral management's ultimate objectives: mitigating credit risk and systematic risk. Tackling margining requirements and complex calculations effectively while staying flexible enough to adapt with evolving regulations and the requirements of different jurisdictions is essential.

Firstly, the most efficient and effective way to work through complex calculations, while staying flexible to the changing world of regulation, is to utilise software designed for the specific task in hand. Utilising a best-of-breed solution that addresses a specific issue can drastically reduce pressure on a variety of different business functions. Increasing the ease in which financial institutions can remain compliant with regulation without increasing resources or departing with a large amount of money is vital.

Faced with the sky-high costs of updating their core technology system, many firms go with the seemingly low-cost option of a spreadsheet, opening the door to an increase of human error and non-existent audit trail. Fundamentally, the buy side should not be relying on spreadsheets for any critical business function, especially one as high profile as collateral management.

According to AcadiaSoft, more than 90 percent of the buy side still use spreadsheets as opposed to external software technology, and spreadsheets will always represent a significant risk to businesses when relied on as the sole mechanism to record, manage and report derivative calculations.

To follow, it is not only important to have a solution in place that is fit for purpose, but a solution that is agile, flexible and easily changeable to fit that of the unsettled regulations it manages. With a number of regulatory changes already set in motion for the coming years, it is very important that firms stay flexible to these changes and have a system in place that does not require a large upheaval every time a new regulation is put in place or something changes.

The right technology solution will have frequent low-touch updates of the system with zero client impact, easily achieved for platforms delivered as software-as-a-service (SaaS), impossible for the legacy platforms of yesterday still being marketed by vendors. Effective solutions will also have automatic links to trade repositories and provide EMIR reporting functionalities out of the box.

Therefore, as new regulations, or adjustments, come into force that affect a buy-side firm, these changes would be quickly implemented by the SaaS provider, eliminating the need for firms to worry about how to remain compliant.

This can be highlighted with the European Securities and Markets Authority's (ESMA) announcement for another set of trade reporting validations (the second level), leveraging the experiences from the first level. The improvement of the inter-trade repository reconciliation process will now be a key field of action when it comes to ensuring better data quality, and a variety of changes are set to be made to enforce this.

Having a technology in place that allows you to adapt to these changes with ease is of great benefit. The technology provider takes on the majority of the workload, providing it has all the relevant information from the client, and makes the implementation of new guidelines seamless. Most importantly, the flexibility of these SaaS solutions and the speed in which they can be updated eliminates the need for operations to worry about whether they will remain compliant in times of market change.

Large legacy vendors and in-house systems lack the ability to react to market changes and have huge lead times in terms of implementing an infrastructural change. If regulation restrictions continue to evolve at the speed to which we are accustomed, then these systems simply do not allow for the buy side to adapt to regulatory changes as fast as necessary without plugging the gaps with spreadsheets.

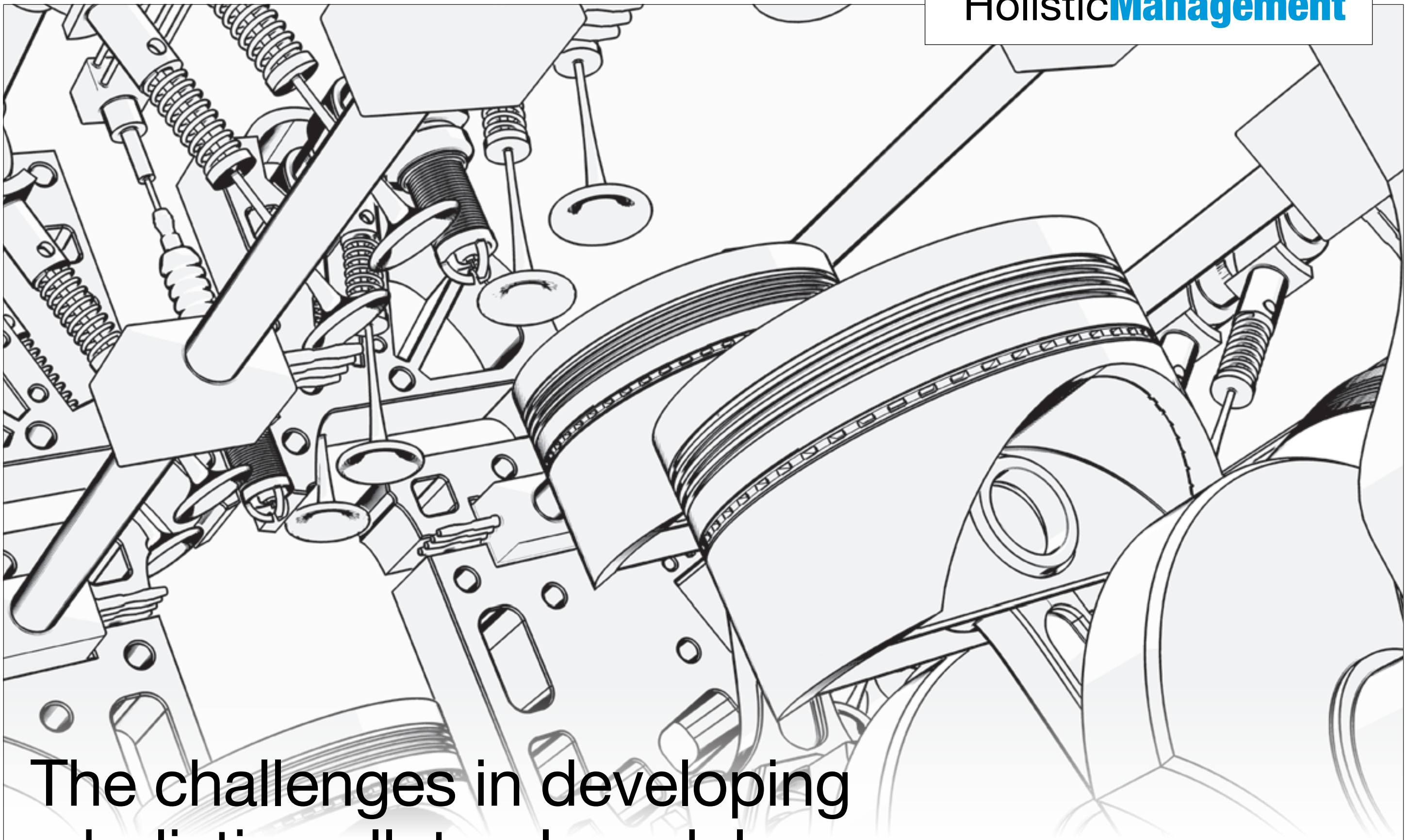
Therefore, to remain malleable it is essential to not tie your operations or treasury department to long term and restrictive contracts with vendors or suppliers that will prohibit your ability to adapt to changing business needs and regulatory pressures. Committing yourself to long-term contracts essentially impedes a firm's ability to grow with the changing world around it and that limits the extent to which it can carry out processes, such as margin management, in a proficient and competent manner.

Another key component is data visualisation to identify trends, risks and spikes, allowing you to make better informed business decisions. It is a necessity that firms have real-time, exception-based visibility across all collateral books with errors being automatically identified and quickly resolved. True cross-product visibility opens the door to the margin efficiency of netting and the ideal collateral technology solution presents the user with the ability to make the right business decisions based on the data, without the poor visibility that traditional methods of managing collateral impose.

In summary, for buy-side participants to have more clarity over their decisions, they need more control over their collateral management process. To do this, it is vital that any firm challenges the status quo, independently questioning and validating the data received from their brokers. Put simply, firms should be proactive about the calculation of a margin call or recall, and not blindly accepting of the brokers' numbers as was the norm—in this time of market upheaval, banks are no longer infallible or unchallengeable. Having a technology solution in place that allows buy-side participants to do this gives increased control over the collateral management process and as a result, the buy-side can better prepare for future regulatory upheaval. **SLT**

Andy Davies
CEO
CloudMargin

Charlotte Griffiths
PR and communications manager
CloudMargin



The challenges in developing a holistic collateral model

More onerous capital and collateralised trading demands require firms to consider changing their processes if they want to remain competitive, says Nick Nicholls of GFT in an extract from an upcoming whitepaper

Against the backdrop of the ever-increasing importance of collateral to trading, risk and capital management, holistic management of collateral is rapidly becoming a necessity.

The process changes needed to support holistic collateral optimisation and management will directly affect the organisational structure, systems infrastructure, trading and pricing practices of sell-side institutions.

