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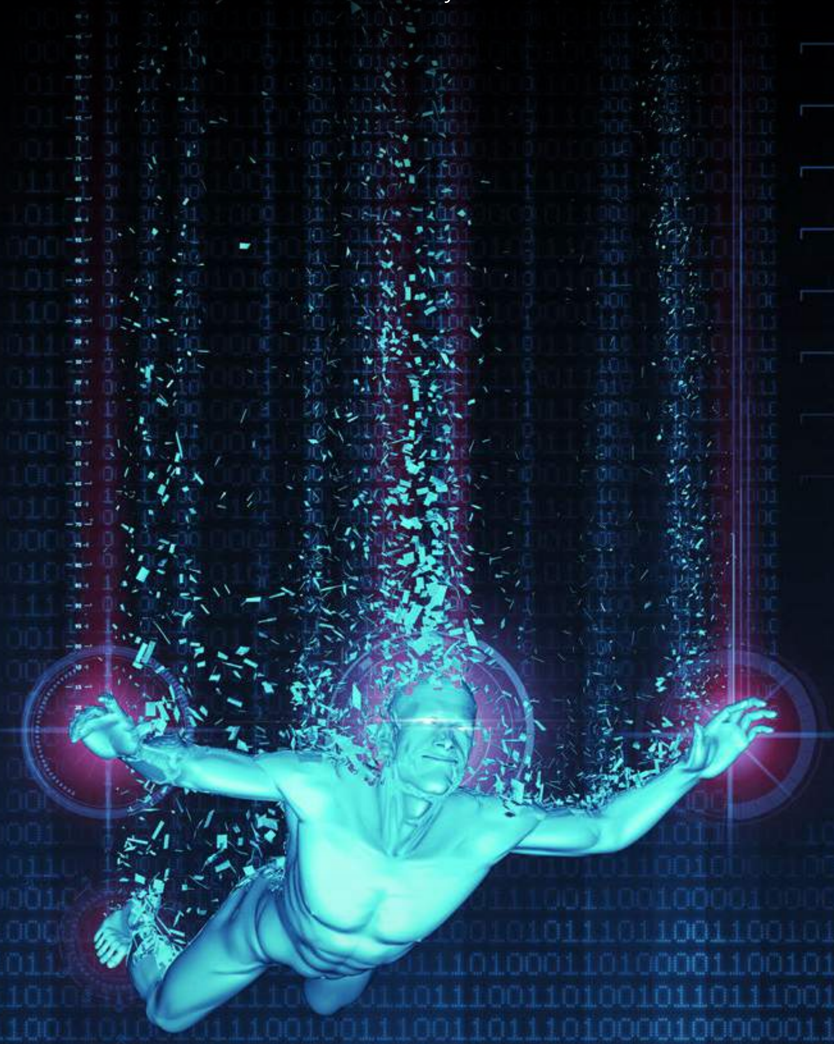

Technology Annual

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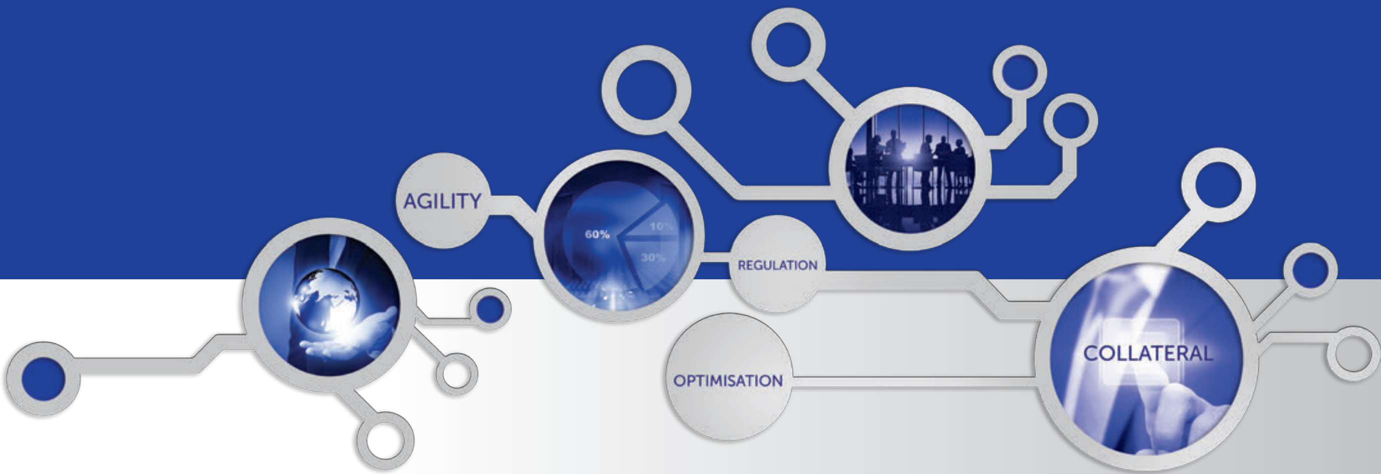

