securities lending times

Collateral Annual 2018/19

A complex ecosystem

The increased complexity of the sector is not going to fade into the distance anytime soon, with further regulatory challenges ahead for the securities finance industry. In this year's SLT Collateral Annual, industry participants discuss how regulatory challenges and technological developments are affecting the collateral management sector.

Also in the Collateral Annual, John Southgate of Northern Trust provides an insight into the changing regulatory landscape and how it has caused an increased demand on client collateral.

With the securities finance industry still showing discrepancies in terms of digital achievement and developments. David Raccat of Wematch.SecuritiesFinancing suggests that some institutions are still showing significant gaps, whereas others are clearly above the curve and making the required investments to cope with digitalisation.

As changes in the industry occur and updates to market practices are implemented, it is important for software providers to keep products up-to-date and fit for purpose. Pirum's Todd Crowther explains that every institution is at a different stage of their evolution and "we try to work closely with our clients to help them reach their 'processing nirvana'".

Elsewhere, IHS Markit's Sam Pierson explains the significance of collateral in securities lending benchmarks, while Jonathan Spirgel of BNY Mellon suggests that the bilateral margin requirements that are being introduced in derivatives markets across the world, present a unique opportunity for asset owners.

Also, Martin Seagroatt of Broadridge discusses five lessons we can learn from Henry Ford and Elon Musk, Matthew Wolfe of OCC talks capital efficiencies in stock loan through central clearing, and Graham Gooden and Tim Meredith of J.P. Morgan explore the macro-level themes that are currently influencing counterparties and other ecosystem participants.

Becky Butcher
Editor

securities lending times

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

Editor: Becky Butcher
beckybutcher@blackknightmedialtd.com
+44 (0)203 750 6019

Deputy Editor: Barney Dixon
barneydixon@blackknightmedialtd.com
+44 (0) 203 750 6026

Junior Reporter: Jenna Lomax
jennalomax@blackknightmedialtd.com
+44 (0)203 750 6018

Junior Reporter: Maddie Saghir
maddiesaghir@blackknightmedialtd.com
+44 (0)203 750 6019

Creative Director: Steven Lafferty
design@securitieslendingtimes.com
+44 (0)7843 811240

www.securitieslendingtimes.com
Twitter: @SLTimes_

Office fax: +44 (0)20 8711 5985
Published by Black Knight Media Ltd

Contents

Contents

Navigating the repo waves

Industry experts give an insight into the main challenges the market faces today, including compliance with evolving regulation and managing cyber risk. But how are they navigating these waves of change?

What trends have you seen in the European repo market over the last year?

Godfried DeVidts: Implementation of mandatory clearing obligations contained in European Market Infrastructure Regulation (EMIR), the Dodd-Frank ruling, and associated margining requirements for over-the-counter (OTC) derivatives, increased the demands for collateral and have led to increasing participation in the repo market by insurance companies, pension funds, and asset managers from the 'shadow banking' system.

Frank Gast: As the European Central Bank (ECB) is buying up a significant amount of high-quality liquid assets (HQLAs) as part of its asset purchase programme (QE), a shortage of bonds available for securities financing arises.

Collateral shortage and bank regulations for liquidity have caused a significant increase in demand for HQLAs and increased activity in securities-driven financing markets, including special repo, as well as securities lending. Since the ECB reduced the net purchases of the asset purchase programme from a monthly pace of €60 billion to a new monthly pace of €30 billion starting in January this year, a stabilisation of volumes in the cleared cash driven repo market has been observed.

In addition, several pension funds and asset managers are in the final steps of onboarding to our 'Select Finance' offering in order to raise cash in our interbank market via central counterparties (CCPs). The new Eurex Select Finance model will enable buy-side clients to trade fully flexible as cash provider and cash taker. Select Finance is designed to accommodate buy-side needs, specifically those of pension funds and asset managers, for variation margin funding.

What opportunities do you see for investors and repo traders?

Gast: New regulatory requirements, such as Basel III, EMIR and Liquidity Coverage Ratio, substantially increase cost for banks in offering client clearing, either directly or indirectly. In order to enhance capital/balance sheet, margin and collateral efficiencies, sell and buy-side participants need to look for advanced CCP models.

With the introduction of new buy-side offerings infrastructure, providers, like Eurex, broaden their target group by enabling clients from outside the financial sector to participate in these markets.

DeVidts: When deciding which investments are right to pick, investors should be carefully considering whether or not they can later raise cash against them—equities, for example, are not eligible for CCPs or for central bank financing. This is nothing new, but it can be advantageous to invest in securities which have a deep liquid market or are easy to liquidate.

As for repo traders, although they still face balance sheet restrictions they have benefitted from the re-pricing of the repo product over the past few years. As a consequence, if mixed with other business within their firm, the repo product has become relatively attractive again. Repo has proven to be resilient but it now has to be seen as part of the overall function of collateral management within financial institutions.

What do you think are the top three biggest challenges for investors and repo traders?

Juliette Kennel: In this context, the three main challenges we see are compliance with evolving regulation, managing cyber risk, and ensuring the harmonisation and standardisation is in place to enable the industry to really take advantage of new technology.

On the post-trade side, the biggest challenge for investors and repo traders is probably understanding the impacts of new regulation and ensuring back-office operations are in place to comply with the new requirements.

DeVidts: The stability of the underlying assets is an ongoing concern. To take a current example, there is a risk in emerging markets, such as Turkey, which may spill over into other markets. We should also watch out for the unwinding of QE, specifically because the list of eligible assets acceptable by central banks will be curtailed over time.

There are some major challenges ahead linked to the mandatory buy-in regime being introduced by the EU Central Securities Depositories Regulation. This will create perverse behavioural incentives, which will likely include increased volatility in markets—especially where there are identified short positions—and challenge the ability of participants, especially from the buy-side, to react quickly to the situation.

Gast: Regulatory requirements arising out of Basel III, Central Securities Depository Regulation (CSDR) or the Securities Financing Transactions Regulation significantly add to the cost of capital required to run a repo book and are assumed to reshape the structure and dynamics of repo markets.

Brexit, US politics and elections in the European area create volatility over financial markets and lead to a flight-to-quality towards core European markets. Given the role that London plays in the repo market, where a lot of the collateral comes from core investment banks, Brexit may have a significant influence on the repo market in the coming year.

How could the repo market benefit from innovation and technological advancements?

Kennel: Advances in technology can doubtlessly benefit the repo market—whether in optimising or in automating processes or in gathering and analysing data—ultimately facilitating greater collateral efficiency and mobility. To reap the benefits of these advances, however, standardisation is going to be key.

While distributed ledger technology might bring a number of business benefits, as with any technological solution the data, processes, inputs and outputs will need to be properly standardised.

DeVidts: Financial technology solutions may, at last, overcome the problems with the legacy settlement infrastructure of Europe, which has not thus far been solved with TARGET2-Securities implementation.

There are still too many CSDs remaining in the Eurozone, with no rationalisation in settlement yet achieved, making it ever more expensive, and still complicated, to effect settlement completion. There are huge opportunities here to reduce the hidden costs of the settlement.

Gast: Innovations in the area of blockchain, cloud computing, machine learning, robotics or artificial intelligence may be implemented and used to mitigate inefficiencies in the European repo market.

Deutsche Börse Group is currently working on a blockchain-based collateral swaps market to mitigate the collateral mobility problem across custodians.

With the implementation of bank regulations for liquidity, mandatory clearing and margin requirements for OTC derivatives, efficient HQLA portfolio management has become critically important for institutional treasurers.

How have electronic trading platforms affected transactions?

DeVidts: Electronic trading platforms are helpful in achieving well-organised trade execution.

This is currently directed towards CCP cleared transactions, but given the increasing use of non-government bonds, electronic trading platforms could also help to deliver faster and safer markets for bilateral trades, once the multiple settlement channels are satisfactorily streamlined.

Gast: Electronic trading is creating many market participants, improving market quality in normal times, lowering transaction costs and segmentation.

Electronic trading providers, such as Eurex Repo, aim to provide possibilities for market participants to increase efficiency in capital and liquidity management. One initiative to reduce the number of outstanding trades is compression as a new trade type.

Compression can be used to tear up a trade by partially or wholly offsetting positions against other positions held by that financial institution.

In the next two years, what developments do you expect to see in the European repo market?

DeVidts: I expect to see larger outstanding volumes and wider participation in the market. And there may be a growth in term trades, driven by the new behavioural incentives, which will be created by the introduction of new net stable funding ratio liquidity requirements.

Undoubtedly there will also be more electronification, including in emerging markets, leading to more efficiency. I expect digitisation to further enable the trend, which we are already observing, with business to business transactions becoming the norm and diminishing interbank transactions.

I hope that this will lead to the clear recognition of the value of the repo product.

Kennel: In both markets, we'd expect more budget and investment being allocated to handle regulatory and cyber issues, which unfortunately is not so much a licence for industry participants to develop new business lines, but rather a requirement to defend their 'licence to operate'.

On the collateral management side, it will be interesting to follow the evolution of the ECB platforms and to see how EU-based changes will impact on other markets. This will be especially critical for global firms acting in multiple markets and jurisdictions.

Gast: The European repo market will inevitably be dominated by regulation. Given the market's experience with EMIR, SFTR will likely be a drag on the market for the next year or so, with firms switching a lot of resources to deal with that. **SLT**

The path to optimisation

John Southgate of Northern Trust suggests the changing regulatory landscape has caused an increase demand on client collateral

Becky Butcher reports

What were Northern Trust's motivations behind the new collateral optimisation solution? And how does it work?

Initially, we are only offering collateral optimisation to active collateral management clients, which makes sense because effectively the solution enables us to make more intelligent decisions about which assets to select when covering margin calls on their behalf.

The changing regulatory landscape has caused an increase in the demands on the client's collateral. They are having to give up greater levels of their assets, typically of the high-quality liquid variety, and in some cases, they need to raise cash where they have cash only a credit support annex (CSA). If they do not have sufficient cash they may have to go into the financing markets to use repos, for example, to access cash against the assets that they have got; that itself is a margined product.

All paths are leading to the fact that margining is generally getting more onerous and complex, therefore, a client needs to increase the efficiency with which they use their assets. We had some clients going back two or three years ago that were identifying this complexity. They provided us rules over which assets to select but it wasn't algorithmic and not as flexible as an automated solution.

We also saw some consultants up to three years ago asking "what is your collateral optimisation strategy?".

However, I'm not sure whether all of the consultants out there knew necessarily what they were asking because optimisation means different things to different people—but we knew we needed to have a defined strategy.

In terms of how we define collateral optimisation, in the first instance, we have established a holistic view across client's assets and across their margined product silos, which we call the enterprise inventory view. Effectively, that ensures that we've got accurate data in terms of availability of the client's assets and their margin requirements across each of those silos, for example over-the-counter (OTC), foreign exchange, repos, exchange derivatives, and so on. Only once we have that view, may the optimisation algorithms be applied.

Once the enterprise inventory view was in place we developed a few flavours of what we call cheapest-to-deliver algorithms. This takes in factors such as haircuts on underlying assets, maturity and funding costs, to try and identify, for a given grouping of margin requirements, what the cheapest or most efficient assets are to deliver. It is important to note that we don't look at each individual margin call separately but collectively, depending on the logical grouping a client wants to use.

For example, we are the collateral manager for a large investment manager, who will have lots of underlying funds and each of those funds are facing off to multiple counterparties. Given that it's only the fund's assets that we can use, we will optimise daily margin calls at that level. Effectively, the algorithm attempts to find the right assets for the most difficult agreements, or the hardest to fulfil first, rather than just going sequentially one-by-one. The ability to re-optimise entire collateral portfolios is also useful for some clients. This looks at everything that has previously been delivered across all of their counterparties and then pumps it through one of the algorithms and says, 'if you have an unlimited restriction around the number of substitutions that you wanted to make this represents the most efficient set of assets to deliver', then there is an exercise where we would recall those assets and substitute. Typically, clients would be doing that on a less frequent basis, maybe monthly or quarterly. That's part of the optimisation offering as well.

We are seeing some pretty compelling numbers in terms of savings that can be delivered.