For the more ambitious investment banks that aim high, the prize of full optimisation requires closely aligned collateral, financing and trading areas within an organisation. Some firms, however, have yet to experience this epiphany and are instead focusing on compliance and continued operational stability, rather than efficiency and business opportunity.

Firms should seek to embrace this opportunity through the holistic management and optimisation of collateral. They should also urgently begin implementing the process and infrastructure changes required to achieve this end, as well as the challenges.

The challenge of achieving full optimisation will not be easy to overcome for firms. Breaking through divisional silos to facilitate best practice management of collateral, liquidity and funding remains difficult.

However, we believe firms should set their ambition levels high. The benefits of implementing a holistic collateral optimisation model will allow firms to positively thrive over the next five years.

What is optimisation?

The International Swaps and Derivatives Association's (ISDA) 2014 Margin Survey explains: "Optimisation refers to the ability to post and re-use collateral according to delivery preferences such as cost of funding and delivery, liquidity and market capitalisation, embedded haircuts in the credit support annex (CSA), availability of assets to the delivery party, cost of reinvestment and yield, ability to re-use and risk."

This speaks to rate of return by eligible assets versus internal cost of funds and is key to economic optimisation. Determining how best to allocate those assets means considering eligibility against the range of unencumbered assets available in inventory and in the market as a whole to determine what is cheapest to deliver, and to ensure best use is made of a firm's own security positions.

As a result, identifying and utilising eligible assets becomes the role of a secured financing desk.

Collateral optimisation can be performed across any collateralised product, cleared or non-cleared. If we broaden the scope beyond over-the-counter (OTC) derivatives, we can apply the same fundamental principles to repo, stock loan and listed derivatives. Indeed, if we were to extend the ISDA definition above to additionally encompass liquidity, regulatory capital, concentration risk and front-office pricing visibility, then the scope of collateral management and optimisation becomes virtually all-encompassing.

The regulatory challenge

The introduction of Basel III has seen many banks struggle to deal with liquidity and capital requirements. This has emphasised the need to make improvements in their management of collateral.

Basel III introduced two new liquidity measures, the net stable funding ratio (NSFR) and liquidity coverage ratio (LCR) in response to the 2008 banking crisis. Implementation of these has been staggered, with the LCR being phased in from January 2015 and NSFR expected to be effective from January 2018. The increased demand for high quality liquid assets (HQLA) to satisfy these ratios is already affecting the market, and will have increasing impact over time as the phase-in of ratios continues.

If dealing with more demanding liquidity and capital requirements was difficult enough for banks, they are now being asked to do so with one arm tied behind their back through the full introduction by 2018 of the Basel III leverage ratio, which will have a huge impact on collateral flow and management within investment banks.

Counterparty credit risk

The defining purpose of collateral is to mitigate counterparty credit risk. However, collateral characteristics from a counterparty credit risk mitigation perspective, such as asset quality, tenor and concentration effects, allow additional degrees of freedom in terms of collateral selection with attendant capital, balance sheet, liquidity, funding and other cost components.

This in turn directly shapes the profitability of the trading activity that the collateral supports.

The way in which firms manage collateral while fulfilling counterparty credit risk mitigation needs varies greatly. The cost/price of transactions is driven by considerations such as risk-weighted asset (RWA) impact, for margined and non-margined exposures.

The ability to assess per-transaction cost is difficult enough. Being able to optimise and tune client transaction costs raises the challenge to a whole new level. For most banks, this remains an elusive aspiration.

A fully holistic approach

Traditionally, collateral management has been a largely operational concern, but as the complexity and number of key moving parts increases, collateral optimisation is becoming a more front office/treasury-centric function.

In order to assess a full optimisation model, we should consider the key individual elements:

- Electronically codified legal agreements which allow better data management;
- Economic decision making;
- Process and exposure management and control;
- What-if pre-trade pricing, inclusive of collateral costs to begin any process; and
- Transfer pricing of collateral sources and uses, complete the circle by sending costs/benefits back to the trader at the transaction level with transparency on how those costs were borne and distributed.

We believe that many firms do not operate with fully holistic collateral management and optimisation models. The objective should be to create a holistic model for collateral, with centralised funding and management.

In such a model the ownership of the various parts of the collateral process remains clear and separate but interdependent, and within one central funding function, which includes inventory management under a trading function. Defined risk/capital management compliment liquidity management functions alongside trading. Cash and collateral management support the central business franchises. The unit as a whole will support client-facing trading franchises.

The centralised funding and collateral management organisation is supported by:

- Exposure and funding/liquidity requirement feeds resulting from client facing transactions;
- Single-source collateral documentation and reference data stores;
- Settlements supporting real-time settlement status updates; and
- Accounting areas distributing reporting, profit and loss, and transfer pricing to client-facing businesses and centralised funding and collateral management.

This model will reduce costs and allow trading strategies which may enhance revenues within a control framework.

The more encompassing the collateral process, the more efficiencies you will gain. Cost reductions will reach across commercial and operational aspects of the collateral process.

Automation is key. Collateral processes must be able to cope with increased margin calls and substitutions. There has to be a move to managing by exception within the call process unless headcount cost is not an issue.

Advantage should be taken of market facilities such as triparty and cross-border trade settlement facilitation, which reduce settlement risk. The processing of collateral pledge transactions also needs to be automated once agreed and authorised.

Determining responsibility

Determining who within the organisation should ideally be responsible for particular functions within the collateral process is often unclear. Legacy structures and lines of responsibility, forged when collateral management was a purely operational concern, are commonplace.

Yet as organisations and the markets mature and evolve, especially as the management of collateral and its optimisation allocation acquire more trading and quantitative dimensions, the organisational structure, processes and responsibilities must similarly evolve.

Once a firm understands that this is a sub-set of capital, funding and liquidity management, the appropriate areas themselves will almost inevitably also drive organisational change.

Where a function sits and what level of authority each area has within the collateral process will depend on the willingness within an organisation to bring similar functions together.

The merit of doing so will depend on each firm and the level of cross-divisional cooperation that currently exists.

Commercial decisions are best handled by those with the deepest understanding of the market within which they operate.

Combining or aligning business areas such as equity and fixed income secured financing desks with a further alignment to unsecured financing and liquidity execution desks may be the best way to draw economic benefits from any collateralised trading process.

Providing a streamlined front-to-back business process forms the core but will require supporting processes to ensure full optimisation.

Without taking a holistic, joined-up approach, achieving an optimal approach is difficult, leading to inefficiencies and areas of stress.

Although improvement in any part of the collateral process will bring with it substantial benefits, an all-encompassing full optimisation approach will reap the greater rewards.

Regulation is affecting the cost of liquidity and capital, which has to be priced into the transaction. Better use of assets and framework and workflows that minimise costs associated with collateral will assist firms in remaining competitive.

Taking each section of a front-to-back collateral process targeting an operating model and examining workflows within it, compared to those of your organisation, may produce a heat-map of where the greatest advantage can be reaped by change.

Looking at one specific area, such as cheapest to deliver using a standalone algorithm (for example, GFT Collateral Optimiser), may lead to a swifter conclusion and provide a proof of concept that shows how cost savings would be increased.

Doing nothing is not an option. More onerous capital and collateralised trading demands, require firms to examine how they can change their collateral processes if they want to remain competitive. Firms that get this right will not just be surviving in another five years—they will be thriving. **SLT**

Nick Nicholls
Principal consultant
GFT

Is a new day dawning?

The day of an industry-wide collateral utility ecosystem is dawning, says David Field of The Field Effect

You might forgive firms trading non-cleared over-the-counter (OTC) derivatives for breathing a collective sigh of relief and focusing on more urgent matters now the margining deadline has moved back. But that is far from the case. There is a huge amount of work to do across the industry in a space where solutions are still being invented around us. This article outlines the emerging vendor innovations, the challenges of fitting them together in to a 'utility ecosystem', and the key disciplines needed to form an effective change programme to meet next year's deadline.

Margin requirements for non-cleared OTC derivatives

First, a little background for readers unfamiliar with the regulations. In order to reduce systemic risk and to promote central clearing, the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) have set out margin requirements for non-centrally cleared derivatives. Counterparts must exchange initial margin on a two-way non-nettable basis, potentially giving rise to Herstatt risk, and must exchange variation margin in the currency of the underlying swap (or accept a haircut). Other requirements include maximum thresholds and minimum transfer amounts. This is a huge departure from how the industry has operated historically.