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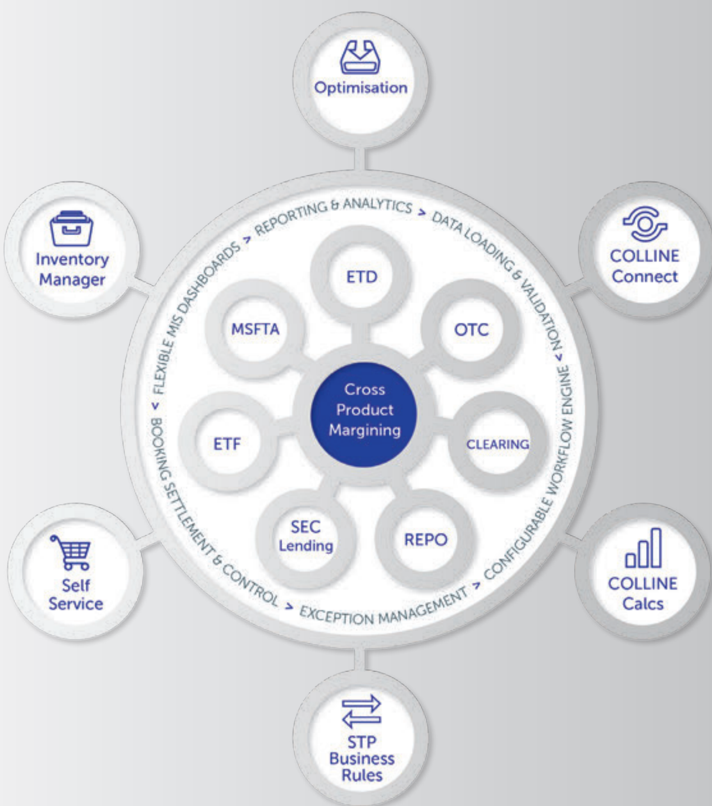

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Published by Black Knight Media Ltd

Evolution, not revolution

Securities finance is striving for evolution rather than revolution in technology solutions. Whether it's the rise of cloud-based operations, the replacement of legacy systems, or even investment in the enigmatic blockchain, the market seems keen to avoid widespread disruption.

This year's Securities Lending Times Technology Annual finds securities finance, as a whole, much further down the road towards modernisation than it was 12 months ago.

Unsurprisingly, it's the spritely fintech newcomers that are leading the pack, with the larger, institutional participants lumbering behind, weighed down by cumbersome legacy systems—but moving forward nonetheless.

IBM's blockchain expert Keith Bear reveals how custodians and clearinghouses are looking to get ahead of the technology that could turn the entire industry on its head (p8).

Demands in the form of regulations old and new continue, requiring participants to report and collateralise more, while managing healthier balance sheets.

Resources to meet these standards must be found and vendors touting cost-effective solutions are continuously refining their products to be best-placed to win business from cash-strapped banks.

The past 12 months have also seen vendors achieve new levels of sophistication, with a number of partnerships struck allowing forward-looking vendors to offer interoperability opportunities.

Pirum, which entered into a partnership with IHS Markit for an SFTR-focused solution, calls on all fintech providers to put more emphasis on collaboration in service areas where they do not compete (p14).

Finally, as financial services lean more on technology, cyber threats inevitably mount.

For many, this will require self-education in the risks posed by modern cyber crime and likely lead to increased costs to mitigate it. OCC's Luke Moranda examines this emerging issue in depth (p32).

Drew Nicol
Annual editor
Securities Lending Times

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The brains behind the blockchain

Much has been written about blockchain, but securities finance is still without a solution. IBM, through partnerships with likeminded institutions, is aiming to change that, as its vice president of global financial markets, Keith Bear, explains

How much of your day is blockchain taking up?