While we have built an initial set of standard algorithms, every client is different, which is why we are able to overlay client hierarchy rules, telling us the sequence of assets to use and allow for customisation. Those rules can be broad brush or very granular and are fully automated. If there are specific assets that the client doesn't want us to use, for example, we can strip them out of scope from the algorithms.

What benefits/opportunities can the collateral optimisation solution bring to clients and prospective clients?

It is becoming a core offering of our active collateral management service. When we talk to clients this is often at the forefront of discussions, however, it is worth calling out that optimisation isn't critical for every type of client. If you have only got a very small number of counterparties there is probably very limited scope for optimising your portfolio and if clients have got cash-only CSA's then they can't be optimised in the same manner.

One of the key benefits that we are seeing with live clients is that it is reducing the overall market value of assets that we are delivering out to cover margin calls, which means that the client has more assets left, which they can leverage to enter into liquidity trades to raise cash if they need it, or more assets through which they can lend, so there is revenue opportunity there for them.

Some clients may hold back from securities lending because they want to ensure that they have a sufficient buffer of assets to cover their margin calls. With optimisation, because you are looking more holistically across those silos, you can be a lot more joined up so you can be more confident that you are going to have sufficient assets left to meet the margin requirements.

And because you are delivering reduced market value out to counterparties you are reducing your credit to counterparty exposure, there are less assets sitting at the counterparty.

Who is it best targeted at?

It is most effective when you have a number of counterparties, say five or six, and multiple underlying products that you are margining. So effectively, the more complex the client's collateral book is, the more potential benefit there is through optimisation.

Why are some firms still hovering around the issue of collateral optimisation? And maybe not utilising it to its full potential?

This has been a significant investment for us and we have been working on implementation throughout last year. We are now working on the next phases and have got multiple initiatives in terms of increasing the functionality. That investment may be holding some people back and it is not suited to all types of firms so the cost either in-house or via a third party might not warrant the benefit that you are going to get.

Therefore, when we work with prospective clients we look to run through a parallel period with them, where we can show them the benefits that we get through optimisation. They can make a call in terms of what the value is to them, whether the market value reduction is sufficient, and whether that benefits other investment activities. We are very happy to help them go through that discovery process.

What are you hearing from clients in the collateral space? And what matters most when optimising collateral and controlling liquidity?

It's certainly that holistic view that I've spoken about, where you need to break down the silos. It's no good managing pools of collateral for different types of asset classes in isolation. And actually, we have seen over the past couple of years that there is increasingly more desire to centralise collateral management.

Historically, a large asset owner, who might have multiple investment managers managing assets for different portfolios, may have let each of those manage the collateral on their behalf. That is simply not efficient because you've got the same funds effectively facing off with the same counterparties and you have multiple pools of collateral. There are no netting benefits. Without centralisation, it is difficult for an optimisation strategy to be effective.

When optimising, reliable and timely data is absolutely necessary. It is important to ensure that we have got the latest snapshot of what assets are available, without time lags, especially if assets are being actively traded.

Additionally, we need to make sure that we are not stepping on the front office's toes. Some of the things that we have developed have allowed us to ensure that if an asset manager knows that they are going to be trading a set of assets over a period of, say a week, that we can automatically remove them from optimisation selection, and take them off the table for a period of time.

Clients are starting to think about collateral much more from a front office perspective, and it has certainly been spoken about for a number of years—collateral management moving out of the back office towards the front office.

Decisions are starting to be made around "what's the impact to my margin requirements by doing this particular trade or clearing via this central counterparty?" so, it is about looking at the bigger picture and the impacts to performance that collateral can have.

Have regulatory changes challenged the way firms think about collateral management?

The increasing regulatory requirements have added complexity and that is certainly bringing collateral management to the forefront of people's minds. The decisions about where you might clear a trade, for instance, can make an impact on the netting benefits at a clearinghouse. Consequently, we are starting to see more scenario analysis tools available, certainly, that's where we want to get with this tool. Right now it sits within our organisation, but in future phases, we are not ruling out being able to put it on clients' desktops so that they can actually run scenario analysis across their book. We are not there yet but that is an aspiration for sure.

Some of the clearing members of OTC clearing house offer tools, it is essentially risk scenario analysis but looking at margin implications. The uncleared margin rules last year were a big impact and transformational for a lot of clients that hadn't had to previously exchange margin but suddenly found themselves needing to. We have spoken to a lot of firms that never really had to consider the fact that they might need to hold cash or collateral back for margin. It's about understanding the impact of a certain trade on your collateral requirements, and then what is the cost of that, particularly if you have got to access cash financing markets and how does that cost impact overall performance.

Have you had positive feedback on the solutions from clients?

We are seeing really encouraging results in the reduction of market value that we are delivering. We have revisited some clients margin portfolios once they have been live for a few months and we have seen some positive numbers.

Client feedback has been very positive and those who have started on the path of rolling out want to get the rest of their funds optimised as soon as possible, so we are now working through a pipeline of clients to get them on to the tool.

How do you see the collateral landscape changing over the next five years?

The theme of the increased complexity is not going to go away as there are further regulatory challenges ahead.

The new initial margin rules are going to kick in over the next few years and will impact our clients, so I think that there is a lot going on in the industry right now where we are looking to increase messaging automation, and that is the other aspect of efficiency.

I look into efficiency in two key areas. One is an efficient use of the assets that you've got, which we call optimisation and the other is infrastructure and messaging, which is the efficiency and the speed at which we can move assets around to cover margin calls. There is a lot of exciting stuff going on around that. I hope that the industry will continue to adopt some of these because standardisation and streamlining is clearly a good thing.

The theme around liquidity is going to continue to grow. We have got clients that sit on both sides of the fence in terms of some having a potential cash shortfall, whereas there are others that are long cash.

Interesting models like peer-to-peer lending are becoming more important and we are starting to see more opportunities emerging. That will continue and, of course, with these trades requiring margining, that trend of increasing complexity will increase. I have spoken about centralisation, and I think that will clearly continue.

Modelling from a front-office perspective will become more prevalent as will the tools used to help model the different scenarios around what a specific trade does and what that means from a margin cost perspective, what that does to your profit and loss, and almost having a front office role in terms of the collateral management function alongside investment management. We certainly see liquidity management and collateral management being two areas that sit pretty neatly together, and that is how we think about some of the products that we look to offer. **SLT**

> ***We certainly see liquidity management and collateral management being two areas that sit pretty neatly together, and that is how we think about some of the products that we look to offer***

John Southgate
EMIR product specialist
Northern Trust

Global Securities Finance and Collateral Management Solutions

- Optimize funding and collateral decisions
- Reduce counterparty and operational risks
- Enable efficient and high-growth operations
- Meet regulatory and market requirements

Ready for Next

Communications
Technology
Data and Analytics

broadridge.com

BACK TO THE FUTURE

David Raccat of Wematch.SecuritiesFinancing explains how some institutions are still showing significant gaps in digitalisation, whereas others are above the curve

It's 6am and Bill's alarm clock rings waking him up. Bill hates Monday mornings and he knows the day is going to be another one of those hectic starts to the week. A quick shower, breakfast, and a boring 45 minutes commute on the train, and he sits at his desk at 7am sharp. Bill receives the full list of daily market comments, the long/short positions of the bank, and starts looking at all regulatory and credit metrics. All those ratios and limits need to be perfectly respected and he knows where the priorities lie. He is manually sorting his positions and checks whether he can optimise with his current balance (longs, shorts, substitutions, general collateral turning special, corporate actions, recalls from lenders).

The list of actions is pretty long and he keeps thinking he should try to build a programme to make this more automated, but he never has enough time for this so keeps doing it manually. At 9am he is ready to start hedging his positions with the market and sends messages to all counterparts. He receives answers from each one of them and compares levels, balances, impact on risk-weighted assets (RWAs), on credit limits, and on regulatory ratios—liquidity coverage ratios (LCR), statutory liquidity ratios (SLR), and net stable funding ratios (NSFR).

After running all those numbers, he processes the optimal allocation and confirms all trades through Bloomberg. He then needs to book all those trades in his system and then follow up on settlement status with his operations team. Hopefully, the night batch will not come up with any surprise as the data does not update on a real time basis. It is 3pm and he looks at the overall book to see whether optimisation can be made through returns, recalls, and potentially applicable rerates. At 5pm Bill is done for the day and needs to send an email to apologise as he missed two meetings and one important training session on conduct that he absolutely needs to attend by the end of the month. He will register for the next session and will hopefully be able to make it.

At 6am this very same morning, Linda's alarm clock wakes her up and she opens her eyes listening to Ed Sheeran while preparing herself for this new week. She gets prepared and takes her usual train to work. When she sits at her desk at 7am sharp, her screen automatically uploads the key data for the day (all credit limits, RWAs, regulatory ratios) and she opens the Wematch platform to launch her trading activity. The platform will upload all netted positions (shorts and longs) based on the algorithm, which optimises collateral with ongoing balances, and starts running the matching process with the market data. All matches appear on screen and Linda can just confirm trades with a couple of clicks. The market levels are available in the live market data screen and she can check accuracy with a glimpse.

At 8:30am, once the daily flow is completed, she can start looking at the suggested matches, allowing her to potentially optimise past interests and/or to refinance positions at a better level. She can take care and make substitutions to manage recalls and corporate actions. In two clicks it is done and will feed her system automatically. She still has a couple of lines to push and looks at her messages. She will trade with Bill on those small remaining positions and then the book will be fully hedged. Well done! Now it is 3pm, all ratios have been updated in real time and it is time to think about a new trading structure and work on her memo formalising the request to develop cross-asset optimisation swaps. A sanity check on all metrics, and she will attend the 4pm training session she was registered for. Nice start to the week.

Bill and Linda do not work in the same bank, but they do work in the same industry.

Digital Developments

The securities finance ecosystem still shows massive discrepancies in terms of digital achievement and developments. Some institutions are still showing significant gaps whereas others are clearly above the curve and have made the required investments to cope with digitalisation.

Being connected, building application programming interfaces, pushing for more automated trading and matching, looking at best execution and enhancing price discovery is not only driven by regulatory and cost control drivers, but should be driven by the permanent objective to accompany our products and our markets into efficiency and transparency.

The securities financing marketplace still needs to go through change management. The processes are heavy and complicated as the nature of the traded products is sometimes very difficult to normalise (especially on the collateral swap space where collateral schedules, RWAs, specific parameters on tenors, specific conditions on ratings, wrong way risk, concentration limits, can make the trade extremely bespoke), and price transparency is still sometimes very difficult to achieve.

However, the trend cannot be ignored and it is currently impacting all asset classes and all products.

We are all going into that direction and all parties will need to align. Will the 154 fields of the coming Securities Financing Transaction Regulation help? Maybe. However, the whole market needs to go through change management and embrace new technologies and new trading patterns.

With 45 legal entities currently active in wematch, the platform receives daily around $50 billion worth of interests on securities financing (total return swaps, securities lending and repos), equity derivatives (exotic products), and more recently on delta one products (Eurex-listed futures on single stocks, dividends and indices in addition to cash close and synthetics).

The strategy which has been rolled out is to embrace more and more products and to offer a multi-platform access to our users so that they can navigate accordingly to their needs and mandates.

We keep investing on connectivity, automation, new features, best execution, and artificial intelligence to allow efficient and smart trading processes.

APIs and connectivity are within our DNA, and we are looking at creating a hub which can connect the dealers together with our clients market infrastructures, which can generate any required or ad hoc reporting (to clients and to regulators if needed), and which can process post-trade services.