To add to the challenge, if a margin call cannot be agreed between the parties within five days, it must be reported. If more disputes arise, the margin period of risk (MPOR) could double, and double again, driving up the quantity and cost of initial margin. The industry must therefore urgently find ways to avoid disputes. But historically there has been no mechanism (or need) for agreeing risk sensitivities or risk factor levels, without which margin numbers can't possibly agree.

Utility ecosystem

The day of an industry-wide collateral utility ecosystem is dawning, and may be about to provide some answers. Some utilities are market-owned/market-governed, while some are commercial/for profit. Each model has its merits. Market-owned utilities offer participants a say in its direction and a stake in the outcome, offset by the governance challenges of decision-by-committee. Commercial ventures should be able to make decisions quickly to exploit market gaps, unconstrained by the delays of committee governance, but may find it harder to get enough industry backing to reach critical mass. Survival will be Darwinian.

Based on our work with sell side, buy side, custodians and triparty agents, The Field Effect has encountered or worked with many of the utility providers. Let's take stock of some of the players.

The much-anticipated 'son-of-Project-Colin' announcement in July 2015 by AcadiaSoft, TriOptima, the Depository Trust & Clearing Corporation (DTCC) and Euroclear promises an industry-wide margining hub by linking together services from each player. The solution extends triResolve portfolio reconciliation into risk factor sensitivity matching, combines MarginSphere 2 margin call and collateral matching with the Margin Transit Utility (MTU) for settlement instruction enrichment using Omgeo's SSI service, enhanced with instruction issue and tracking. It's a complex suite of functionality, messaging and data transfer, but with the backing of 13 global banks, surely success is assured. But while the investor backing is impressive, at the time of writing we have yet to see any functional or architectural detail and can only imagine the governance challenge of satisfying such a wide stakeholder group.

> "Market-owned utilities offer participants a say in its direction and a stake in the outcome, offset by the governance challenges of decision-by-committee"

Nor does the AcadiaSoft/TriOptima initiative have the playing field to itself. NetOTC has been developing a margining and dispute management service for some time and may have a head start with detailed requirements and technical build. Originally conceived as a multi-lateral netting service, the focus now is on meeting the more urgent requirements for bilateral margining. As a commercial service it can generate and pursue new ideas at will, and has highly innovative features that avoid initial margin settlement risk, and offer a reduction in initial margin quantity equivalent to netting.

NetOTC also promises a choice of margining models, not just standard schedule and the International Swaps and Derivatives Association's (ISDA) standard industry margining model (SIMM), but also their own historical value-at-risk model, which claims superior spread risk modelling. NetOTC's challenge is to generate enough industry backing to bring the service to market.

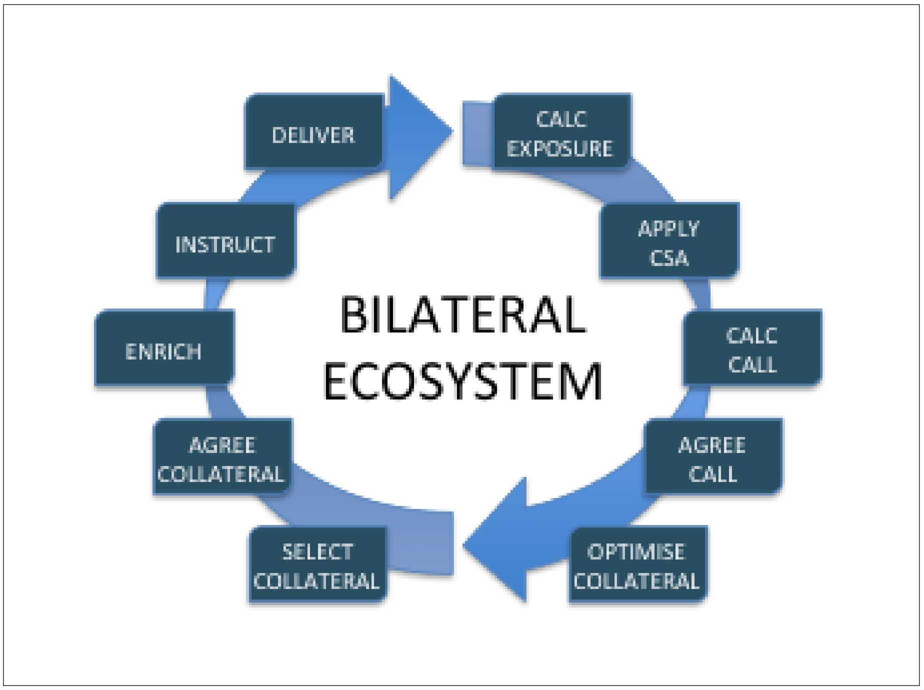
While there may be some competitive overlap in the two services, in our opinion each has specific strengths and the industry would be well served if the solutions would inter-operate. The question is: how?

Third-party margin calculation services such as OpenGamma, TMX and others have been quick to spot the opportunity to margin non-cleared OTC, and could play a role in utility solutions. Derivatives processing systems such as Calypso have also announced margining functionality for non-cleared OTC, and of course offer rich front-, middle- and back-office functionality on-premise or as a service. Many of these services also simulate collateral required from central clearinghouses by replicating margining models from the likes of LCH.Clearnet, CME, ICE and others. Through this mechanism they support the need for firms to optimise allocation of collateral across multiple demands, both cleared and non-cleared.

Utilities are also springing up in related areas such as documentation. The rules around exchanging collateral are typically captured in an ISDA credit support annex (CSA), a complex document containing legal terms related to eligibility, haircuts, currencies, interest rates, termination events and so on. CSAs are notorious for the difficulty they present in extracting high quality golden source reference data that can be consumed efficiently by the many and varied systems that need them. The new regulations will force some new standards on terms such as minimum transfer amounts (MTAs) and thresholds, so firms face a major re-papering challenge. Banks will have to margin all trades after the compliance deadline under new CSAs, but are entitled to continue margining legacy trades under the old rules. So both sets of CSAs must be maintained and managed.

Third-party utilities such as Recommind's Perceptiv service offer ways to streamline extraction of structured CSA information from unstructured 'legalese' to create accessible golden source data. Perceptiv has the backing of three major investment banks, with the promise of more coming on board to create an industry-wide solution. But new players are also emerging in this space, such as Logical Construct, which offers solutions for locating data in scanned contractual documents across a wide range of business areas, including CSAs.

Crucial to the emerging infrastructure are the triparty agents. Euroclear and Clearstream both offer smart mechanisms for accessing assets locked up in previously inaccessible places to enable allocation as collateral. Their Highway and Hub solutions differ, but both enable collateral givers to allocate assets to collateral takers in a way that is faster and cheaper, dramatically increasing the velocity of collateral. In our opinion, triparty is essential infrastructure to support the future industry landscape. As collateral and cash become increasingly interchangeable, we believe CLS has a growing role to play, and first steps have been taken with the recent joint LCH.Clearnet announcement offering cleared FX options. SWIFT is also playing a role in connecting everything together, with the development of new collateral messaging standards.



How to decide?

Every firm must make a set of interlocking solution decisions: build or buy, in-house or utility, best-of-breed versus composite solution. Some utility vendors cooperate and some compete, so each decision has implications for other selections. How to make sense of it all? We urge taking a holistic view of the target operating model. Our experience indicates that mapping end-to-end business process is the essential discipline to inform solution design and decision making, helping identify how to make the ecosystem work for your firm.

Designing every single business process is not necessary for solution design. We recommend focusing on the narrow set which have the most architectural significance.

These will be similar across many businesses, even if expressed in different language, and we suggest the following model might be a good place to start.

In our experience there will be several knotty problems to resolve while you are designing the target process. They will differ by organisation, but by way of an example here are a couple we have considered:

Reconcile or call? Should you reconcile risk sensitivities and margin calculation before making the call? This will ensure that the call is correct before it is issued. Or should you issue the call and see whether it is agreed by the counterparty, only invoking the reconciliation process if an investigation is required?

Optimisation and transformation? Many firms continue to invest in improving optimisation and transformation capabilities. How should these functions be integrated into the non-cleared margining workflow?