My responsibilities concern market development for financial markets globally, specifically in regard to IBM's blockchain-related activities. I don't work exclusively on blockchain but due to the opportunities in that area and the amount of activity we see, it's probably taking up three quarters of my day.

I deal with lot of exchanges and clearinghouses that are investing in distributed ledger technologies, as well as some custodians that are becoming a lot more active in this area. Primarily, my work comes under the umbrella of the Hyperledger project, which is hosted by the Linux Foundation, and has been running for almost two years now. Hyperledger now has more than 120 members from a wide range of financial institutions that are looking to participate in the open source project for blockchain technology.

How could blockchain be applied to markets such as securities finance?

We see interest from custodians for a securities borrowing and lending application for this technology and we have a proof of concept (PoC) with a major global custodian that saw clear advantages in validating and and testing the technology. The PoC focuses on applications for the treasury desk of the agent lender as well as the beneficial owner. This involves putting the loan, the cash element from the treasury, the margin calls and collateral movement through the blockchain. The technology has a role to play but we are only just starting to see real activity in this area.

IBM is working closely with DTCC in the DLT space. How are these projects going?

The Depository Trust & Clearing Corporation (DTCC) is working on two publicly-announced projects: one on treasury repos and the other, which we are a partner in, aims to replace DTCC's current Trade Information Warehouse (TIW). The system involves upgrading the TIW for credit default swaps with a blockchain environment. The PoC was completed last year and it's now in implementation stage with a view to going live next year. The venture will deliver significant cost-savings for DTCC and participating banks by replacing a large legacy applications.

Blockchain could cause disintermediation across the market. Should financial services be concerned?

IBM conducted a market survey of 200 financial market institutions from the sell and buy side and vendors that addressed this issue of market disruption. Very few respondents flagged disruption as a worry. There's a lot of talk about disruption but the evidence of any actual appetite to aggressively disrupt the current system is very unclear—although that may be due to where we are on the maturity curve in term of blockchain adoption.

At the same time, we were surprised by the number of firms that expected to go live with blockchain technology by the end of 2017 or early 2018. Around 14 percent said they would launch the first implementation. Current evidence though, with examples such as DTCC, indicate that this estimate may not be that far off.

From what we've seen, some of those investing heavily in blockchain are doing so either as a cost-cutting exercise by increasing efficiency, or as a way to mitigate the potential risk of disruption by being at the leading edge of where these new business models may be and gaining a first-mover advantage.

Some custodians and central securities depositories may see themselves at risk and have an incentive to understand how their role may change as a result of this new technology. However, I suspect it will be more evolution than revolution.

How are regulators reacting to blockchain?

Regulators such as the European Securities and Markets Authority (ESMA) are putting in a lot of effort to create a dialogue with the market on emerging technologies such as blockchain. ESMA has requested and received a lot of industry comment on the subject, including from IBM. Thanks to existing examples of blockchain technology, such as the model created by Northern Trust, which is currently live, regulators have a good example of how the technology could benefit them and assist their aims of greater transparency and security. In the Northern Trust blockchain, for example, the regulator has a node that allows it to have a clear view of the transactions being conducted.

ESMA's view at the moment is that it's not the technology that needs to be regulated, it's market participants use of the technology. As we see more products come to market we will see more regulators play a proactive role alongside the market.

There are already examples of this happening with the Guernsey Financial Services Commission and the Japanese Financial Services Agency, which are dealing with developed blockchain solutions at the moment. These regulators aren't necessarily taking a leading role but are actively participating because they see the value of what the technology brings in terms of trust and transparency.

Could blockchain help with reporting challenges as well?

Utilising a blockchain solution would help make areas of the market, such as reporting, much more efficient. It could potentially remove the need for trade reporting all together, which is a mounting concern in the securities lending market with the introduction of unique trade identifiers. In a blockchain solution, it's possible to have the regulator on a node in the network, which cuts the cost and complexity of reporting, while also increasing the accuracy and volume of information available to the regulator. **SLT**

Drew Nicol reports

Overcoming the legacy

Jonathan Adams and Joe Channer of Delta Capita reveal why market participants are actively replacing their legacy architectures with a more efficient and cost-effective operating model in managed services

Business and technology consultancy Delta Capita's acquisition of Appendium signalled its intent to launch a securities finance utility.