Connectivity is key and is becoming the name of the game for a successful integration. **SLT**

Connectivity is key and is becoming the name of the game for a successful integration

David Raccat
CEO and founder
Wematch.SecuritiesFinancing

COLLINE

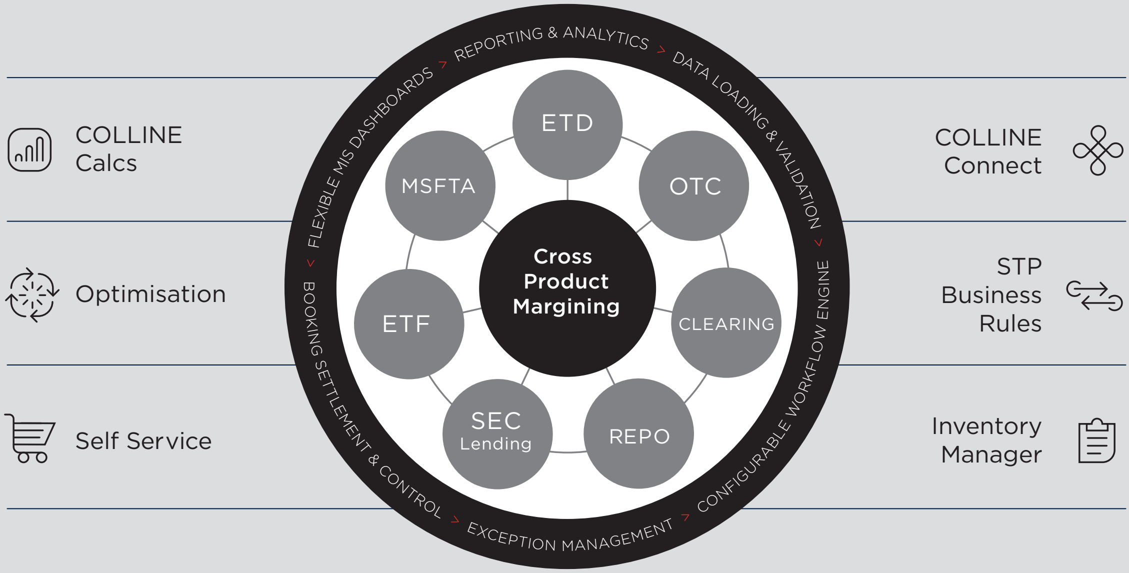
END-TO-END, CROSS-PRODUCT COLLATERAL MANAGEMENT AND CLEARING

While many organisations are working through the administrative complexities of multiple systems, segregated cash and security asset platforms, COLLINE's cross-product solution provides a single enterprise-wide platform for all strategic collateral management and regulatory needs.

With **COLLINE** managing all cross- product collateral, inventory and optimisation needs, both buy- and sell-side organisations can benefit from minimised costs, maximised automation and gain flexibility and control to provide a strategic competitive advantage. Full functionality, yet totally flexible.

COLLINE's approach to collateral management is modular. Clients of all sizes and can choose only the modules that are required to meet their specific business needs.

COLLINE's rapid implementation approach, flexible pricing models and broad industry expertise facilitates real competitive advantage for both buy- and sell-side organisations.



Ask how we can bring agility and competitive advantage to your business. Contact us at: info@lombardrisk.com

Lombard Risk
a VERMEG company

VERMEG

An evolving collateral ecosystem

Graham Gooden and Tim Meredith of J.P. Morgan discuss macro-level themes that are currently influencing counterparties and other ecosystem participants

Managing collateral has become highly strategic. A complex ecosystem that encompasses providers and takers, agents and vendors, venues and clearing houses, it facilitates the interplay of regional and global demands.

In conversations with clients and industry partners to assess the global state of collateral, we've identified 10 macro-level themes. Learn how these are influencing counterparties and other ecosystem participants as they make decisions, evaluate opportunities and deploy their resources.

Focus on growth

Across the industry, we are seeing a subtle shift: a focus on revenue growth and profitability as institutions have become more efficient at managing and adapting to regulatory change. In tandem, demand for scalable and cost-effective solutions is increasing, even as firms focus on optimising their management of collateral.

Taking a global perspective, we see balances growing but with an important caveat: borrowers tell us that this growth is driven more by that focus on optimisation instead of a rising balance sheet.

Drive for efficiency

As institutions met the regulatory requirements of the last decade, financing and lending activities kept pace. Not surprisingly, the individual developments needed to comply with multiple waves of regulatory change have not necessarily resulted in an optimal operating model. Post-implementation, firms are looking to fine-tune and drive for efficiency, seeking to maximise the effective use of collateral and manage their internal capital utilisation across specific desks, regionally and on a firm-wide basis before going out to the market.

Interest in sensible standardisation

While standardisation is essential in order to achieve desired efficiency, it should not be at the expense of innovation. Many believe that the creation of new market constructs for the future should be agreed upon rather than defined or imposed by any one single industry participant. It is, however, important to agree on best practices so that counterparties are able to effectively interact with one another. That could come either through industry conversations on best practices, based on the experiences of individual firms, or by normalisation and acceptance of models put forth by external providers. The key will be to balance the flexibility needed by individual firms with the benefits that stem from common processes.

Desire for control

Institutions are focused on where they can effect change based on the things they can control, such as identifying and creating a target operating model, directing investment, managing price and optimising their collateral. Tri-party provides one engine to facilitate the deployment of those optimisation strategies, with capabilities that support margin management, stock loan and repo.

Changes to traditional approaches

While the operational management of collateral remains in the middle and back office, its importance has made it a front-office concern. Trading desks increasingly focus on the cost or availability of collateral, or the collateral requirements of a transaction, as part of their decision-making process. Furthermore, collateral itself has value; depending on the type, source, term or counterparty, excess collateral could be traded like any other scarce financial resource.

The ability to mobilise collateral across regions is also essential: this requires knowing what assets you have, where they are and how you can move idle or unused collateral to the right place. In certain Asian markets, tri-party structures are helping to unlock assets trapped in illiquid markets for use in onshore and offshore financing.

However, legal entities create additional layers of complexity, particularly for large universal banks. This is due to the need to manage complex internal connections and adhere to different jurisdictional or cross-border requirements.

Demand for quality, in counterparty and in collateral

The quality of the counterparty remains paramount, but your counterparty, and how you face it, is evolving:

- If you use a central counterparty (CCP), the CCP becomes your counterparty and your credit decision is effectively outsourced under the CCP's mutualised risk model
- Alternatively, peer-to-peer networks facilitate bilateral arrangements, requiring a direct review of counterparty quality

Lending counterparties are also evaluated for credit quality and to determine whether they will be able to provide meaningful supply and liquidity during times of high demand.

Finally, collateral quality remains a keen focus. High-quality liquid assets are in high demand, particularly for broker dealers managing against complex balance sheet, capital and liquidity constraints.

Anticipation of future integration

Interoperability and industry solutions, such as CCPs, vendor solutions and the ability to assemble components into partially bespoke solutions are giving institutions more choices in managing their financing and collateral portfolios.

The traditional supply chain is likely to expand in order to include non-traditional solutions. However, new options will require adaptation and adoption to be effective. For example, peer-to-peer platforms will require critical mass and scale to make them attractive in terms of access and liquidity, and counterparties will need to conduct their own due diligence on the institutions they face in these bilateral platforms.

Agent lending models are also evolving to attract new borrowers and lenders and expand the available pool of assets.

Push for flexibility

Tri-party structures continue to expand beyond traditional stock loan or repo. Pledge structures, which were originally discussed as a solution to manage haircuts or margin, could be used for the entire loan exposure amount following the successful use of pledge models in tri-party for segregated initial margin. These structures leverage the existing market infrastructure, and may be quicker to market than other emerging options, such as CCP structures for securities lending.

The pace of change also depends upon the appetite of buy-side institutions to adopt new structures. This continues to be the topic of significant conversations amongst collateral borrowers, lenders and agents, given the introduction of uncleared margin rules.

Investment in technology

Intense investment spending to comply with regulatory change over the last decade is now giving way to more flexibility in allocating spend. Investment funding is focused on increasing efficiency, reducing costs, improving the customer experience and increasing connectivity. Online tools facilitate eligibility schedule management and collateral allocation deployment, while big data initiatives and advanced analytics aid decision making. Being able to combine data across an institution, for one common source of information, is critical, particularly across multiple desks or regions.

Technology that supports interconnectedness and interoperability amongst members of the collateral ecosystem will ultimately create additional efficiencies.

As individual firms continue to innovate internally, we expect that financial technology will help to connect the dots between different institutions in order to improve the broader model.

Role of the agent

As with any ecosystem, participants must remain adaptable in order to thrive. For agents, that means going beyond the critical service of mitigating operational and counterparty risks. As the management of collateral becomes more sophisticated, agents must now be able to:

- Provide collateral eligibility and allocation services that are nimble and can support complex, bespoke and fluid counterparty requirements
- Support a wide variety of asset classes, underlying principal trade structures and markets to facilitate the global deployment of collateral across multiple client legal entity structures
- Work closely with clients, providing tools to help them achieve the optimal use of their collateral in accordance with their own internal demands and binding constraints (for example, capital, liquidity)
- Deliver on-demand reporting and transparency to facilitate intraday collateral and funding requirements

We expect the pace of change to accelerate as innovative technology and new platforms create evolutionary opportunities, and traditional barriers continue to soften, we will continue to work closely with borrowers, lenders and industry partners to identify and adapt to emerging opportunities. **SLT**

Tim Meredith
Executive Director
Investor services sales, EMEA
J.P. Morgan

Graham Gooden
Executive director
Collateral management
J.P. Morgan

Moving from best practice to practical implementation

Todd Crowther of Pirum Systems explains why it is vital that financial software providers keep up-to-date with industry changes and market practices

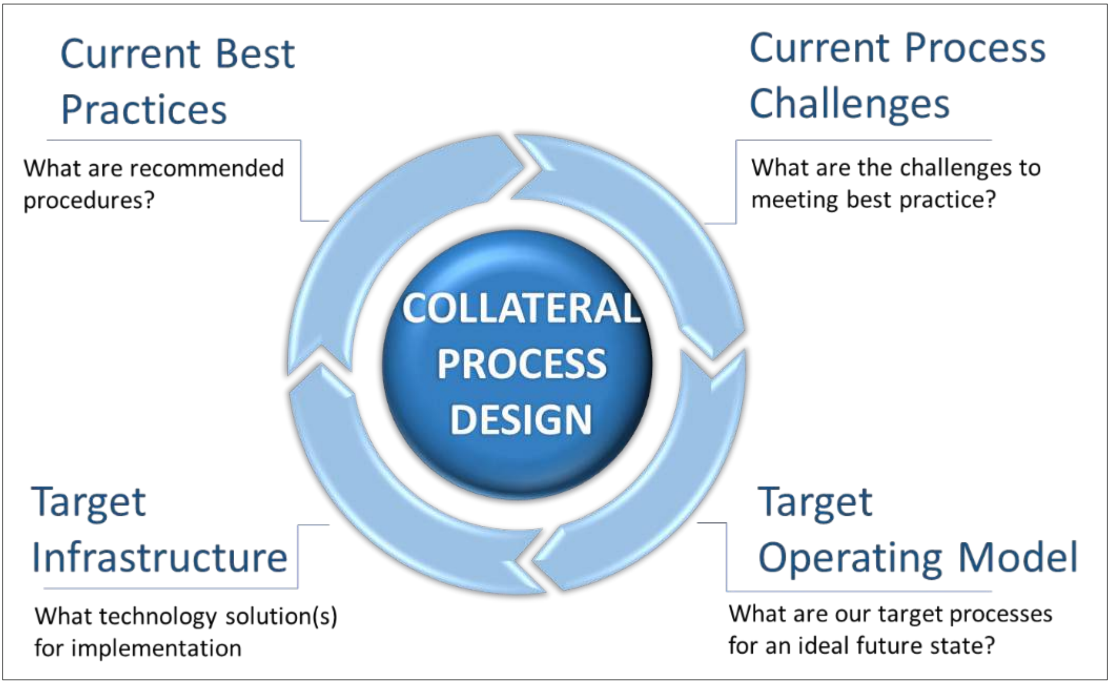
It is vital that financial software providers keep up-to-date with industry changes and market practices so that their products are fit for purpose and do what their clients need them to do. At Pirum, we are committed to helping our clients address current challenges and working with them to offer the best technological solutions to fulfil their needs.

Every institution is at a different stage of their evolution and we try to work closely with our clients to help them reach their 'processing nirvana'. However, we are all individuals within an industry community. We all have to connect and communicate with each other and the more we can all do to identify and adopt best practices within and across our industry, the more effective and efficient it will become to process our collateral trades.

What approach to take?

This article aims to identify a framework that a market participant could use to review their current operating model in order to help them better understand their own process gaps and prioritise the steps they need to take to reach their target operating model. To add context to the framework, this article attempts to consolidate some of the recommendations made by the industry's governing bodies in regards to challenges within the industry as well as opportunities to address these challenges going forward.