Five steps to Heaven

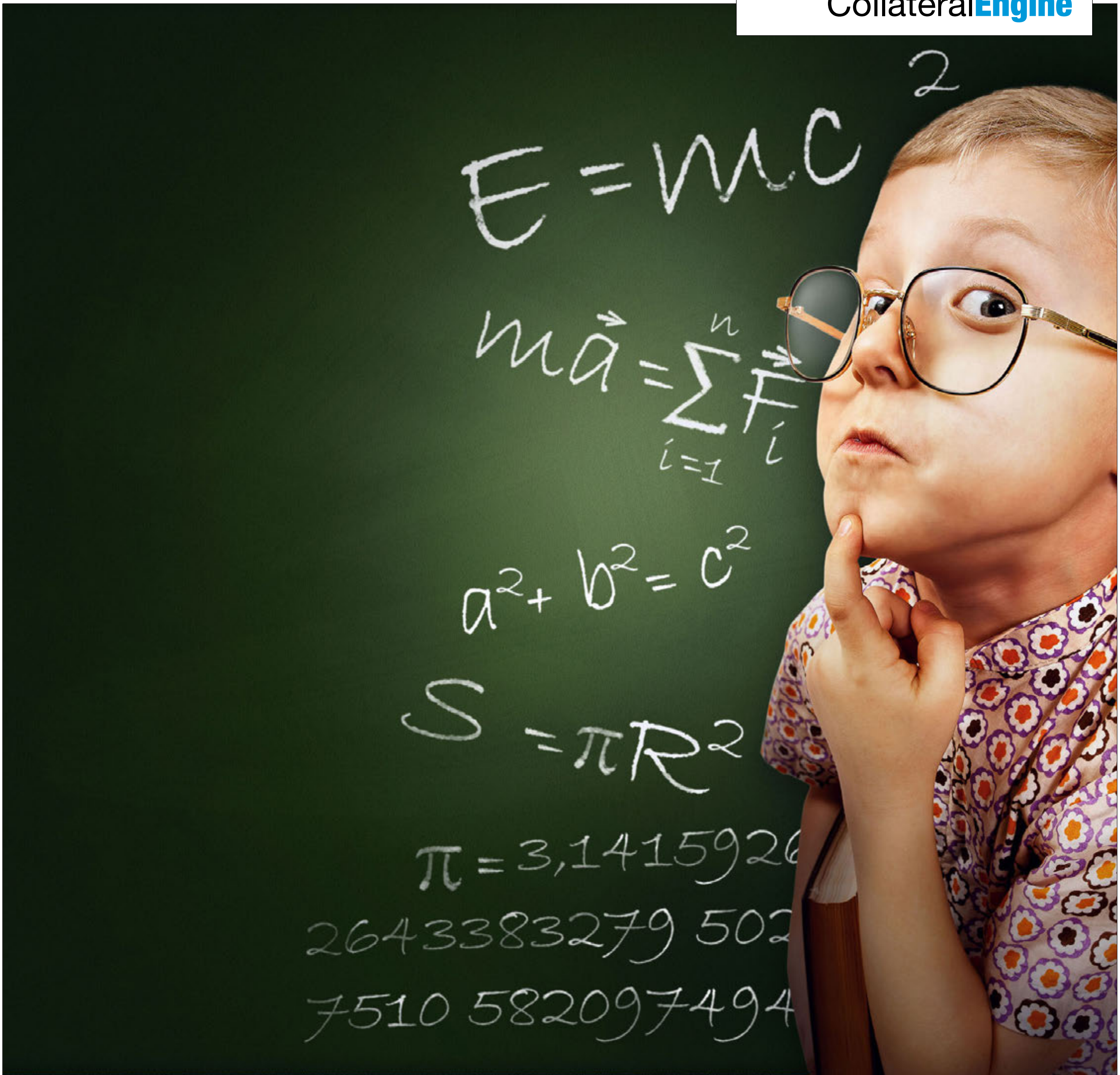
Clearly, there is a lot of work to be done. We have been working on change projects in the cleared and non-cleared markets for many years, and we would like to share some of our experience helping firms design target operating models quickly and effectively:

- **Define your vision, set your objectives, measure your goals:** set out strategically what you want to achieve to paint the 'big picture' to steer decisions. This may seem obvious or even trivial, but many firms fail to articulate it and then wonder why change initiatives fail to deliver the vision.
- **Pain points, opportunities and gaps:** examine your current state architecture and processes, find what makes it a manual or painful process. Identify opportunities (freeing up staff, speeding end-to-end process, reducing cost, and so on) and define gaps. See where you should be doing something and plan for that. Test the target operating model against everything you have captured, to ensure you are addressing as many of the pain points, opportunities and gaps as practical.
- **Processes, activities, tasks:** so, how do you define a target state? Where do you even start? We think of a target operating model as the alignment of people, process and technology—starting with process. Each process has a number of activities, made up of tasks containing steps. That is an incredibly useful approach, as it breaks the target state up into easily manageable chunks, but allows us to link people, processes, technology, data and locations and start to drive out the functions and datasets.
- **Channels:** with a diverse set of utility solutions and in-house systems, there will be numerous touch points with external actors. Each must be understood in terms of data standards, messaging and service qualities.
- **Data:** it's pretty obvious that data quality and standardisation are critical to the solution. Once you understand all the datasets, their format and content you can begin to design a data model. Industry experience with trade reporting regulations demonstrated the continuing challenges of data quality. Demand for quality data just increased—we now need standardised risk factor sensitivity data, which can be extraordinarily hard to produce, and is often held in completely different systems. Collation and transmission of this data is going to be a major challenge for many firms.

Analysing these dimensions will uncover the information needed to evaluate competing utility solutions and design the optimum target state for your firm. Appropriately modelled, you will be able to efficiently drive out business requirements, vendor requests for proposals, technical specs, plans and business cases.

Whatever approach you adopt, these key disciplines will be needed to form an effective change programme to meet next year's deadline. **SLT**

David Field
Founder and managing director
The Field Effect



A clever balancing act

Simon Lillystone of SmartStream considers how financial services firms can meet their collateral requirements

Moves by regulators to drive vanilla over-the-counter (OTC) deals through central clearing have created a huge demand for additional, good quality collateral. Financial services firms now also face a fresh hurdle in the form of new margin requirements for uncleared OTC derivatives. These rules, drawn up by the Basel Committee on Banking Supervision and the International Organization of Securities Commissions, will be phased in from September 2016.

The impending rules will affect all financial services firms and systemically important non-financial entities. Firms dealing in non-standardised OTC derivatives will, in a similar fashion to the cleared derivatives, be obliged to post both initial margin and variation margin. Initial margin will be required from both parties and not just from the weaker party, as was traditionally the case, and will be collected on a gross basis, precluding the possibility of netting. Variation margin will be calculated and aggregated at the currency level, placing further strains on overall collateral requirements. Collateral, which must be high quality and highly liquid, will have to be kept segregated with third-party custodians, in case of default by the posting party.

In response to these regulatory challenges, as well as to the general scarcity of high quality assets and the lack of liquidity in relation to certain assets, financial services firms are reconsidering the ways they allocate collateral when margin calls are made. Organisations want to make sure that their inventories are exploited as cost-effectively as possible.

Some also wish to move away from the most currently popular form of collateral—cash—and make greater use of the securities they hold (without diminishing potential trading opportunities). Firms are seeking to maximise the value of their assets, whether through trading activities or collateralisation. Trading desks, along with collateral managers, are keen to understand which assets should be preserved for use as collateral and which, potentially, are available for trading.

Traditionally, collateral managers have taken a single-threaded approach to allocating collateral to margin requirements. However, deciding which is the optimal asset to use in relation to a particular requirement is a challenging task, especially when there could be tens or hundreds of margin calls to satisfy at the same time. The collateral manager must pinpoint the cheapest to deliver collateral and balance this against a number of restrictions, for example, eligibility rules and concentration limits.

Additionally, they must weigh up funding costs, as well as the impact of haircuts and impending corporate actions on allocation strategies. The collateral manager must also take into account the opportunity cost: should an asset be used as collateral or would it be better to trade with it?

To assist them in this activity, some collateral managers make use of a preference-based system, which ranks the assets in a firm's inventory according to pre-defined criteria. Of course, this has many advantages over simply relying on the collateral manager's instinct and operational expertise. Indeed, using a preference-based system is still the approach of choice for many financial services firms. There are some drawbacks to employing a preference-based model. The rankings system on which it is based may alter, depending on a firm's circumstances and other factors, and so a means of keeping this up to date is required. It may also not allow the wide variety of parameters—for example, haircuts, which must be considered if a truly optimal allocation is to be arrived at—to be taken fully into account.