Appendium boasts an enterprise system for the booking and transaction processing of stock loan, repo, cash deposits and collateral, which Delta Capita plans to use to support the development of its securities finance managed service proposition that will allow participants to move away from their in-house technology and operations platforms towards a 'pay for use model'.

The acquisition came as Delta Capita experienced growth in its structured products business and continued to act as a managed services consultant to the Plato Partnership, a consortium of asset managers and broker-dealers, including Fidelity Worldwide Investment and Deutsche Bank, dedicated to improving equities markets.

Delta Capita's Jonathan Adams, principal consultant and practice lead for securities finance and collateral management, and CEO Joe Channer reveal why market participants are actively replacing their legacy architectures with a more efficient and cost-effective operating model.

What does Appendium bring to Delta Capita in terms of boosting your services offering?

Jonathan Adams: Delta Capita is an established player in the managed services utility space, currently providing a structured products utility platform for servicing top-tier bank manufacturers and managed service provider to the Plato Partnership, a high-profile industry consortium group of buy and sell-side firms that are collaborating to bring creative solutions and efficiencies to today's complex equity marketplace. The Appendium acquisition was part of a broader strategic investment to build on our established success through the further expansion of our cross-asset class managed services capability to include the securities finance product suite.

How did Appendium stand out to Delta Capita when it was searching for a stock loan platform?

Adams: As a financial markets specialist consulting and managed services firm, we have an in-depth understanding of the vendor landscape. Appendium stood out for its adoption of modern technology, its modular architecture and its functionally rich platform when compared to well-known legacy platforms. It was immediately clear to us that the system had been built by expert industry practitioners who had themselves previously managed securities finance businesses. It has two distinct fully integrated modules covering the front and back office, providing the distinct advantage of being able to develop a fully outsourced managed post-trade service while being able to optionally provide a hosted front-office solution but enable clients to retain their existing front-office solution if required.

The front-office module includes a sophisticated and flexible pricing engine with measured pricing efficiency, intelligent position monitoring (logical and physical), pre-trade limit checking, pre-trade balance sheet impact and optimisation tools--in our opinion industry leading. The back-office module has integrated billing, margin call processing with trade lifecycle intelligence, real time back-dated change handling (trade and position economics) and high levels of straight-through processing. Importantly, the platform was created organically and designed with a modern architecture, which makes it very secure, scalable and easy to integrate.

> Our 'pay for use' model offers clients an immediate shift to variable pricing, superior technology and a shared platform model

Jonathan Adams, Principal consultant and practice lead for securities finance and collateral management
Delta Capita

The purchase is the latest step in Delta Capita's plan to launch a securities finance utility. What is the timeline from here to launch?

Joe Channer: The market interest has been overwhelming and we are already in talks with several sell-side institutions who are actively considering replacing their legacy architectures and looking to move to a more efficient and cost-effective operating model. We are very encouraged that so many clients are open to giving up on a proprietary ownership model in favour of a move to a specialist service provider, having concluded that their own in-house legacy platform offers no real differentiation.

We expect to announce a transaction in Q3 2017, offering significant first-client advantage and likely to include a 'lift out' of the client's current operations team—who would join our existing managed services client facing team based in our Canary Wharf offices at 40 Bank Street. We have an established, fully operational offshore platform in Johannesburg, to support the more commoditised non-client facing elements of the service.

What is your target market?

Adams: Initially, the target market is sell-side institutions that are struggling to adapt their business operating models in response to falling margins, increased capital costs and industry complexity driven by a growing regulatory burden. In the medium term, Delta Capita will broaden its capability to extend its service offering to hedge funds, agent and direct lenders.

What are the main challenges that you hope to address?

Adams: The main challenges we see facing institutions engaged in the securities finance business, next to a fundamentally cost and capital sensitive business environment, is the growing total cost of ownership and complexity associated with managing a market ready and compliant end-to-end operations and technology platform. This challenge is further exacerbated when needing to maintain legacy platforms with many integration points and supporting applications. Replacement projects are lengthy and expensive.

There is a need for agile applications to support regulatory change as well as functional enhancement, without the resulting downstream that some upgrades require.