The first step towards building a vision for an optimal future-state collateral model is to set out a design framework. The proposed design framework begins by examining current recommended best practice



standards in order to identify optimal procedures that will act as a benchmark against current capabilities. Following this, an examination of existing legacy processes should then highlight the resulting current pain points and challenges in meeting these recommended standards for each component of the process flow. From this analysis, a plan should emerge for both the future target operating model (and its component processes) as well as the target infrastructure required or implementation.

Where are we and what can be done now?

While it is always good to look within your own organisation, we are nevertheless part of a wider community, and the good news is that a lot of analysis has already been carried out.

For example, over the past year, various industry bodies including the International Securities Lending Association, the International Capital Market Association and International Swaps and Derivatives Association have issued updated best practices and, when reviewed side-by-side, it is clear that these recommended standards share a great deal of commonality.

It is important to note that while these best practices provide practical guidelines and suggested procedures for effective collateral processing, they do not necessarily align to current capabilities across the industry. With this in mind, those same industry bodies, in close consultation or through surveys with market participants, have also done a great job in identifying current participant pain points that are common within the industry and, through the consultation process, have also proposed suggested solutions to incrementally address these consensus pain points.

Below we attempt to amalgamate and summarise these recommendations. We outline 10 common components of the collateral process flows which are shared across repo, securities lending and derivatives, then break down each process component by recommended best practice, the consensus pain points and possible opportunities for incremental change across the collateral processing model.

Know-your-customer and client onboarding

Recommended best practice	Client onboarding and contractual set up to ensure accurate and timely capture of all required information including legal, account, tax and standard settlement instructions (SSIs)
Current pain points	Client information is generally independently stored in non-standardised, incomplete data sets
Possible solutions	Move/connect to smart workflows in order to better exchange and share know-your-customer and client onboarding information

Legal documentation processing

Recommended best practice	Documentation should utilise standard industry documentation and, where possible, be executed and captured prior to execution
Current pain points	Documentation is often a) non-standardised, b) unilaterally generated, negotiated and executed as well as c) manually captured and maintained
Near-term solutions	Move to utilise standardised, digitalised contract templates and adopt smart contract workflow tools to better agree, store and bilaterally share agreements

Affirmation and confirmation

Recommended best practice	Affirmation and confirmation including margin should be agreed at point of trade on transaction date
Current pain points	Confirmation/affirmation is by-and-large currently a semi-automated or manual process
Near-term solutions	Move to a T0, fully matched electronic agreement of trade and margin detail

Trade capture and transaction management

Recommended best practice	Portfolio reconciliation via a contract compare system to ensure all trade and collateral exposures are kept in line over the trade lifecycle
Current pain points	Trade mismatch resolution is not performed prior to issuing margin and is further challenged by increasing volumes and tight, mandated timeframes
Near-term solutions	Move to a T-intraday, event-based reconciliation to ensure clean exposure figures can be used when issuing a margin call for T or T1 settlement deadline

Trade and transaction reporting

Recommended best practice	Use electronic means to generate and communicate unique trade identifiers (UTIs) where available, and to reconcile portfolios in line with the regulatory requirement
Current pain points	UTI mismatches caused by manual processes and a high volume of reconciliation breaks due to the existing post-reporting resolution model
Near-term solutions	Implement an in-house or third-party solution to enrich trade data (including UTIs), perform T0 matching, resolve breaks and report by T1 deadline

Margin calculation and call process

Recommended best practice	Margin requirement calculations which ensure efficient calculation of exposure (by T or T1) based on an agreed/mandated underlying trade and collateral mark to market valuation methodology
Current pain points	Margin call computation relies upon poor data integrity and manually intensive call agreement processes
Near-term solutions	Implement flexible, streamlined straight-through processing (STP) workflows to achieve automatic calculation, issuance and agreement of margin calls

Collateral dispute resolution

Recommended best practice	Dispute procedures to escalate and rectify disputes intraday via prompt notification, comparison (valuation, model and other inputs) and agreement
Current pain points	Manual or semi-manual reconciliation and communication processes
Near-term solutions	Move to exception-based STP workflows to achieve automated matching and efficiently resolve disputes

Asset eligibility and selection

Recommended best practice	Tri-party reconciliation and processing capabilities to bilaterally agree and promptly instruct the triparty agent to collateralise agreed exposures
Current pain points	Standardised collateral schedules are often unilaterally stored and do not share common data sources which result in free-form collateral eligibility checking or unsuccessful allocation results
Near-term solutions	Leverage market utilities (tri-party) and/or utilise vendor applications to store schedules, standardise datasets and run efficient eligibility validation and collateral selection

Collateral settlement and reporting

Recommended best practice	Collateral call settlement procedures must be in place to ensure efficient, same day instruction and delivery of collateral in order to minimise counterparty risk. Fails processes should quickly identify and resolve issues
Current pain points	Collateral settlement commonly relies on manually intensive downstream processes that are often siloed alongside collateral systems
Near-term solutions	Leverage market utilities (tri-party) and /or utilise vendor applications to automate collateral pledge/release with the custodian and facilitate real-time settlement, fails management and reporting

Margin interest and outturns

Recommended best practice	Collateral entitlements processing to reflect accrued interest on cash collateral and stock entitlements on non-cash collateral pledged
Current pain points	Lifecycle events on margined positions are generally supported by manual, error-prone processes and communication methods
Near-term solutions	Move to an electronic daily/intraday, event-based processes to calculate, reconcile, match and pay outturns

These possible initiatives include, standardised industry terms, taxonomy, and agreement templates; digitised, centrally stored collateral schedule data; smart contracts for centralised negotiation, storage and sharing of agreement data; standardised, centrally stored counterparty and transaction data; CCP-like centralised valuations and cash flow processing; processing standards that support straight-through processing including ISO 20022 data messaging harmonisation; scalable and interoperable infrastructure to enable connectivity and handle rising volumes due to increasing regulatory mandates; and shared utilities or solutions which automate the full collateral processing lifecycle allowing for a zero-touch environment.

Can we help you on your journey?

How to move from best practice to practical implementation? The most important part of moving forward is continued engagement across the industry. Having set and agreed best practice standards via market participant-led industry bodies, it should now allow for the highest level of adoption and the greatest amount of benefit. Going forward, the industry needs to continue to engage and work together to establish market-wide take-up of these practices. Further work will need to be done in terms of agreeing on common technical standards as well as embracing a unified approach to process management.

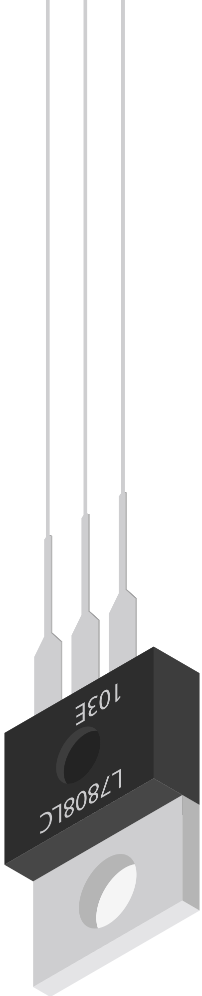
Technology will provide the platform for this implementation. At Pirum, we believe our solutions address the agreed procedures and controls requirements whilst being flexible enough to allow market participants with different operating models to adopt and benefit from our services. Pirum aims to offer cost-effective solutions, which are modular in design, to promote interoperability across internal silos, counterparties and infrastructure service providers. Finally, Pirum's solutions are designed to be scalable to volume, adaptable to a changing regulatory environment and able to incorporate emergent technologies such as cloud, artificial intelligence, machine learning and distributed ledger.

Pirum has a proven track record of working with our clients to deliver cutting edge, easily implementable solutions to help move them along their journey towards their target operating model. Our services address many common industry pain points and span the full collateral processing lifecycle, including affirmation/confirmation, reconciliation, lifecycle management, transaction reporting, margin and collateral management.

Positioned at the forefront of the market innovation, Pirum enables our clients to benefit from ongoing transformational changes encouraging the adoption of best practices across the industry. This has allowed our clients to implement meaningful change that delivers direct positive profit and loss impact. There is much to be done and we are here to help. **SLT**

The most important part of moving forward is continued engagement across the industry

Todd Crowther
Head of client innovation
Pirum Systems



A significant component

Samuel Pierson of IHS Markit explains the significance of collateral in securities lending benchmarks

Collateral is an increasingly significant component in securities lending transactions. The role of collateral has historically been to provide the lender with an asset (cash or securities) that would act as a buffer in the event of a default. This is still the primary function, however, Basel III capital requirements—and other balance sheet pressures—have made collateral a central focus in many transactions.

Broker-dealers value the opportunity to efficiently utilise securities on their balance sheets as collateral and are often in a position where a transaction is only feasible if made against a certain collateral type. Beneficial owners who accept different collateral types will be able to maintain a competitive advantage and capture the best opportunities to lend their portfolios, which makes it all the more important to take collateral flexibility into account when benchmarking lending performance.

Growing demand for non-cash collateral

The change in collateral mix favoured by securities lending counterparts has been stark in recent years. Since the start of 2014, loan balances with cash collateral have increased by $50 billion, while non-cash collateralised loan balances increased by over $600 billion. At the end of Q2 2018, the percentage of loan balances with non-cash collateral was 65 percent—having moved past 50 percent in late 2011.

More than 75 percent of government bond loans have non-cash collateral, which is the highest of the three major asset classes. Government bond loan balances overtook total equity balances for the first time post-crisis in H1 2018, so the percentage of the total collateral mix driven by government bond lending is also increasing.

The increase in non-cash collateral usage is also present in equities, however, where the percentage of non-cash collateral has increased from 44 percent at the start of 2014 to 58 percent at the end of Q2 2018. The motivation is similar, where placing equities that a broker-dealer may already have on their balance sheet as collateral is often the preferred means to borrow equities required for a specific purpose.

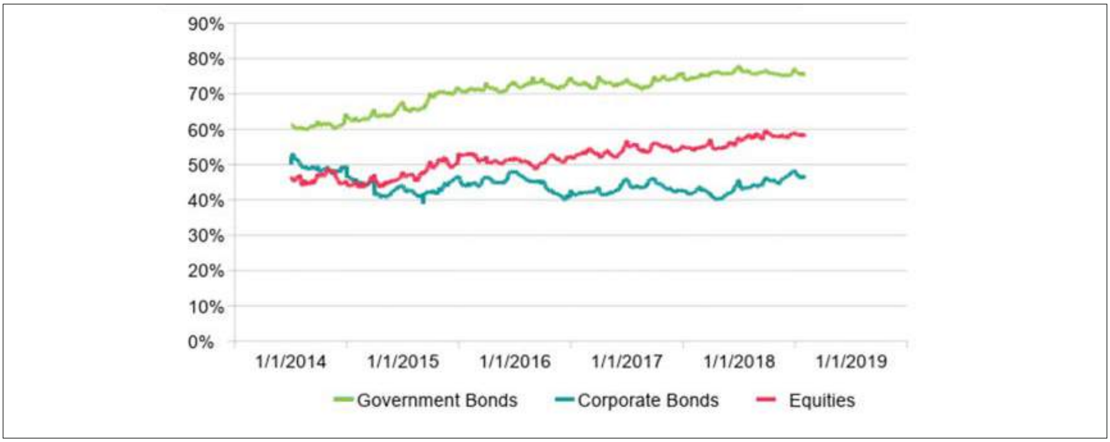
New tools for collateral benchmarking

Given the growing industry trend towards accepting non-cash collateral, IHS Markit sees new opportunities for market participants to more efficiently price loans based on collateral type.

For background, agent lenders contribute lendable inventory and open loans to IHS Markit on behalf of their beneficial owner clients, with flags indicating the collateral that they accept. When examining these datasets, the performance of securities lending programmes for agent lenders can be holistically benchmarked.

Figure 1: Loan balances by collateral type

Figure 2: Percentage of loan balances with non-cash collateral



IHS Markit has determined that the best returns have been achieved by the beneficial owners whose collateral acceptance practices are aligned with the demand from broker-dealers, which can significantly alter utilisation and fees. In light of this, IHS Markit is developing new tools to enable the securities lending industry to analyse the rates associated with different collateral types, which will offer more of the benchmarking granularity to the trading side of the business.