Given the many variables involved, achieving a multi-threaded optimal allocation is a highly complex, challenging task. For firms looking to break away from the preferential approach another avenue is open—advanced collateral optimisation technology. Some larger financial services institutions have already opted to develop this type of technology.

Development in-house can, however, be technically challenging, time-consuming, and require a large number of specialist resources. In contrast, other companies are looking to access the collateral optimisation capabilities offered by service providers—and with it the still-nascent concept of collateral transformation (a premium service where the clearing member accepts lower-grade assets from the clearing client and posts higher grade, eligible collateral to the clearinghouse). Yet other firms are looking to take advantage of the collateral optimisation technology developed by third-party vendors.

A highly advanced example of vendor-developed collateral optimisation technology is SmartStream's TLM Collateral Optimisation module. This is a powerful, algorithmic optimisation engine, and the module is available as an optional component connected to SmartStream's TLM Collateral Management application. This connectivity enables the simultaneous optimal satisfaction of multiple margin requirements with all the necessary collateral movements derived from the available, eligible inventory.

The results of this process then feed seamlessly into the margin call workflow for approval and downstream delivery to settlements. By avoiding the traditional sequential approach to allocating collateral of margin calls, and by simultaneously performing multiple calculations and allocations, using a large number of parameters and constraints, the collateral optimisation module can understand not only the liquidity of all the assets available, but also their suitability to a firm's circumstances. This sophistication, as well as the system's ability to handle great complexity, makes it a particularly apt choice for organisations with diverse portfolios of assets and large numbers of daily margin calls.

The collateral optimisation module is also compatible with other technologies and so can potentially be used by organisations that have alternative systems already in place. The module is web-based and therefore easily deployable. It meets the new focus of firms that see an emerging type of centralised, middle-office 'collateral management'—one where a holistic approach for asset use is key. Such an approach also helps firms develop their strategies for asset optimisation ahead of the introduction of new regulations.

Traditionally, the siloed approach taken to collateral management made it difficult for firms to form a centralised view of their collateral inventory, and predictions of liquidity throughout the day. SmartStream's collateral optimisation module overcomes this drawback, consolidating all the required data and providing collateral managers with a view of margin requirements, side by side with the global inventory of available assets. The organisation-wide, centralised picture created by the module allows those responsible for optimising assets to be cognisant of trading opportunities. The web-based approach means that traders and trading desks can also get instant insights into the available inventory.

In the past, the approach to collateral management was essentially benign: collateral often remained with a counterparty until a change in margin requirement prompted its return. Alternatively, a corporate action, such as a coupon, dividend or maturity might give rise to a substitution request. Financial services firms now want to keep a far closer, even intra-day eye on the inventory they have posted out and taken, so that they can decide whether it is more profitable to continue using a particular asset as credit support, or whether it could be used more effectively elsewhere.

To assist, SmartStream's collateral optimisation engine can be configured to balance and rebalance positions, assessing whether the current use in one or more cases is optimal or suboptimal. Where the engine detects an imbalance—new assets may have become available, prices altered, or haircuts change—it can propose a series of substitutions in and out of the inventory, which can then be approved by the collateral manager. These suggested movements, which are often interrelated and require careful management, assist the collateral manager to decide which pieces of collateral it would be most cost-advantageous to take away or give back. Part of the optimiser's strategy in this regard will be to take into account the operational cost and settlement risks associated. Organisations are also able to set up their own schedules, giving an added degree of flexibility.

Through the use of this advanced collateral optimisation technology, firms can achieve significant annual cost savings, depending on strategy. During a recent exercise with a client, a major European bank, application of the solution demonstrated that by utilising the rebalancing function, the bank could have saved some €70 to 80 million. More remarkably, as much as 80 percent of this cost saving could have been derived from processing the top 10 substitutions proposed by the collateral optimisation engine.

In summary, with new regulation looming and a shortage of high quality collateral available, firms need to rethink how they make use of their collateral they have at their disposal because cash may no longer be king. Underused assets need to be exploited more fully and by employing highly sophisticated collateral optimisation technology, firms can make their inventories work far harder for them. **SLT**

Simon Lillystone
Consultant
SmartStream

Service Provider Directory

4SIGHT
FINANCIAL SOFTWARE

4sight Financial Software

UK office
11-29 Fashion Street
London, E1 6PX
Tel: +44 20 3384 0520

North America office
40 University Avenue, Suite # 1002
Toronto, Ontario
M5J 1T1
Canada
Tel: +1 416 548 7920

Asia Pacific office
Suite 11.03, level 11
6 O'Connell Street
Sydney, NSW 2000
Australia
Tel: +61 0 2 9657 4280

Antonio Neri, Executive Director
Tel: +44 20 3384 0522
antonio.neri@4sight.com

Ed Cockram, North American Senior VP
Tel: +1 347 615 7784
ed.cockram@4sight.com

www.4sight.com

Company description

4sight Financial Software is an independent software solutions provider with 19 years of experience.

4sight's customer base includes a full spectrum of buy and sell side market participants from smaller banks and asset managers through to global broker dealers. Clients in 16 countries on four continents use 4sight's software to meet their business needs and 4sight offers the reliability and experience of a company with a proven track record.

4sight also provides project management, consultancy services and global support through its worldwide network of offices.

4sight's product range includes:

- 4sight Securities Finance (4SF)—a software solution for lending, borrowing, repo, and swaps
- 4sight Collateral Management—software for enterprise-wide collateral management and optimisation. Xpose provides cross product collateral management for securities lending, repo, and derivatives in a single solution
- 4sight Swap—a user-friendly solution for managing the complete equity derivatives lifecycle

These solutions provide front to back office support and help 4sight's customers to:

- Boost revenues;
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For further information, please visit: www.4sight.com

BNY MELLON

BNY Mellon

Americas
Ted Thresher
ted.thresher@bnymellon.com
Tel: +1 212 815 4512

Asia Pacific
Filippo Santilli
filippo.santilli@bnymellon.com
Tel: +852 2840 6664

Japan only
The Bank of New York Mellon Securities Company Japan Ltd
Hiroshi Ohno
hiroshi.ohno1@bnymellon.com
Tel: +81 3 6756 4320

Europe, Middle East and Africa
Mark Higgins
mark.higgins@bnymellon.com
Tel: +44 20 7163 3456

bnymellon.com/marketsgroup

Company description

Amid a changing financial landscape, managing your collateral doesn't need to be intimidating. Explore our universe of collateral management and segregation solutions as you navigate the capital markets. With an expansive range of solutions, our Collateral UniverseSM is designed to help you unlock the value of your assets. Benefit from our tools, our expertise and our global perspective.

BNY Mellon's Markets Group is focused on providing a suite of foreign exchange, securities finance, collateral management and segregation, capital markets, liquidity and prime brokerage services to provide clients with a comprehensive array of capabilities to complement their investment process.

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BondLend

Tim Keenan
Global Product Owner
Tel: +1 212 901 2289
tim.keenan@bondlend.com

Jonathan Hodder
Global Co-Head, Sales and Marketing
Tel: +44 207 426 4419
jonathan.hodder@equilend.com

Dan Dougherty
Global Co-Head, Sales and Marketing
Tel: +1 212 901 2248
dan.dougherty@equilend.com

Andrew McCardle
Head of EquiLend Asia
Tel: +852 3101 7070
andrew.mccardle@equilend.com

Alexa Lemstra
Head of EquiLend Canada
Tel: +1 416 865 3395
alexa.lemstra@equilend.com

www.bondlend.com

Company description

BondLend is a securities finance technology platform created specifically to support the fixed income borrowing, lending and repo community. BondLend's Trading and Financing Services provide straight-through processing automation for borrowing, lending and repo using a common standards-based protocol and infrastructure processing, eliminating manual processes and freeing up valuable resources.

BondLend comparison services add efficiency and reduce the risk of potential collateral management errors. Comparison services are security-type agnostic and support global usage for cash and non-cash records. BondLend's trading and post-trade services help drive down unit costs and increase efficiency. They allow firms to free up resources to expand their market presence, increase trading volumes and reduce error rates, all without additional cost.

US office:
225 Liberty Street
10th Floor, Suite 1020
New York, NY 10281
USA
Tel: +1 212 901 2200

UK office
36th Floor, One Canada Square
London, E14 5AA
UK
Tel: +44 207 426 4426

Asia office
Level 19
Two International Finance Centre
8 Finance Street
Central, Hong Kong
Tel: +852 3101 7070

Canada office
The Exchange Tower
130 King Street West, Suite 1800
Toronto
Ontario, M5X 1E3
Tel: +1 416 865 3395

Broadridge Financial Solutions, Inc.