Our 'pay for use' model offers clients an immediate shift to variable pricing, superior technology and a shared platform model that mutualises the cost of operating a market-ready and compliant platform. We believe our decision to locate our client service team in Canary Wharf demonstrates recognition and understanding that this business is more complex, has more operational risks and is more client service sensitive than other business lines—something that other providers have failed to acknowledge when locating client services centres in India and Manilla were the local market has little industry experience. We achieve cost efficiency by operating a standard service model, on a single instance of technology and by sharing the cost of expert resources across a portfolio of clients.

Where do you see Delta Capita being in terms of market share in the next 24 months?

Channer: For the full range of services being offered, we are currently the only provider with proven managed service capability and a proprietary securities finance technology platform, operating an onshore UK client service centre made up of industry experts. We expect to have several satisfied clients on the platform in the next 24 months and to have emerged as the 'go to' specialist managed service provider of choice for the securities finance industry. **SLT**

> We are very encouraged that so many clients are open to giving up on a proprietary ownership model in favour of a move to a specialist service provider

Joe Channer, CEO
Delta Capita

From a position of strength

The financial technology providers dedicated to securities finance must come together to better service clients, according to Pirum's Ben Challice

Financial technology, known as fintech, has been the buzzword of the past few years as an entire industry has been created from companies using new technology and innovation with the goal to compete with, replace or enhance the usage of financial services of incumbent companies.

According to KPMG in The Pulse of FinTech Q4 2016, the value of investment and mergers related to fintech hit $70 billion in the past two years alone, and new abbreviations such as 'regtech' and 'insuretech' have been created as fintech looks to enter specialist areas from its roots in payments and peer-to-peer retail finance.

Closer to home, in wholesale financial services, much has been made of the conundrum that banks are facing with flatlining revenue, margins being squeezed, shrinking financial resources and the increased costs of supporting legacy infrastructure, all while complying with regulation as it moves from legislation to implementation.

Increasingly, business owners are realising that, given challenged revenues, cost is a variable that is more directly controllable and under their direct influence.

It's the old adage of 'doing more with less', ie, optimising scarce financial resources to maximise returns while reducing cost. This is where there is a clear need to turn to technology as a part of the solution, especially in what is being referred to as the non-differentiated technology layer. Financial firms have realised developing proprietary solutions to industry-wide problems is expensive and often unproductive, consequently outsourcing to a service provider makes sense from both an efficiency and cost point of view.

However, given the sheer size and breadth of products in financial services, there will never be a magic bullet, or single technology solution. Instead, hundreds of technology providers have developed thousands of products to provide increased automation and efficiency while reducing operational risk and overall cost in specific areas of the value chain.

While buying a collection of best-of-breed solutions will provide benefits to an individual business line or product, it can actually create significant costs and risks for banks as individual systems and services require internal integration.

Furthermore, this integration often needs to be revisited each time one of the relevant systems is upgraded, creating a major burden on internal IT departments and limits the time and budget for revenue generating projects.

One practical way to minimise risk for both service providers and their clients is to create partnerships that allows the providers to combine the individual strengths of their existing products to solve new processing or regulatory challenges. Integration of functionality from existing systems, as well as combining expertise in complementary areas, is a way for partners to reduce cost, implementation risk and time to market. If a vendor partnership can provide a seamlessly integrated solution to problems that clients face, it means there is one less interface that an IT department needs to worry about. In these cost-conscious times, a holistic solution to a complex but standard set of problems, which can simplify overall infrastructure, is an attractive proposition.

Most vendors simply want to provide a better service to their clients and some, including Pirum, are starting to see partnerships as the best ways of doing this. The firms likely to form partnerships will have client bases that have some degree of overlap but are sufficiently diverse to create opportunities for both partners to get direct exposure to potential new clients, markets and products.

The critical mass of established vendors in securities finance and collateral management makes it possible to find partners that have complementary skills, system functionality and connectivity to clients. The right partner can provide a wide range of benefits, from a detailed understanding of nuances of different markets to the most effective way to design a data model.

At a more strategic level, the increasing convergence between product lines in securities finance and collateral management mean, that in the long term, there will be less scope for pure niche players. Partnerships are a great way to learn about the bigger picture and become ready for a more convergent world, and for niche vendors to quickly expand their functionality to become more relevant to a broader audience.

Pirum stands by this ethos and leads by example. We already provide a secure, centralised automation and connectivity hub that seamlessly connects market participants, allowing them to electronically verify key transaction details and fully automate the post-trade lifecycle.