Armed with this information, firms can determine how to potentially increase returns based on the acceptance of different types of collateral. As an example, lenders of government bonds could rationalise the use case of equities as collateral, and capitalise on the demand for collateral upgrade transactions from broker-dealers.

Pledged collateral can provide another opportunity for counterparts to boost returns. In these transactions, collateral is only pledged and there is no physical movement of collateral from the borrower to lender. While there has been a recent push to increase the use of pledged collateral in Europe, implementation challenges remain for many beneficial owners. We believe this data will also be valuable in creating the next generation of performance benchmarks.

Closing thoughts

The noteworthy migration to non-cash collateral, and the significance of the different non-cash collateral types in loan pricing, has created a need for more granular benchmark rates. Collateral will have an increasing significance in determining the revenue from a loan, so it is important to evaluate in the context of trading and benchmarking.

At IHS Markit, we believe market participants should use fees for different collateral profiles at security and market level. This will ensure efficient trading and provide the most accurate lending performance benchmarks.

We look forward to bringing these new tools to market in the aim of supporting our clients as they best realise the opportunities in an evolving landscape for securities lending. **SLT**

Samuel Pierson
Director of securities finance
IHS Markit

Celebrating 25 years

As OCC celebrates the 25th anniversary of its cleared stock loan programme, Matthew Wolfe discusses capital efficiencies in stock loan through central clearing

As OCC celebrates the 25th anniversary of its cleared stock loan programme this year, we have been marking that milestone with growth and development. OCC's stock loan programme continues on a growth trend with a 19 percent increase in new loans in July. Year-to-date stock loan activity through 31 July increased 22 percent from the same period a year ago with 1,611,382 new loan transactions in 2018, and the company's on loan balances have increased 8 percent this year to over $82 billion as of 31 July.

OCC's cleared stock loan programme was launched as a way to recognise the risk offsets between equity and index options, and stock loan positions, thus requiring less collateral from clearing members. Since then, additional incentives have been discovered. Substitution of counterparty credit to a central counterparty like OCC with reduced capital requirements that banks receive from OCC's two percent risk weighting is a big one.

OCC's innovative and unique System for Thematical Analysis and Numerical Simulations (STANS) risk methodology provides members a custom evaluation of their portfolio's risk, which is typically driven by equities. OCC's STANS risk system assesses the combined risk of options positions, stock loans, and equity collateral on deposit. This provides a more accurate view of offsets and delivers savings to clearing members compared to traditional CCP risk models, particularly if the stock loan and/or collateral positions reduce the risk of the option positions. Clearing members and their clients can realise significant collateral and capital savings from OCC's unique risk-modelling by incorporating risk offsets in to their stock loan and collateral decisions. Many clearing members are making investments in their systems and processes to reduce their OCC collateral requirements and improve their operational efficiency.

Capital efficiencies are also realised with cash versus non-cash collateral. With non-cash loans, members are able to post securities instead of cash, making them more capital efficient and freeing up high quality liquid assets. OCC is working closely with custodians as we develop a clearing solution for non-cash collateralised loans. OCC recently surveyed clearing members about their use of non-cash; over 70 percent of respondents indicated they expect non-cash activity will grow over the next one to two years and that if cleared, non-cash balances would be at least $20 billion.

Non-cash offers another benefit for lenders. OCC is working with custodians to ensure that the accounts holding the collateral can support a perfected security interest for both the lender and OCC, and that the oversight, controls and automation provided by the custodians allow borrowers to easily use the accounts. These protections and security interests should mean that the risks of a lender not meeting an obligation to OCC are mitigated and intended to address many of the concerns around buy-side clearing models.

The combination of these benefits should allow participants to enjoy lower costs, better pricing, and higher utilisation offered through centralised clearing of stock loan.

OCC is very appreciative of the support and engagement from our clearing members and the securities lending industry, and we look forward to continued collaboration as we work to refine the collateral model to allow for expanded participation in our clearing solution. Through education and increased adoption, we are working to encourage members and new users to take advantage of the capital and collateral efficiencies and the sound risk management that OCC offers to market participants. **SLT**

"We look forward to continued collaboration as we work to refine the collateral model to allow for expanded participation in our clearing solution"

Matthew Wolfe
Vice president of business development
OCC

Non-cleared margin: the opportunity for securities finance

Bilateral margin requirements are being introduced in derivatives markets across the world, presenting a unique opportunity for asset owners. BNY Mellon's Jonathan Spirgel explains

Without a doubt, the biggest issue facing collateral management today—and for the next couple of years—is the ongoing implementation of margin requirements on non-cleared derivatives in the majority of the world's developed markets.

This process started in Pittsburgh in 2009, when G20 finance ministers met in the wake of the financial crisis to agree reforms designed to strengthen the global financial system.

Under the agreement reached at that summit, the future treatment of derivatives was to be two-pronged: standardised derivatives would be cleared at central counterparties, while non-standardised derivatives unsuitable for clearing would remain bilaterally traded and be subject to the mandatory exchange of both initial margin (IM) and variation margin (VM).

The first phase of the non-cleared margin requirements took effect in September 2016, as the largest US banks with notional derivatives exposure above $3 trillion began posting margin.

In September 2017, the threshold dropped to $2.25 trillion and dropped again to $1.5 trillion in September 2018, requiring a few dozen more institutions to comply.

In these first three waves, almost all of the entities captured were banks and broker-dealers, but events are poised to become much more interesting from here on out.

The number of impacted entities is expected to spike in September 2019 as the thresholds drop to $750 billion, but then expand dramatically in September 2020 as any market participants with derivatives notionals above just $8 billion will be included.

Although $8 billion is not a very large number in terms of notional derivatives exposure, a large swathe of buy-side firms have a little over two years to prepare themselves to meet the new margin requirements.

A rare opportunity

While the challenge of complying within that deadline is a significant one for impacted firms, it also presents a fantastic opportunity for beneficial owners and asset lenders not captured by the rules.

This is because the changes are likely to drive a vast group of new participants to enter the securities finance market for the first time in order to meet their margin requirements. To practically demonstrate the point, let's take the example of an insurance company.

A US life insurer is running a large book of variable annuities for policyholders. The insurer hedges the interest rate risk posed by these annuities using bilaterally-traded long-dated swaps. Due to the notional swap exposure the insurer is running, it will be captured under the non-cleared margin requirements in 2019.

Both IM and VM will be required to be posted against these long-dated swap hedges, and arguably the simplest way for the insurer to access government securities and the other eligible collateral is to access the securities finance market.

However, the need to borrow securities from asset owners does not stop there. As the insurer's older grandfathered swap hedges that are uncollateralised roll-off, they must be replaced by new in-scope hedges that require collateral.

Further, in the current rising interest rate environment, variable annuity books are more susceptible to market moves, meaning that the insurer will need to stockpile an inventory of eligible collateral assets in order to promptly post additional margin in response to VM calls upon changing market dynamics.

Collateral shortfall

With such a marked increase in the amount of collateral required by just a single institution, concern has been expressed in recent years over the total volume of collateral that compliance with the non-cleared rules will consume.

A wide variety of numbers have been quoted on the aggregate collateral drain the new rules will entail. In 2012, research firm TABB Group estimated the shortfall at $1.6 to $2 trillion, while the following year the Committee on the Global Financial System, a subsidiary of the Bank for International Settlement, put the number as high as $4 trillion.

Some of this demand has already been digested by the market during the first two waves of non-cleared margin compliance in 2016 and 2017 as the largest banks and broker-dealers were impacted.

Based on flows observed internally within BNY Mellon, certainly, hundreds of billions of dollars in additional high-quality collateral has been sourced by counterparties over the past two years—with the number perhaps having already exceeded the $1 trillion mark.

Despite the progress we've already seen, there is much more activity to come as hundreds of buy-side firms begin the compliance process. This promises to be a hugely positive development for beneficial owners and asset lenders, as they are well-positioned to capitalise on the increased demand to borrow collateral assets in the years ahead.

The non-cleared margin journey

To provide a sense of the many stages involved in complying with the non-cleared margin rules—and to demonstrate where the opportunity lies for beneficial owners—here is a brief step-by-step guide:

Pre-trade

Am I included?: The process begins with this simple question. If a trading entity's derivatives exposure exceeds the threshold for inclusion, they're captured.

Custodian selection: Captured entities need a third party custodian to which collateral is posted. Custodians with large securities lending programmes may prove particularly useful in sourcing eligible collateral for clients.

Select segregation model: Most custodians offer a choice of segregation models. At BNY Mellon, clients can choose either: Triparty Segregation, which handles many processes on clients' behalf, including identifying unencumbered assets, screening assets and applying haircuts, or; Margin DIRECT, in which clients have a more direct hand in controlling the collateral workflow.

Collateral schedule: Collateral schedules need to be agreed between trading counterparties, specifying the types of securities each are willing to accept as collateral and the applicable haircuts and concentration limits.

Trade execution

Calculating margin: Following execution, a margin call is issued from the trade counterparty requesting a certain amount of collateral. The entity on the other side of the trade will need to verify that it agrees with the calculation—requiring either internal capabilities or the assistance of a third-party collateral administrator.

Dispute resolution: If there is a discrepancy between the two margin calculations, a mechanism—such as a reconciliation service—will be required to resolve the dispute. Eligibility analysis: With the margin amount agreed upon, each party has to determine the eligible collateral the other is willing to accept and compare it against the securities in their custody account.

Collateral selection and transformation: This is where the opportunity lies for asset lenders and beneficial owners. Let's imagine that a counterparty will only accept US Treasuries, but the client's portfolio only contains corporate bonds and equities.

In this case, the client's options are to either buy Treasuries (assuming it has ready cash available) or sell securities to fund the purchase, which is something the client does not want to do.

Securities finance presents a third option. As one of the world's largest agent lenders, BNY Mellon can connect the client with one of the market's largest communities of beneficial owners and asset lenders.

As non-cleared margin rules drive more buy-side entities into borrowing assets through securities finance, BNY Mellon sits at the centre of a network providing borrowers with the collateral they need, and lenders with a potential source of additional yield, creating solutions for the needs of both parties.

Deliver and receive assets: With the eligible margin assets sourced, the collateral is delivered to both counterparties' segregated accounts at their designated custodians.

Post-trade

Post-settlement obligations: For each trade, counterparties are required to mark-to-market every live position every day, and post or receive VM accordingly. This will be an ongoing requirement that will necessitate daily and intraday maintenance.

Connecting lenders and borrowers

Whether you are a buy-side party in line to be impacted by the non-cleared margin rules, a broker-dealer already subject to the requirements, or an out of scope asset manager, the changes to come in the next two years will make securities lending an even more invaluable service for market participants than ever before.

If the higher collateral shortfall estimates prove to be correct, the requirements will present a once-in-a-generation opportunity for beneficial owners to capitalise on these hugely favourable market dynamics as incremental demand for more high-quality collateral only heightens in the market.

As BNY Mellon continues work to onboard more buy-side clients into our collateral administration service, we are adding more potential borrowers to participate in securities finance.

On the other side, we continue to induct new asset owners into our agency lending programme, ensuring that we'll be able to connect holders of margin assets with those that will need collateral going forward.

That is good news for beneficial owners, good news for buy-side borrowers, and good news for the stability of global markets. **SLT**

> ***The changes to come in the next two years will make securities lending an even more invaluable service for market participants than ever before***

Jonathan Spirgel
Head of global liquidity and segregation services
BNY Mellon Markets

Self-driving collateral management

As the collateral management industry is undergoing significant change, Martin Seagroatt of Broadridge discusses five lessons we can learn from Henry Ford and Elon Musk

Collateral management is undergoing significant change. A need to industrialise processes due to cost pressures and regulatory reform is occurring in parallel with the emergence of disruptive technologies such as blockchain, artificial intelligence and robotic process automation.

In many ways, the business of collateral management is currently inefficient and rather like a pre-mass production car plant. This includes:

- A high degree of manual processes
- A lack of standardisation and interoperability between systems, processes and market

participants across the value network
- Continued use of outdated systems and legacy technologies such as faxes

To meet the demands of the 21st century, the collateral value chain needs to become more like an automated and robotised modern day car manufacturing plant.