1981 Marcus Avenue
Lake Success, NY 11042
USA

North America
Tel: +1 888 237 1900

EMEA
Tel: +20 7551 3000

APAC
Tel: +852 2869 6393

Jerry Friedhoff
Managing Director, Product Manager
Securities Financing and Collateral Management

www.broadridge.com

Company description

Broadridge Financial Solutions, Inc is the leading provider of investor communications and technology-driven solutions for broker-dealers, banks, mutual funds and corporate issuers globally. Broadridge's investor communications, securities processing and operations outsourcing solutions help clients reduce their capital investments in operations infrastructure, allowing them to increase their focus on core business activities. With more than 50 years of experience, our infrastructure underpins proxy voting services for over 90 percent of public companies and mutual funds in North America, and processes more than $4.5 trillion in fixed income and equity trades per day.

Broadridge Securities Financing and Collateral Management Solutions offer global, multi-asset systems designed to enable global investment banks, asset managers and service providers to optimise their regional and global collateral management, repo and securities funding operations. Used together, or as standalone solutions, traders and collateral managers have real-time access to collateral inventory positions, and can easily navigate screens and enter information for quick deal entry, collateral allocation and transaction maintenance. Advanced reporting and workflow options provide users with a streamlined approach to managing large amounts of complex data. From collateral optimisation to master netting and messaging, additional product enhancement modules create a complete platform for securities financing and collateral management teams.

For more information about Broadridge and our proven securities financing and collateral management solution, please visit our website.

CloudMargin

28 Austin Friars
London
EC2N 2QQ
UK
Tel: +44 (0) 20 3397 5670

45 Rockefeller Plaza,
Suite 2000,
New York, NY 10111
USA
Tel: +1 212 372 7236

Andy Davies, CEO
Tel: +44 20 3397 5671
andy.davies@cloudmargin.com

Stuart McHardy, COO
Tel: +44 20 3397 5672
stuart.mchardy@cloudmargin.com

www.cloudmargin.com

Company description

CloudMargin was formed in 2013 by a group of professionals with over 35 years of combined experience within collateral management, OTC derivatives, technology and capital markets. They came together to create a system, built primarily for the buy side, that eradicates inefficiencies in collateral management and to bring a new approach to the ever-changing market landscape.

CloudMargin, the worlds first web-based collateral management system, is hosted securely over the internet, so all you need to use CloudMargin is an internet connection and web browser, meaning there is no need for costly hardware implementation. Nothing to install. Nothing to support. Nothing to upgrade.

CloudMargin offers real-time, exception-based visibility in all collateral books, which is fast becoming a necessity for firms if they want to survive and remain in control of their assets and ultimately their business. CloudMargin presents the users with the capability of true cross-product visibility, opening the doors to the margin efficiency of netting. CloudMargin's collateral technology solution will present users with the ability to make the right business decisions without the inefficiencies that traditional methods of managing collateral impose.

CloudMargin has produced a powerful web-based interface that gives total visibility of proprietary and counterparty or CCP positions, while state of the art data visualisation and reporting puts clients firmly in control of their business.

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DataLend

Dan Dougherty
Global Co-Head, Sales and Marketing
Tel: +1 212 901 2248
dan.dougherty@equilend.com

Jonathan Hodder
Global Co-Head, Sales and Marketing
Tel: +44 207 426 4419
jonathan.hodder@equilend.com

Andrew McCardle
Head of EquiLend Asia
Tel: +852 3101 7070
andrew.mccardle@equilend.com

Alexa Lemstra
Head of EquiLend Canada
Tel: +1 416 865 3395
alexa.lemstra@equilend.com

www.datalend.com

Company description

DataLend is the securities finance data services division of EquiLend, providing the market with global data across all asset classes.

This offering extends EquiLend's position as the standard of excellence in the securities finance industry.

DataLend builds on EquiLend's strengths in technology and benefits from its economies of scale. EquiLend, as a regulated trading platform, is a trustworthy repository for sensitive securities finance data.

Our innovative approach enables our clients to have a direct hand in shaping the evolution of the securities finance industry by producing market data that is best suited to serve the needs of industry participants.

The DataLend mission is to be the leading provider of securities finance market data.

US office
225 Liberty Street
10th Floor, Suite 1020
New York, NY 10281
USA
Tel: +1 212 901 2200

UK office
36th Floor, One Canada Square
London, E14 5AA
UK
Tel: +44 207 426 4426

Asia office
Level 19
Two International Finance Centre
8 Finance Street
Central, Hong Kong
Tel: +852 3101 7070

Canada office
The Exchange Tower
130 King Street, Suite 1800
Toronto
Ontario, M5X 1E3
Tel: +1 416 865 3395

Delta Capita Limited

9 Devonshire Square
London EC2M 4YF
UK

Joe Channer
CEO
joe.channer@deltacapita.com

Bimal Umeria
Managing Partner
bimal.umeria@deltacapita.com

Tel. +44 203 714 1879
info@deltacapita.com

www.deltacapita.com

Company description

Delta Capita formulates and delivers strategic business and technology change for investment banks and investment management firms. We combine advisory, solutions and delivery to provide an end-to-end consultancy service. Our cross-discipline teams and IP-based solutions are accelerators for solving complex business problems and the delivery of tangible client value. Delta Capita specialises in strategy, business operating models, technology advisory and solutions, as well as programme management with PMO services.

Prime finance and brokerage together with securities lending and collateral are key focus areas for Delta Capita. We define global solutions based on vendor technologies to help our clients find optimum solutions to their business problems. This includes optimisation tools to manage collateral, trading platform solutions, business migrations locally or across jurisdictions, regulatory reporting, and simplification or automation of work flows to increase efficiency.

Delta Capita works front-to-back across equites, FI, FX, derivatives, structured retail products, risk, regulatory compliance, treasury and ALM. Further, we provide specialised managed services in a number of areas including structured retail products, regulatory compliance, and metrics and performance monitoring.

OUR INNOVATION. YOUR ADVANTAGE.

EquiLend

Dow Veeranarong
Global Product Owner
Tel: +1 212 901 2273
dow.veeranarong@equilend.com

Dan Dougherty
Global Co-Head, Sales and Marketing
Tel: +1 212 901 2248
dan.dougherty@equilend.com

Jonathan Hodder
Global Co-Head, Sales and Marketing
Tel: +44 207 426 4419
jonathan.hodder@equilend.com

Andrew McCardle
Head of EquiLend Asia
Tel: +852 3101 7070
andrew.mccardle@equilend.com

Alexa Lemstra
Head of EquiLend Canada
Tel: +1 416 865 3395
alexa.lemstra@equilend.com

www.equilend.com

Company description

EquiLend is a leading provider of trading services for the securities finance industry.

EquiLend facilitates straight-through processing by using a common standards-based protocol and infrastructure, which automates formerly manual trading processes. Used by borrowers and lenders throughout the world, the EquiLend platform allows for greater efficiency and enables firms to scale their business globally.

Using EquiLend's complete end-to-end services, including pre- and post-trade, reduces the risk of potential errors. The platform eliminates the need to maintain costly point-to-point connections while allowing firms to drive down unit costs, expand business, move into different markets, increase trading volumes, all without additional spend. This makes the EquiLend platform a cost-efficient choice for all institutions, regardless of size.

USA office
225 Liberty Street
10th Floor, Suite 1020
New York, NY 10281
USA
Tel: +1 212 901 2200

UK office
36th Floor, One Canada Square
London, E14 5AA
UK
Tel: +44 207 426 4426

Asia office
Level 19
Two International Finance Centre
8 Finance Street
Central, Hong Kong
Tel: +852 3101 7070

Canada office
The Exchange Tower
130 King Street, Suite 1800
Toronto
Ontario, M5X 1E3
Tel: +1 416 865 3395

Eurex Clearing

Mergenthalerallee 61
65760 Eschborn
Germany

Thomas Wißbach
Senior Vice President, Clearing Product Design
Tel: +49 69 211 179 92
thomas.wissbach@eurexclearing.com

UK office
Gerard Denham
Senior Vice President, Clients and Markets
Tel: +44 207 862 7634
gerard.denham@eurexclearing.com

Jonathan Lombardo
Senior Vice President, Clients and Markets
Tel: +44 207 862 7559
jonathan.lombardo@eurexclearing.com

Paris office
Ebru Ciaravino
Senior Vice President, Clients and Markets
Tel: +33 1 552 767 68
ebru.ciaravino@eurexclearing.com

www.eurexclearing.com

Company description

Eurex Clearing AG is one of the leading CCPs globally, assuring the safety and integrity of markets while providing innovation in risk management, clearing technology, and client asset protection. The clearinghouse provides fully automated post-trade services for derivatives, equities, bonds and secured funding and financing as well as industry-leading risk management technologies.