The platform provides onward connections to partner infrastructure service providers. Its position, at the heart of securities finance, allows clients to leverage the Pirum connectivity to access central counterparties (CCPs), triparty agents, data vendors and regulatory reporting platforms, with more connections being added all the time

Case Study: Triparty RQV service

Triparty collateral services have become the standard for managing non-cash collateral in the securities finance market. IHS Markit reports that 63 percent of collateral for securities lending is now non-cash and combining with data from the International Capital Markets Associations and the Federal Reserve Bank of New York, we estimate collateral associated to global securities finance transactions to be less than $4 trillion.

Through our partnerships with BNY Mellon, J.P. Morgan and Euroclear, Pirum allows their mutual clients to seamlessly interact with each of the providers. The service allows users to provide fully automated intra-day position updates, close of business market prices and foreign exchange rates electronically to Pirum via near real-time feeds. Using this information, Pirum calculates triparty required value (RQV) figures at the triparty account level for each side displaying the results on its secure, intuitive web portal. Pirum's proven reconciliation platform analyses any differences to determine the root cause of the dispute leading to rapid resolution. Pirum also provides near real-time exposure management tools and reporting, on a scheduled basis throughout the day, giving clients visibility over collateral that has been allocated at a triparty account level intra-day, and also automatically releasing pre-paid loans when collateralised.

Case-study: Trading Venues

The recent regulatory changes regarding initial margin and variation margin requirements for non-cleared derivatives together with the push for centrally cleared or exchange-traded derivatives, means that the buy-side must post margin in greater numbers than ever before. This is happening at the same time as banks are deleveraging, so it has created well-documented collateral mobilisation issues. We are seeing the rise of peer-to-peer trading venues to fill the gaps.

Pirum has established connections with trading venues to provide both connectivity to the settlement or collateral value together with full post-trade lifecycle management such as automated collateral management in conjunction with triparty providers (as discussed previously) and regulatory reporting. This seamless straight-through processing connectivity will help to bring liquidity to the platforms and allow participants who have less developed back office infrastructure to lower the implementation burden and realise the benefits of the trading platform.

Case Study: SFTR reporting partnership

A principal focus for the industry in 2017 and beyond is the EU's Securities Financing Transactions Regulation (SFTR). SFTR brings the securities finance and collateral trades under the same general regime as over-the-counter (OTC) derivatives for reporting and will be implemented beginning in 2018.

Due to the product set in scope (stock loans, repo, buy/sell backs and margin loans) and the wide number of matching fields, the data required to simply report is likely to come from multiple different sources. Overlay this with the fact this is a dual-sided, principal level reporting regime, the need to pre-match transactions (and create a unique trade identifier) before reporting is a key requirement for clients to achieve acceptable matching rates at the trade repository. All of this leads to a costly implementation burden for firms and the threat of a disparate, unconnected world of service providers. Therefore, it was clear to us that established service providers should work together.