This article, therefore, looks at the lessons we can apply to collateral management from two legendary disruptors of the transport industry; Henry Ford and Elon Musk—one from the early part of the 20th century, the other 100 years later in the early 21st.

Henry Ford

Henry Ford popularised the use of the assembly line and mass production that became the benchmark for industrial practice in the first half of the 20th Century. He was responsible for dramatically increasing ownership of the automobile in American society, disrupting the transport industry and changing the world in the process. It was Ford's intention to produce the largest number of cars, to the simplest design, for the lowest possible cost. Through innovative production techniques and a relentless focus on process improvement, Ford was able to cut prices, double the minimum daily wage to $5, produce a superior product and still make a profit.

Elon Musk

Musk has set out to save the planet from global warming and disrupts the transportation industry in the process by mass-producing affordable, driverless electrical cars. Musk's personal brand and ability to promote his vision has seen Tesla briefly achieving valuations that exceeded both Ford and General Motors, despite having just 1 percent of their sales.

Henry Ford once said: "You can't build a reputation on what you are going to do."

More recently, however, Tesla has become in Musk's words "the most shorted stock in history"—a possibly dubious claim—following ongoing production delays versus Musk's overly optimistic forecasts. Musk's tweets (what Henry Ford would have made of Twitter is anyone's guess) about taking the company private, then keeping it public, have compounded downward pressure on Tesla's share price. We will now look at five lessons we can learn from Ford and Musk and how we can apply them to collateral management.

Lesson one: don't underestimate the effort required to hit key deadlines

Musk has made ambitious predictions of producing 10,000 of Tesla's mass-market Model 3s a week by the end of 2018. But problems with a highly robotised production line mean that just over 2,000 a week are leaving the factory. Tesla's revised goal of 5,000 still seems overly optimistic.

The collateral management business is facing its own demanding deadlines. Wider market compliance with the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) uncleared margin rules are looming on the horizon and reporting of collateral under the Securities Financing Transaction Regulation (SFTR) is also approaching rapidly.

The sheer range of counterparties falling under the uncleared margin rules for exchange of bilateral initial margin (IM) in September 2020 will see dealers facing around 1,000 new in-scope entities, according to the International Swaps and Derivatives Association (ISDA). Because each buy-side firm often faces more than one dealer, ISDA estimates the rules will require the creation of around 9,400 new relationships and 18,800 new segregated margin accounts (two per relationship for the posting and collection of IM).

The number of margin calls that both dealers and the buy side have to deal with will also increase significantly.

The work to set up segregated accounts and repaper agreements is enormous. This is on top of the need to implement technology solutions to manage the increase in margin calls and optimise collateral usage.

Similarly, SFTR poses huge challenges, with granular reporting on collateral and calculations around rehypothecation.

Early preparation and a conservative approach to estimating the effort required to comply with these mandates will help to avoid bottlenecks, headaches and short-term tactical solutions as compliance dates approach.

Lesson two: focus on re-designing processes

A key reason for Ford's success was that he broke the manufacturing process down into its constituent parts. This division of the production process allowed Ford to focus on how he could refine each practice.

This provides a useful lesson for collateral management. Before seeking to comply with incoming regulation, it's important to clearly define the target state. This includes asking questions such as:

- Where are the bottlenecks?
- Where can steps in the process be automated or ideally eliminated?
- What upstream problems cause downstream delays?

Collateral can be viewed as a value chain. Inputs include internal cash and securities inventory, client/counterparty flow and high-quality liquid assets (HQLA). The outputs are central counterparty (CCP) eligible collateral for derivatives margin, liquidity coverage ratio eligible collateral and specials/general collateral the firm can finance for incremental revenue.

Similarly, it is important to analyse the infrastructure around the collateral management process and the links in the value chain to see where bottlenecks and inefficiencies can be resolved. Connectivity to infrastructures such as tri-party agents, CCPs, peer-to-peer/all-to-all networks and trading platforms can increase straight-through processing. Collateral messaging tools and reconciliation solutions also automate a lot of inefficient manual processing.

Ford made sure that all of the feeder lines in his plant were synchronised. Musk built his huge giga-factory battery manufacture plant in relative proximity to his auto production facilities and to achieve economies of scale. Collateral desks should consider how they can reduce similar bottlenecks and single points of failure in operations.

Ford also experimented rather than just optimised. Lots of people claim to optimise systems and processes without any real baseline of performance to measure changes against. Ford experimented with all of his changes and had very objective measurements of success such as the time and cost of producing a Model T. If an idea didn't work at the experimental level, Ford quickly abandoned it. This is an approach that can pay dividends when optimising collateral processes.

Lesson three: standardise first, then automate

Henry Ford: "Any customer can have a car painted any colour that he wants so long as it is black."

After optimising the production process, Ford and his engineers noticed that the bottleneck in increasing output further was the speed at which that paint could dry. As Japan black was the fastest drying paint colour, Ford began manufacturing cars available only in black.

The drying paint in collateral management is data and its lack of standardisation. Industry associations such as ISDA, the International Securities Lending Association and the International Capital Market Association are now looking at how participants in the securities finance and derivatives industries can collaborate to standardise transaction data for ease of reporting.

For example, ISDA's Common Domain Model (CDM) 1.0 provides "a standard digital representation of events and actions that occur during the life of a derivatives trade, expressed in a machine-readable format. Using this common standard will enhance consistency and facilitate interoperability across firms and platforms, irrespective of the programming language ultimately used for each technology. Each firm has historically used its own unique representations of events and processes, which has severely curtailed the potential for technologies to interoperate."

"The ISDA CDM is intended to provide an industry standard blueprint for how derivatives are traded and managed across the lifecycle. Establishing a common set of data and processing standards will facilitate interoperability between firms and technology platforms."

The standardisation achieved through the ISDA CMD and SFTR in the securities finance business, will reduce operational workload and enable the business to industrialise. It will pave the way for smart contracts, distributed ledger technologies and artificial intelligence while making transaction reporting data more useful to regulators in identifying systemic risk.

While getting firm-level data in order is complex and may be as exciting as watching paint dry, data models are undoubtedly the drying paint in the collateral process. Following Ford's example and getting clean, standardised data models in place in advance of SFTR and BCBS IOSCO is the key to simpler compliance and future automation.

Lesson four: don't automate things just because you can

Following the standardisation of collateral data, the industry has an opportunity to add further automation to the process. However, Elon Musk's production delays hold valuable lessons in this respect. One of the reasons Tesla has missed targets is that Musk has attempted to over-automate the production process.

According to a recent Economist article: "Rather than relying on the time-tested manufacturing methods used by established rivals, who still use people to do tasks that machines are as yet unsuited for, he wants his car factory to be a hyper-automated 'machine that makes machines', bristling with robots and keeping human involvement to a minimum. Max Warburton at Bernstein, an equity-research firm, argues that the big global carmakers have realised—owing to bitter experience with overzealous previous attempts at automation—that a sensible mix of man and machine produces the most efficient car-assembly for the time being."

When deciding what to automate, it is important to assess whether a process requires significant human involvement, or is, in fact, less expensive for humans to do than implementing and continually governing an automation algorithm.

Lesson five: prioritise and stay focused

Following Musk's errant tweet about taking the company private (and other seemingly ill thought-out tweets), media speculation has increased that his heavy workload has affected his judgement. Musk's objectives of simultaneously mass producing electric vehicles, implementing large-scale underground transportation systems, and colonising Mars are certainly ambitious.

Collateral market participants should also seek to prioritise when it comes to the high volume of tasks facing them to comply with the broad scope of new regulations, while simultaneously preparing for a world of robotic automation and other disruptive technologies. Thinking carefully about the long-term view of where the industry and technology are heading and ensuring the building blocks are in place will enable your firm to stay relevant as collateral experiences its industrial revolution. In the words of Henry Ford: "Nothing is particularly hard if you divide it into small jobs." **SLT**

"Following the standardisation of collateral data, the industry has an opportunity to add further automation to the process"

Martin Seagroatt
Marketing director
Broadridge

A wish list for collateral managers

As the broader collateral management marketplace settles into a new era of challenges and opportunities, Dmitry Rozenfeld of Lombard Risk explains how global regulatory pressures and increased volumes have presented challenges for all market players

As we enter the fourth quarter of 2018, the broader collateral management marketplace settles into a new era of challenges and opportunities. Global regulatory pressures and increased volumes (of margin calls processed and collateral exchanged) have presented challenges for all market participants. With that in mind, some are taking these disruptions as opportunities to re-evaluate how their business functions and to build a revenue-generating framework around collateral management that can include optimisation and transformation.

In the latter stages of 2018, many new financial institutions will be caught in the net of mandatory regulatory compliance, with even more market participants nervously watching the calendar for their 'due date'. Those that have already been forced to comply with some of the new operational and reporting challenges over the last few years are striving to find efficiencies in the marketplace or internally across products and business lines.

Over the last few years, much has been written about this dynamic new marketplace and the implications for its participants. However, little is said about the individuals processing the daily margin calls while the rules of the game change all around them. These depleted collateral analysts and managers are looking forward to year-end and a much-needed holiday before returning to the endless stream of margin calls, portfolio reconciliations, dispute management and new regulatory rules.

As the holidays approach, those closest to the process look for some relief from the daily grind of collateral management in 2018. The following wish list is intended to mitigate some of the stressors associated with collateral management while giving analysts, managers and department heads maximum productivity in their work lives.

Wish list for the collateral analyst

Dealing with margin communications, collateral allocations and dispute resolutions, the analyst is often struggling with increased volumes and a lack of collateral availability.

Automation/STP

For any collateral analyst, an increase in automation and straight-through processing tops the wish list. Automation and straight-through processing (STP) are paramount in achieving increased efficiency and managing high volume. The capacity to automatically manage margin communications, allocate and settle collateral assets, send and receive reports, handle monthly interest accruals and update changes to legal agreement terms turns daily collateral management into an exception-based process.

STP allows the collateral analyst to manage increased volumes while simultaneously curbing recurring nightmares of non-stop margin call emails and disputes.

Though automation and STP are certainly beneficial, it is critical to remember that when dealing with something as financially sensitive as collateral management any automation built would need numerous controls in place. A definable automation framework with flexible rules for identifying the quality of data received, large swings in collateral requirements and optimal asset allocation—all executed within the time constraints dictated by legal agreements—would be high on any analyst's list.

A centralised process across business lines

The new legal framework for margining and derivatives, along with increased demand for high-quality collateral has encouraged and (sometimes forced) market participants to expand the scope of their trading business. With more derivatives products moving to a clearing model, more high-quality assets being sourced through the repo market/collateral transformation and a tighter focus on liquidity and collateral costs, financial institutions must often deal with margin demands across several business lines.

The collateral analyst is ensnared and burdened by the traditionally siloed nature of these businesses. Each product line—whether cleared over-the-counter (OTC), central counterparty (CCP), exchange-traded derivatives, OTC derivatives, repo, securities borrowing and lending or to be announced trading, which comes with its own margin process including its own system, dedicated margin analyst(s) or manual spreadsheet.

This not only makes the collateral analyst's job more challenging, it often leads to missed opportunities to allocate collateral assets across products. Siloed business lines narrow the focus of operations staff and lead to inefficiencies at a higher level. Managing these diverse products in one place would allow the organisation and the analyst to operate more effectively, making holistic allocation decisions within a standardised operational framework.

Wish list for the collateral team manager

The collateral management team lead is responsible for organising the activity of collateral analysts and aligning the organisation's practices with the current direction of the industry. Dealing with present and future challenges, the team leader must comply with regulatory standards while also reframing and modernising procedures.

A connected collateral management marketplace

In today's environment, creating an infrastructure of linked technologies is vital to operational efficiency. Connectivity is key when it comes to various internal and external stakeholders. The end to end collateral management process can interact with many systems including legal agreement repositories, trading systems, market utilities (for communications, reconciliations and settlements), CCPs, futures commission merchant's (FCM), Triparty agents, inventory management systems and analytical tools—each with their own technology.

Linking and centralising these components in a collateral management system would allow the team manager the agility to deal with challenges in an ever-evolving marketplace. This puts the collateral management team in a strong position; focused less on simply satisfying obligations and more on adding value, being strategic and perhaps even generating revenue.