As part of Deutsche Börse Group, Eurex Clearing manages a collateral pool worth around €50 billion and processes gross risk of nearly €16 trillion for more than 176 clearing members in 17 countries. In 2014, Eurex Clearing settled around 1.5 billion contracts.

Eurex Clearing pioneers the market by offering Europe's first central clearing service for the securities lending industry. It not only supports the safety and efficiency of the market but also combines it with the flexibility of the special bilateral relationship structure.

Together with Eurex Exchange, the International Securities Exchange (ISE), the European Energy Exchange, Eurex Bonds and Eurex Repo, Eurex Clearing forms Eurex Group.

US office:
Tim Gits
Senior Vice President
Clients and Markets
Tel: +1 312 544 1091
tim.gits@eurexclearing.com

Foley O'Neill Limited

Foley O'Neill Ltd

Bill Foley
Tel: +44 (0) 7769 657579
Bill.foley@foley-oneill.com

Sean O'Neill
Tel: +44 (0) 7789 907717
Sean.oneill@foley-oneill.com

enquiries@foley-oneill.com

Company description

Foley O'Neill Ltd provides specialist business solutions, guidance and market services covering all aspects of securities finance, treasury and cash & collateral management.

Each Director is able to draw upon more than 25 years of market experience gained at some of the world's leading financial institutions to understand our clients' needs and deliver the most appropriate solutions.

We aim to ensure that our clients can optimise their business, understand all routes to market and identify opportunities that are ever present in a rapidly changing landscape. Our independence enables a non-biased view of the market and the solutions available.

GFT

Capital House
85 King William Street
London EC4N 7BL
UK

Dawn Blenkiron
Business Development
Tel: +44 20 3753 5778
dawn.blenkiron@gft.com

UK: +44 20 3753 5700
US: +1 212 205 3400
Canada: +1 647 724 1745

www.gft.com

Company description

GFT is a specialist global consulting firm focused on delivering management consulting, programme and project management, user experience design, technical strategy and implementation services for financial services firms. Headquartered in Stuttgart, we support our clients with consultants based in key locations for capital markets, including London, New York, Toronto, Boston, Barcelona and Frankfurt. We deliver technical design, implementation and support services from our nearshore facilities in Poland, Spain, Costa Rica and Brazil.

GFT specialists provide advisory, execution and support services to the world's leading financial institutions. Our domain specialisms include: securities finance, prime services, risk management, trading, legal and compliance, and operations. Our delivery specialisms include: advisory and execution services in system development, user-centric design, software development, integration, data management, regulation, testing, ongoing support and IT outsourcing.

We offer our clients end-to-end solutions that solve their complex business and IT issues. Our specialists have a deep understanding of the pressures faced by financial organisations; many of our recent engagements have included strategic consultancy and large-scale change programmes driven by regulatory and compliance initiatives.

Lombard Risk

UK office
7th Floor, Ludgate House
245 Blackfriars Road
London SE1 9UF
UK
Tel: +44 207 593 6700

US office
489 Fifth Avenue, 10th Floor
New York, NY 10017
USA
Tel: +1 646 432 9974

Singapore office
30 Raffles Place, #20-04 Chevron House
Singapore 048622
Tel: +65 6720 1012

Rebecca Bond
Group Marketing Director
rebecca.bond@lombardrisk.com

www.lombardrisk.com

Company description

Lombard Risk (London Stock Exchange: LRM) is a leading provider of integrated collateral management and liquidity, regulatory and MIS reporting solutions, enabling firms in the financial industry significantly to improve their approach to managing the risk in their businesses. Founded in 1989 and headquartered in London, Lombard Risk has offices in Cape Town, Hong Kong, Luxemburg, Mumbai, New York and New Jersey, Shanghai, Singapore and Tokyo.

Our clients include banking businesses—30 of the world's top 50 financial institutions—almost half of the banks operating in the UK, as well as investment firms, asset managers, hedge funds, fund administrators and large corporations worldwide.

Lombard Risk's Colline is a state-of-the-art, web-based solution designed by experienced business practitioners for end-to-end, enterprise wide collateral management (over-the-counter derivatives, clearing, repo, securities lending and exchange-traded funds).

Colline provides a consolidated solution for mitigating credit risk, providing cross-product collateral management, aggregation and optimization. Through its functional flexibility, Colline enables clients to manage their own requirements according to individual priorities and regulatory obligations:
Colline OTC includes market leading functionality including legal agreement repository supporting CSA, SCSA and umbrella agreements, flexible margin calculation and configurable workflow, reporting, and reconciliation.
Colline Repo and Sec Lending Module supports front-to-back margin operations for all of an institution's repo and securities lending agreements, including optional mark-to-market calculation and exposure profiling.
Colline CCP/Clearing Workflow supports both house and client clearing requirements, and allows for the validation of CCP and broker calculations with configurable margin process definition and cash flow management to support multiple clearinghouse models on a single platform.
Colline Optimisation provides configurable technology to enable real-time algorithmic calculations, according to user-defined rules, goals and evolving priorities.

Markit Securities Finance

UK office:
Ropemaker Place
25 Ropemaker Street
London, EC2Y 9LY, UK

Pierre Khemdoudi
Tel: +44 207 264 7603
pierre.khemdoudi@markit.com

US office
620 8th Avenue, 35th Floor
New York, NY 10018, USA

Edward Marhefka
Tel: +1 917 441 6900
edward.marhefka@markit.com

Hong Kong
Level 16
Man Yee Building
68 Des Voeux Road, Hong Kong

Karen King
Tel: +852 3726 7012
karen.king@markit.com

www.markit.com

Company description

Markit is the leading provider of securities lending data, tracking short selling and institutional flow across all global markets.

Through its history spanning over 10 years the company has brought transparency to the market, helping beneficial owners and custodians benchmark the effectiveness of their securities lending activities. Our analytics are used by lenders and borrowers to assess rates, availably, squeeze risk and make better informed investment decisions. Content is sourced directly from market participants including prime brokers, custodians, asset managers and hedge funds.

The database covers:
- Over 3 million intraday transactions with $2 trillion on loan
- $15 trillion of securities in the lending programs of over 20,000 institutional funds
- Over 10 years history

The service is available through datafeeds, an API, web applications and an Excel toolkit with integrated datasets including Markit's dividend forecasting and ETP and US dollar Repo data. The securities lending data is available on the major market data platforms including Bloomberg, FactSet, S&P CapitalIQ and Thomson Reuters.

Murex

EMEA main office
8 rue Bellini
75116 Paris
France
Tel: +33 1 4405 3200

APAC main office
10 Marina Boulevard #19-01
Marina Bay Financial Centre Tower 2
Singapore 018983
Tel + 65 6216 0288

Americas main office
810 Seventh Avenue
14th floor
New York, NY 10019
USA
Tel +1 212 381 4300

17 offices located in EMEA, Asia Pacific and the Americas.

info@murex.com

www.murex.com

Company description

Since its creation in 1986, Murex has played a key role in proposing effective technology as a catalyst for growth in capital markets, through the design and implementation of integrated trading, risk management, processing and post-trade platforms. Driven by innovation, Murex's MX.3 Front-to-back-to-risk platform leverages the firm's collective experience and expertise to offer an unrivalled asset class coverage and best-of-breed business solutions at every step of the financial trade lifecycle.

MX.3 for Collateral Management and Securities Finance is an enterprise collateral management solution for bilateral or cleared OTC, repo or securities lending, and exchange-traded derivatives products.

Key features include:
- BCBS/IOSCO WGMR and CCP margining;
- Real-time inventory with a flexible optimisation engine; and
- Powerful STP workflow manager providing connectivity to TriResolve, MarginSphere and Swift.