Regulatory compliance/standardisation

New regulations on exchanging collateral, calculating initial margin, reporting on/managing collateral disputes, and maintaining liquidity are (depending on your organisation) already in place or right around the corner. These regulations come with their own set of challenges and require a large amount of organisational focus.

When looking at regulatory change globally, chances are you will be impacted in some way. Even if not directly targeted by a specific change perhaps your counterparty is, and you will need to adapt to their new operating framework.

Having to constantly interpret, internalise and react to regulatory change is an extremely demanding job, much of which falls on the collateral management team lead. A final established standard with fewer regulatory fluctuations would relieve much of the pressure.

However, with the realities of the current regulatory environment, having a system in place that complies with various rules across asset classes, product types, borders and regulatory jurisdictions is certainly on many collateral management wish lists.

Wish list for the department head

The department head is responsible for the bigger picture and needs to contextualise the collateral management function within the broader goals of their organisation.

Statistics and analysis

Assuming that our department head has all necessary tools in place and is running a regulatory compliant process within a connected collateral management ecosystem one thing they would put on their wish list is the ability to analyse that ecosystem and make tangible inferences about how their business is running.

Recent advances in big data have led to new techniques in capturing, storing, analysing and extracting value from large swaths of information. Applying these techniques to collateral management gives the department head powerful information.

The availability of collateral utilisation information and trends in call volumes per client, asset type and business line, while running scenario analyses against those figures, would empower the department head to make a more accurate investment and risk mitigation decisions.

Implementing analytical tools properly is the first step towards transforming collateral management into a revenue-generating activity.

Optimisation and centralised inventory

Collateral optimisation and automated allocation are much more than just the cheapest to deliver. With the rules of the game becoming more complex and with more assets and business lines being considered for margining, implementing an optimisation strategy that is both broad enough to consider unique operating frameworks together and flexible enough to adapt to changing market dynamics leads to a competitive advantage.

In order to optimise collateral allocations properly and take the next step into quantifying the benefits of collateral management decisions, centralisation of both the full suite of margin requirements along with the firmwide inventory is required. This needs to be done within the context of liquidity management, collateral eligibility and haircut structures, concentration limits and asset protection and segregation. Allocating cost factors to collateral movements can only occur once the above has been considered.

The department head would put a tool and/or system that can accomplish all of the above highs on any wish list. They should then work with other departments in order to use the flexibility of said tool to craft the optimisation strategy that best suits my organisation.
Collateral management is central to any financial institution’s risk mitigation strategy and operations. Legal, IT, Front Office, and Treasury, just to name a few, will all have their own collateral management wish lists heading into the end of this year. It is crucial for any vendor product or utility to grow with the demands of the market and take these wish lists into account. **SLT**

Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the official policy or position of Lombard Risk or the Vermeg Group.

Cooking up a collateral treat

Ed Hellaby of FIS suggests it is time to 'mise en place' your collateral operation

Have you ever wondered how it is that a professional chef can turn out a full service of dishes in parallel, while your attempt to whip up anything more than an omelette and coffee at the same time leads to a trail of destruction and charred pans? You could say it is a skill that the chef has honed over years of cooking—and it is, of course, true; years of practice go a long way toward being able to master myriad dishes and the associated time management to ensure they all come out together. Or perhaps you would put it down to the quality of the equipment they have at their disposal—but then, you also know that some restaurant kitchens in our capital cities are no larger than a suburban closet. For the real 'secret sauce', we must look to a French term well utilised in the culinary world, 'mise en place'. Unlike most of us, professional chefs do not prepare each step of a menu as they arrive upon it; instead, they will ensure each and every ingredient is pre-washed, weighed and prepared. The mise en place their kitchen, which simply means, 'to put everything into place'. This allows a chef to efficiently assemble dishes by adding their ingredients at just the right time, in just the right quantity. At this point, you may be wondering what any of this has to do with collateral management—and my answer would be: quite a bit.

Over the past two years, we have seen a swathe of regulation generate the need to raise and mobilise both cash and non-cash collateral on a T0 or T1 basis. As the uncleared margin rules (UMR) continue to come into effect for new waves of market participant, the demands on liquidity and operations processing is set to climb. At a recent collateral forum, an industry veteran estimated that upward of $105 billion is now collected daily to cover initial margin (IM) obligations off the back of UMR for the phase one and two participants. This is on top of the existing margin requirements for cleared and non-cleared trades.

One of the key challenges facing collateral management teams on the buy side is ensuring there is sufficient liquidity available to meet their variation margin (VM) calls on a same-day basis while maintaining the lowest possible cash buffers to avoid a drag on performance. An intrinsic part of a collateral manager's daily job is now to ensure they can accurately determine tomorrow's VM and ensure they have worked with treasury to ensure they raise the cash they need. This mise en place of the cash is generally achieved by lending out their assets. The sooner and more accurately you do it, the better the outcome. Advanced collateral management solutions, such as FIS's Apex Collateral, are able to perform these kinds of 'what-if' calculations for VM to produce reports that can be passed to the treasury and funding groups automatically.

In a similar ilk, the buy-side can also expect to be hit hard by the demand to post IM for their uncleared trades. IM requirements, for the most part, must be satisfied with high-quality liquid assets (HQLA), something an asset manager may not be held in sufficient quantities. An increasing trend on the buy side is to leverage post-trade optimisation to ensure that they are effectively using their existing portfolio of assets to its full extent. However, where there are shortfalls in inventory, they will likely have to turn to the securities lending markets to perform upgrade trades to raise sufficient levels of HQLA. As we are still two years away from the margin rules being fully in effect, we cannot be certain what kind of liquidity squeeze this will place on the market. However, we can be sure of one thing: with a rising interest rate environment and an increased demand for HQLA, we will see higher costs of borrowing in the securities lending markets. While this may be a boon for the beneficial owner community, it will likely eat further into the shrinking margins for actively-managed funds.

Due to growing demand for access to the repo and securities lending markets, the buy side are increasingly looking at setting up dedicated collateral financing/trading desks tasked with executing repo and securities lending transactions to raise the right kind of collateral. For those organisations new to this space, trying to determine where this process will fit in their overall process and system architecture is no simple task. Those lucky enough to already have an enterprise collateral management system with a real-time view of global inventory that can also support repo and securities lending trading, it may be as simple as flipping a switch to activate this functionality. For others with legacy in-house technology, or just a collateral operations solution, the road ahead may be a little more convoluted. Complex integration with trading platforms or third-party agents will need to be done to ensure that as the desk executes a trade and raises collateral, the positions show as available inventory for use within the collateral platform.

This real-time flow of data is essential for anyone who may be looking to use any form of optimisation engine to most efficiently allocate inventory across the competing requirements for VM, IM and alpha generation through the lending programme.

We can think of the next chapter of collateral management the same way as we would a chef walking on to the line for a busy Saturday service. If we put into place a process that lets us determine and source exactly what collateral we need, where and when we need it, we put ourselves in the best position to succeed.

And just like a chef, if we fail to mise en place our collateral operations, we will quickly find ourselves looking for a new kitchen. **SLT**

"If we put into place a process that lets us determine and source exactly what collateral we need, where and when we need it, we put ourselvesin the best position to succeed"

Ed Hellaby
Business development director
FIS

BNP PARIBAS

BNP Paribas Securities Services is a multi-asset servicing specialist with local expertise in 36 markets around the world and a global reach covering more than 90 markets. This extensive network enables us to provide our institutional investor clients with the connectivity and local knowledge they need to navigate change in a fast-moving world.

As of 31 December 2017, BNP Paribas Securities Services had $11.317 trillion in assets under custody, $2.774 trillion in assets under administration, 10,959 funds administered and 10,709 employees.

Seven desks worldwide cover established securities lending and borrowing markets and provide in-depth knowledge of local market trends and across multiple asset classes. BNP Paribas Securities Services' proven track record in the securities lending and borrowing industry is the result of strong trading expertise, robust risk management policy and control, and the continuous development of operational efficiencies.

BNY Mellon is a global investments company dedicated to helping its clients manage and service their financial assets throughout the investment lifecycle. Whether providing financial services for institutions, corporations or individual investors, BNY Mellon delivers informed investment management and investment services in 35 countries.

As of 30 June 2018, BNY Mellon had $33.6 trillion in assets under custody and/or administration, and $1.8 trillion in assets under management. BNY Mellon can act as a single point of contact for clients looking to create, trade, hold, manage, service, distribute or restructure investments.

BNY Mellon's Investment Services business provides global custody and related services, broker-dealer services, collateral services, alternative investment services, corporate trust and depositary receipt services, as well as clearing services and global payment/working capital solutions to institutional clients.

We touch all points across the investment lifecycle: from the creation of assets through the trading, clearing, settlement, servicing, management, distribution and restructuring of those assets:

- We help create assets, working with clients to issue debt or debt and revenue, for example
- We facilitate the trading and settlement of assets through our broker-dealer, global
- markets and treasury services activities
- We hold and service assets for beneficial owners through asset servicing
- We provide a distribution channel for assets through our Pershing platform
- We can restructure those assets, as in the case of debt restructurings, through
- corporate trust
- We support the rapidly expanding collateral management needs of both the buy and sell-sides through our global collateral services business.

With the formation of our Global Collateral Services division, we have brought together four of the businesses that have a central role to play in solving collateralisation challenges—agency and principal securities lending; tri-party securities financing; our Derivatives 360 OTC derivatives collateral processing service; and liquidity management—to help buy-side and sell-side firms address their needs around liquidity, efficiency and the segregation and optimisation of collateral.

Mike Airey
Vice president, sales
+1 (201) 714 3039
Mike.Airey@broadridge.com

www.broadridge.com

Broadridge is a global fintech leader with $4 billion in revenue, providing communications, technology, data and analytics.

We drive business transformation with solutions for enriching client engagement, navigating risk, optimising efficiency and generating revenue growth, helping our clients get ahead of today's challenges and capitalise on what's next.

Broadridge offers a suite of global, front to back office securities finance and collateral management solutions. This includes integrated or standalone systems for securities lending, repo, collateral management, collateral optimisation, clearing reports harmonisation and a multi-jurisdictional,
cross-asset trade and transaction reporting solution for SFTR and other major global regulations.

For more information about Broadridge and our proven securities finance, collateral management and trade and transaction reporting solutions, please visit www.broadridge.com

Daniel Belluche
Senior vice president and general manager
FIS securities finance and collateral
daniel.belluche@fisglobal.com

Jamie Macdonald
Senior vice president and general manager
Apex securities finance and Global One
jamie.macdonald@fisglobal.com

Igor Salzgeber
Managing director, Apex collateral
igor.salzgeber@fisglobal.com

www.fisglobal.com

FIS provides best-of-breed solutions for all aspect of securities finance and collateral management. We help a broad range of participants address all aspects of their securities borrowing and lending, repo, enterprise collateral and optimisation needs.

Whether you are on the supply or demand side of the securities finance business, FIS helps you maintain agile growth and run smarter operations by supporting you in:

- Increasing profitability, improving transparency, and making smarter decisions throughout the global trading day
- Expanding your business through support of a broad range of product types and markets
- Controlling operational cost and increasing the efficiency of your business
- Managing risk and holding down the cost of collateral/capital usage

FIS's solutions for securities finance allow you to automate your entire operation, including enterprise collateral management, collateral optimisation, order routing, trading, real-time positions management, operations, accounting, settlement, trade analytics and trade automation services. Our solutions are used by more than 140 of the world's leading financial institutions, including the world's 10 largest banks. four of the businesses that have a central role to play in solving collateralisation challenges—agency and principal securities lending; tri-party securities financing; our Derivatives 360 OTC derivatives collateral processing service; and liquidity management—to help buy-side and sell-side firms address their needs around liquidity, efficiency and the segregation and optimisation of collateral.

North America region:
Vladimir Fookson
Senior vice president, head of sales Americas
Securities finance and processing
+1 (617) 513 5580
vladimir.fookson@fisglobal.com

EMEA office:
Andrew Murray
Head of sales UK
+44 (0) 20 8081 2000
andrew.murray@fisglobal.com

Hong Kong office:
Mathias Bellancourt
Head of sales Asia Pacific
+852 3719 0861
mathias.bellancourt@fisglobal.com

Eric Brandt
Director of Sales
+1 (212) 294 7752
ebrandt@helixfs.com

info@helixfs.com
www.helixfs.com

Today's challenging times, now more than ever, demand the most comprehensive and dependable securities finance and balance sheet management tools available. With the ability to provide 'the small company touch' responding to the specific requirements of each individual customer, but with the added security and resources of being backed by parent company Cantor Fitzgerald, Helix Financial Systems continues to be a leading provider of software solutions, hosting and consulting services for the buy and sell-side communities.