Omgeo

55 Thomson Place
Boston, MA 02210
USA
Tel: +1 866 49 OMGEO

Richard Enfield
Executive Director, Collateral Management
Tel: +1 617 880 6965
richard.enfield@omgeo.com

Leigh Walters
Managing Director of Global Sales
Tel: +44 20 3116 2406
leigh.walters@omgeo.com

www.omgeo.com/protocoll

Company description

Omgeo, a wholly owned subsidiary of the Depository Trust & Clearing Corporation (DTCC), automates trade lifecycle events between investment managers, broker-dealers and custodian banks. The firm enables 6,500 clients and 80 technology partners in 52 countries to seamlessly connect and interoperate. By automating and streamlining post-trade operations, Omgeo enables clients to accelerate the clearing and settlement of trades, and better manage and reduce their counterparty and credit risk. Omgeo's strength lies within its global community and its ability to create solutions to enable clients to realise clear returns on their investment strategies, while responding to changing market and regulatory conditions.

Omgeo's robust collateral management platform, Omgeo ProtoColl, offers a holistic view into a firm's exposure while enabling automated straight-through-processing in order to manage margin and collateral calls across the entire trading operation. The automation of the collateral management lifecycle reduces manual intervention, thus enabling firms to increase operational efficiency while making smarter, more effective use of their collateral and subsequently reduce counterparty risk. Omgeo ProtoColl's rules-based approach to collateral management allows clients to build custom algorithms supporting risk mitigation by:

- Optimising assets for delivery;
- Automatically evaluating delivered collateral for eligibility;
- Routing transactions for validation and settlement; and
- Highlighting high-risk transactions for approval

With Omgeo ProtoColl, firms can fundamentally change the way they manage their collateral and its associated risks, without the need to create costly, manually intensive operating models. Its rules-based approach is simple, yet powerful, providing clients with a cost effective, automated approach to risk management. Omgeo and DTCC remain committed to providing automated collateral management offerings to facilitate straight-through processing solutions to help our clients meet their regulatory requirements.

Quartet FS

Napier House
24 High Holborn
London WC1V 6AZ
UK

Mark Sappol
Sales Director for the EMEA
Tel: +44 207 831 7222
msa@quartetfs.com

www.quartetfs.com

Company description

The Quartet FS in-memory analytical platform ActivePivot provides users with instant insight into massive, fast-moving data for timely decision-making.

ActivePivot is used by time-sensitive organisations to continuously evaluate business performance and make optimal data-driven decisions.

Founded in 2005, Quartet FS is a privately owned company with offices in London, Paris, New York, Hong Kong and Singapore. With more than 60 live implementations in large international companies, we serve customers in many verticals, including financial services, market exchanges, logistics and retail.

SmartStream

St Helen's
1 Undershaft
London EC3A 8EE
UK

EMEA
Tel: +44 (0)20 7898 0600

North America
Tel: +1 212 763 6500

APAC
Tel: +65 6224 7689

www.smartstream-stp.com

Company description

SmartStream provides Transaction Lifecycle Management (TLM®) solutions and managed services to transform the middle and back-office operations of financial institutions. Over 1,500 clients, including 70 of the world's top 100 banks, 8 of the top 10 asset managers and 8 of the top 10 custodians rely on SmartStream's solutions.

Founded in 2000, SmartStream has evolved from a dedicated reconciliations provider to become a market leading provider of software solutions that deliver automation and control to post-trade operations. The company has grown rapidly, introducing new solutions and winning multiple industry accolades.

SmartStream addresses the challenges faced by financial institutions through a range of solutions and managed services that cover the entire post-trade lifecycle, providing more efficient, streamlined and cost-effective front, middle and back-office operations. These solutions enable clients to gain a lower cost-per-transaction whilst reducing operational risk, aiding compliance and improving customer service levels. Solutions offered by SmartStream include:

- Cash & Liquidity Management
- Client Money Segregation
- Collateral Management
- Confirmations Management
- Corporate Actions Processing
- Data Management Services
- Exception Management
- Reconciliations
- Trade Process Management
- Transaction Fees Invoice Management

The adoption of SmartStream's solutions enables firms to realise market leading match rates in excess of 95%, higher than the industry average of approximately 84%. Furthermore, SmartStream is the only vendor with the ability to link reference data management to reconciliations, delivering enhanced cross-instrument processing across the enterprise.
As a result, our solutions are critical to the retooling of post trade environments demanded by new regulations – whether it is liquidity transparency, reducing operational risk or moving operations to true intraday transaction processing.

SunGard

North America
340 Madison Ave
New York 10173
Tel: +1 347 266 9521

Christian Bullaro
Head of Sales Americas
christian.bullaro@sungard.com

EMEA
25 Canada Square
London E14 5LQ, UK
Tel: +44 20 8081 2000

John Peck
Head of Sales EMEA
john.peck@sungard.com

Asia
71 Robinson Road #15-01
Singapore 068895, Singapore
Tel: +65 63088028

Colm Gaughran
Head of Sales Asia Pacific and Japan
colm.gaughran@sungard.com

www.sungard.com/collateralmanagement

Company description

SunGard Apex Collateral centralises the inventory management and optimisation of collateral assets on a single platform, thus overcoming silos, reducing the cost of funding collateral and improving revenues through proactive collateral trading. Robust and flexible operations tools satisfy new regulatory imperatives transforming collateral management.

A modular structure allows customers to pick and choose the elements of the platform that best fit their requirements. Six key innovations set Apex Collateral apart:

- Lean Operations provides a highly efficient process platform to help cope with the increased collateralisation volume, complexity and regulatory requirements operations teams must handle. EMIR, Dodd Frank and BCBS IOSCO rules are supported
- Enterprise Inventory provides a single, consolidated, real-time view of the available collateral inventory and liquidity requirements across the enterprise
- Collateral Optimisation is the key driver for change in the collateral management infrastructure within many institutions
- Apex Collateral is unique in using numerical optimisation techniques to solve the twin problems of optimisation: complexity and scale
- Initial Margin Optimisation helps calculating, validating and minimising VaR and sensitivity based initial margin requirements an institution will have to post for centrally cleared and bilateral trading
- Collateral Analytics holistically models the risk in the collateralisation programme to changes in underlying market conditions, prices, credit ratings and beyond
- Collateral Transfer Pricing facilitates the calculation and allocation of the funding cost of collateral of the underlying trading activity

SWIFT

7 Times Square
45th floor
New York, NY 10036
USA

Guillaume Boland
Senior Market Manager
Tel: +32 2 655 3111
guillaume.boland@swift.com

Company description

SWIFT provides secure financial messaging services, applications and solutions to more than 10,800 banks, securities firms and corporations in more than 200 countries across the globe. In the area of collateral management, SWIFT offers bilateral and triparty collateral management messaging solutions designed to facilitate the monitoring and real time reporting on collateral positions to support effective risk management.

Through SWIFT, counterparties to a transaction or their triparty agents can seamlessly exchange information around exposure notifications, matching and collateralisation status, and exchange of statements covering collateral and exposure positions.

THE FIELD EFFECT

The Field Effect

info@thefieldeffect.co.uk
Tel: + 44 207 448 3096

David Field
Managing Director
Tel: + 44 7881 918 973
david.field@thefieldeffect.co.uk

www.thefieldeffect.co.uk

Company description

The Field Effect is a boutique consultancy specialising in clearing and collateral management, spanning cleared and uncleared over-the-counter derivatives and exchange-traded derivatives.

We provide advisory services to every participant in the industry value chain, including buy-side and sell-side firms, clearinghouses, custodians and central securities depositories.

The Field Effect was founded and is led by David Field, an acknowledged expert in clearing and collateral management. With more than 20 years of financial services consulting experience, he has led many clearing and collateral advisory projects across the buy side, sell side, central counterparties and custodians, spanning strategy, target operating models, and technology. He speaks at numerous industry conferences and is frequently quoted in financial services media.

Enabling the adaptive enterprise with SunGard's Apex Collateral

- Innovative solutions for enterprise-wide collateral management, trading and optimization
- Single platform to combine your entire collateral management and securities finance business
- Support for regulatory requirements that are transforming the collateral landscape
- Lean collateral operations to handle growing volumes
- Collateral analytics for initial margin, risk and transfer pricing

SunGard's Apex Collateral solution helps collateral traders, heads of trading desks, risk professionals, operations staff and senior management manage and optimize their collateral on an enterprise-wide basis. Apex Collateral offers a single platform for trading directly from a real-time, consolidated global inventory as well as supporting operational requirements for underlying securities lending, repo and derivative transactions. It uses numerical algorithms to automatically allocate collateral in the optimal way, helping firms minimize costs and maximize return on assets. For more information, please visit **www.sungard.com/enterprisecollateral**

www.sungard.com
twitter.com/sungard
getinfo@sungard.com
linkedin.com/company/sungard