HelixREPO, the original standard bearer for fixed income repo trading, is complemented by our HelixSL, HelixMBS, and HelixALARM modules. Used together or separately, these modules offer global multi-asset solutions for managing every requirement of a modern securities finance and collateral management desk. Solutions offered include, but are not limited to, full lifecycle contract management for both fixed income repo and equity stock loan, US and non-dollar collateral management, counterparty and market risk, profit and loss, and cost of carry reporting, TBA pool allocation management, and regulatory balance sheet and capital cost reporting. For more information about Helix Financial Systems and our solutions, please visit our website.

Adrian Dale
Director, product management
+44 (0) 207 064 6348
adrian.dale@ihsmarkit.com

Charlie Bedford-Forde
Director, sales specialist
+44 (0) 207 260 2299
charles.bedford-forde@ihsmarkit.com

www.ihsmarkit.com/sftr

IHS Markit, in partnership with Pirum Systems, offers an end-to-end reporting solution for Securities Financing Transactions (SFT), which sets an industry-wide standard, providing the foundation needed to reconcile trading activity down to the unique transaction identifier and legal entity identifier level of granularity.

The SFTR solution offers participants turnkey connectivity to trade repositories. This modular solution leverages our proven track record of delivering industry-wide reporting solutions and our 11 years of partnership with the securities lending community.

Key benefits

- Built-in infrastructure and relationships: Tap into the existing relationships that IHS Markit has built across the securities finance industry. Our network of data contributors, built over the last 11 years, represents $15 trillion of inventory held by over 120,000 underlying funds. We process and match over 3 million transactions daily using a reporting spec that already covers the majority of fields required by the latest draft of the SFTR legislation.
- Flexibility: Use the solution's modular nature to meet your individual needs and structure. Starts with the data ingest architecture all the way down to trade reporting as the solution will be connected to every trade repository.
- Future-proof compliance: Get a solution that has the flexibility to deliver transaction reporting across future legislation, which might require transaction reporting, as well as any additional transparency/risk reporting framework that could be mandated across the securities finance industry.

Paul Wilson
Global head of securities finance | equities data and analytics
+44 (0) 207 260 2117
paul.wilson@ihsmarkit.com

Melissa Gow
Executive director, consultancy
+1 (646) 312 8963
melissa.gow@ihsmarkit.com

www.ihsmarkit.com/msf

IHS Markit is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. We serve customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions.

Analytics

Our Securities Finance dataset covers more than $21 trillion of global securities in the lending programmes of more than 22,000 institutional funds, which includes more than three million daily transactions dating back more than 112 years.

We work with leading industry practitioners, including custodians, prime-brokers, asset managers and public funds, to optimise their securities lending programmes utilising web, Excel, data feed, application programming interface and third-party delivery mechanisms.

Consulting

IHS Markit Securities Finance Consulting provides fully independent research to institutions already active, or considering becoming active, in the securities finance market. This includes repo, securities lending and prime brokerage activities.

With many years of consulting and practitioner experience in securities finance and programme analysis, the team can draw on the most globally comprehensive daily stock loan database with more than 112 years of transaction history.

With a reporting infrastructure built around the unique Markit Securities Finance data set, the consulting team have a proven track record in providing:

- Performance benchmarking
- Programme evaluation
- Exposure reports
- Collateral reviews
- Spotlight surveys

J.P.Morgan

Michael Albanese
Global head of collateral management
+1 (212) 622 8067
michael.p.albanese@jpmorgan.com

www.jpmorgan.com/CFS

Collateral management/collateral agency services

J.P. Morgan offers innovative solutions to collateral providers and receivers, helping institutions efficiently manage collateral against securities and derivatives transactions and address financing, funding and liquidity requirements.

Banks, broker-dealers, asset managers, insurers, central banks and pension funds can optimise their collateral portfolio with sophisticated analytic and eligibility tools and flexible bilateral and tri-party structures. J.P. Morgan's global capabilities, supported locally, help institutions manage collateral around the world or onshore, in order to meet increasingly complex financing and liquidity requirements.

A leading global custodian, J.P. Morgan operates in approximately 100 markets and provides a comprehensive suite of settlement, asset servicing, tax, FX, securities lending, cash and liquidity products.

Lombard Risk, a Vermeg Company, is the leading dedicated global provider of regulatory reporting and collateral management solutions to the financial services industry. Through intelligent automation and optimisation, Lombard Risk's clients are able to improve their approach to risk management, gaining the agility they need to have a competitive advantage, reducing the cost and complexity of managing risk while maximising accuracy, speed and value.

Lombard Risk's award-winning COLLINE, is a configurable collateral management solution that automates the workflow and settlement processes across multiple business lines—saving time, reducing costs and increasing operational efficiencies.

Murex—MX.3 for Collateral Management and Securities Finance

For more than 30 years, Murex has provided enterprise-wide, cross-asset financial technology solutions to capital markets players. Its cross-function platform**,** MX.3, supports trading, collateral management, treasury, risk and post-trade operations, enabling clients to better meet regulatory requirements, manage enterprise-wide risk, and control IT costs. With more than 50,000 daily users in 60 countries, Murex has clients in many sectors, from banking and asset management to energy and commodities.

MX.3 reinvents active trading of enterprise asset inventory. It provides funding and collateral trading desks with a real-time view of their equity and bond enterprise inventory. The solution includes tri-party repos with agent connectivity, evergreen and extendible, fee and rebate stock loan, as well as synthetic financing across asset classes. Corporate actions can be executed automatically. Compliance and concentration rules, as well as collateral eligibility checks, automatically apply.

MX.3 for Collateral Management and Securities Finance offers a single framework for enterprise-wide margining, optimization, regulatory compliance and collateral trading. The offering features an enterprise inventory manager for cash, security and physical commodity positions—synchronized in real-time with positions, market data and settlement events. The analytical optimization algorithm proposes optimal allocations, substitutions or repo booking against margin or funding requirements and user-defined constraints.

The single platform bridges gaps between silos, decreases cost of ownership and increases efficiencies across the chain. Operational processes are rationalized around a single data source. This avoids unnecessary reconciliations between front, back and risk functions.

This solution centralizes collateral processing across entities and business lines for bilateral or cleared OTC, repo or securities lending, and exchange-traded derivatives products. The exception-based workflow manager enables intra-day margining and high STP across the collateral chain, including connectivity with key market infrastructure.

MX.3 for Collateral Management and Securities Finance supports the mandatory collateralization of un-cleared trades, it is compliant with BCBS/IOSCO, including Basel III and SFTR, and regional or local jurisdictions, as well as initial margin methods, including ISDA SIMM.

info@murex.com
www.murex.com

OCC THE FOUNDATION FOR SECURE MARKETS

Craig Donohue
Executive chairman and CEO
+1 (312) 322 6200
busdev@theocc.com

investorservices@theocc.com
www.theocc.com

OCC is the world's largest equity derivatives clearing organisation. Founded in 1973, OCC is a cost-effective, customer-driven organisation that delivers world-class risk management, clearance and settlement services to 19 exchanges and trading platforms for options, financial futures, security futures and securities lending transactions.

It operates under the jurisdiction of the US Securities and Exchange Commission and the US Commodity Futures Trading Commission. OCC has been designated by the Financial Stability Oversight Council as a Systemically Important Financial Market Utility, which reflects OCC's critical role within the US financial markets infrastructure.

In 2017, OCC cleared more than 4.3 billion equity derivatives contracts, representing its third-highest volume year ever. OCC stock loan activity in 2017 was up 22 percent from the prior year with 2.3 million new loan transactions.

Rajen Sheth
CEO
+44 (0) 20 7220 0963
rajen.sheth@pirum.com

Phil Morgan
Chief commercial officer
+44 (0) 207 220 0965
philip.morgan@pirum.com

www.pirum.com

Pirum offers a secure, centralised automation and connectivity hub for global securities finance transactions, enabling complete automation of the post-trade and collateral lifecycle. Our position within the securities financing market enables clients to seamlessly access counterparts, tri-party agents, trading venues, market data companies and central counterparties as well as assisting regulatory adherence.

Pirum highly innovative and flexible solutions are tailored to fully support the industry's complexities and evolving business processes. Financial institutions from around the world have increased processing efficiency, reduced operational risk and improved profitability by using Pirum across their securities finance business.

Pirum's Services include:

Real-time and overnight contract compare including pre-settlement compare
Billing compare, billing delivery
Mark-to-market automation
Automated returns
Triparty RQV automation with links to BNY Mellon, J.P. Morgan, Euroclear and Clearstream
Real-time exposure and margin management
Automated prepay cash process
Automated loan release
Collateral visibility and efficiency
CCP gateway

wematch.live
SECURITIES FINANCING

David Raccat
Founder & CEO
Tel : +44 7500 896 826
david@wematch.live

www.wematch.live

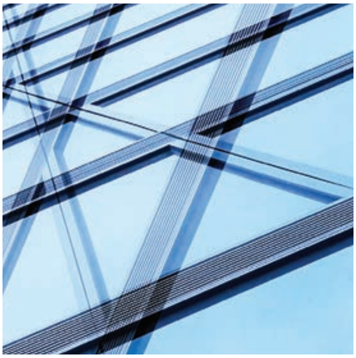
David Raccat is the CEO and founder of Wematch.SecuritiesFinancing since May 2017.

Raccat has 20 years' experience at BNP Paribas Securities Services in the securities lending/repo/TRS business, his last mandate was global head of market services (securities lending, repo, TRS and custody FX) from 2011 to 2017.

Raccat was an International Securities Lending Association board member between 2014 and 2016 and graduated from HEC Paris in 1996.

Wematch optimises matching of interests on financing structures (TRS, repos and securities borrowing and lending), equity derivatives over-the-counter structures, and delta 1-listed products (single stock futures, index rolls, dividend futures, cash closes, synthetics and total return futures), and integrates features to monitor events during the lifecycle of the trades.

Wematch offers additional dashboards for compliance and operations teams, allowing for proper controls and integration into the client's infrastructure. All trades are confirmed by Kyte Broking Limited, a Financial Conduct Authority-regulated broker.





We clear the path

OCC has the largest centrally-cleared stock loan offering in the world with approximately $80 billion in cleared loan balances. Over the last 25 years, OCC has built an innovative and unique U.S. program for securities lending transactions where OCC steps in as the counterparty (with a two percent risk weight) and guarantees the return of stock or collateral. We continue to enhance and expand access to our stock loan program in order to offer clearing solutions and capital efficiencies for our members and the entire securities finance industry.

As the world's largest equity derivatives clearinghouse, OCC is committed to providing market participants with high quality and efficient clearing, settlement and risk management services. As a Systemically Important Financial Market Utility, we work to enhance our resiliency in order to reduce systemic risk, increase market transparency, and provide capital and collateral efficiencies for the U.S. capital markets.

OCC

THE FOUNDATION FOR SECURE MARKETS

The Top Three Priorities for Collateral Managers Today

1 Complexity, compliance, capacity

Apex Collateral for lean operations

Apex Collateral's lean operations module automates the complexity delivering hands-free, straight-through processing (STP) for enterprise collateral operations.

2 Connectivity and collateral utilities

Apex Collateral for connectivity

Apex Collateral's Connectivity server provides real-time, out-of-the-box connectivity for our clients to all the major collateral market utilities. Our clients benefit from this interconnected world, allowing data to flow seamlessly and full automation of the collateral management lifecycle.

3 Cost and competition for collateral

Apex Collateral for optimization

Apex Collateral for optimization is a fully automated tool that our client use to gather inventory together in real time and to optimally allocate their assets to trading, capital and collateral requirements. Our clients are able to realize significant basis point savings on the cost of collateral and at the same time automate allocation and transfer pricing.

Email us at **getinfo@fisglobal.com** to get started with FIS' Apex Collateral Management Solutions today.