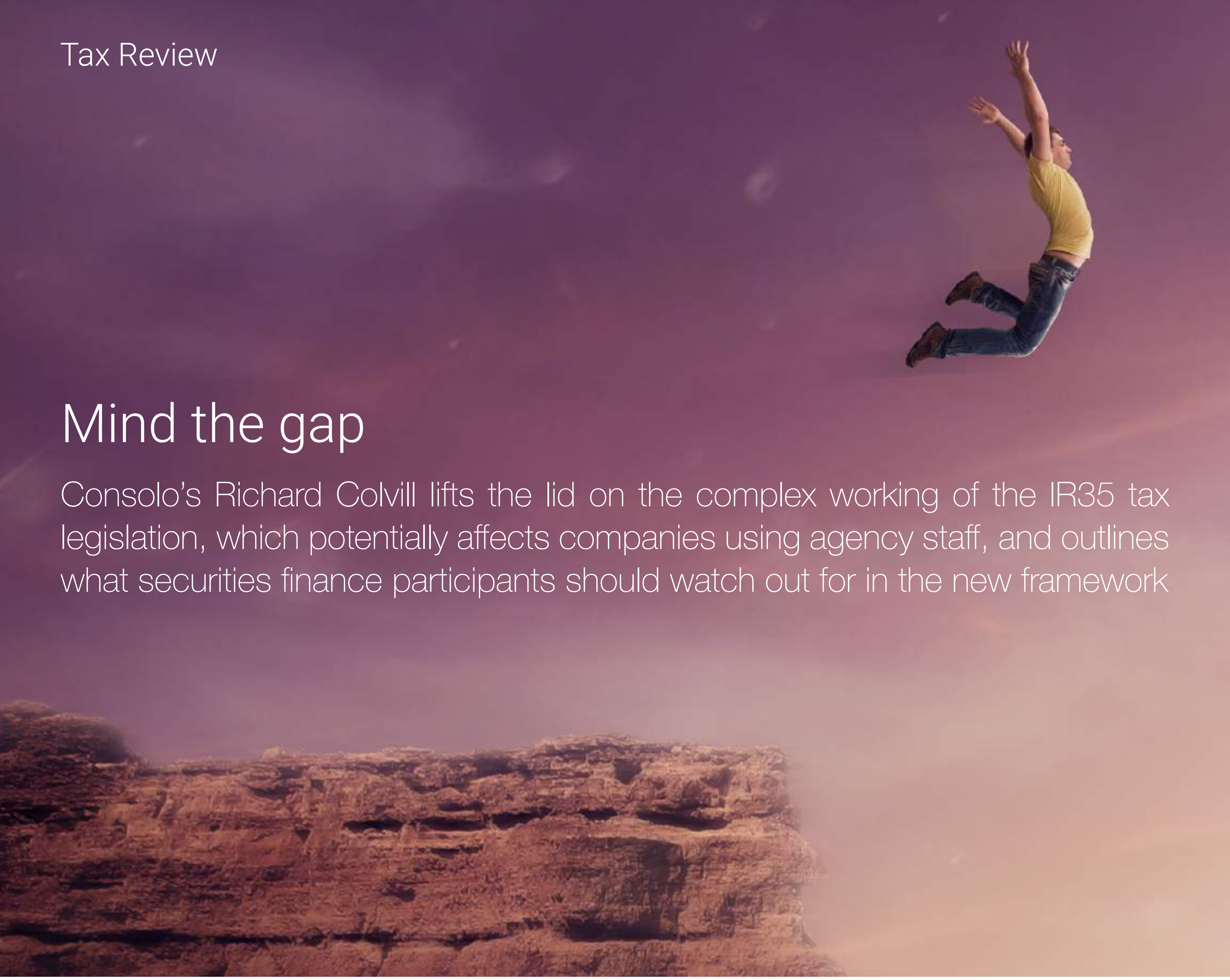
Given the short time scale and their relevant expertise in the component parts of the workflow necessary for successful reporting, Pirum and IHS Markit have partnered to create a robust SFTR solution. Pirum has 17 years of experience in matching and reconciling securities finance data through our popular contract and billing compare services. This has given us considerable experience in processing securities finance trade data.

It also means we already have connectivity to many of the key players in securities finance. IHS Markit is a data company at its core and has a long-established securities finance pricing data service as well as direct experience connecting to trade repositories for over-the-counter derivatives trades from its MarkitServ product. Together, we have all the pieces that a reporting firm needs to fulfil its reporting obligation and can deliver a pre-integrated service where we use the existing connectivity to reduce to implementation burden for clients and ultimately lower cost.

We believe these case studies demonstrate an increased need for collaboration by service providers in the securities finance and collateral management space. The requirement for new technology solutions is only going to increase. While regulations are still a focus, other opportunities will emerge in the future where both sell-side and buy-side firms will look to service providers to provide a complete front-to-back, cross-product solution, especially in that non-differentiated technology layer. As service providers build on their strengths, collaboration with complementary systems can offer all parties strategic upside with reduced risk in the development and integration cycle. **SLT**

Collaboration with complementary systems can offer all parties strategic upside with reduced risk in the development and integration cycle

Ben Challice, COO
Pirum Systems



Mind the gap

Consolo's Richard Colvill lifts the lid on the complex working of the IR35 tax legislation, which potentially affects companies using agency staff, and outlines what securities finance participants should watch out for in the new framework

I suspect that to most people reading this, IR35 means nothing more than a random collection of alphanumerical characters. To contractors it means much more, as it should to anyone in business who recruits agency staff or is likely to require temporary resource for any future business or project initiatives.

IR35 is tax legislation designed to prevent 'disguised employment' and it was introduced in April 2000 by the HM Revenue & Customs (HMRC) in the UK as a countermeasure to personal service companies (PSCs). PSCs are typically limited companies, set-up whereby the director or owner of the company pay themselves a salary and dividends, to circumvent PAYE tax thresholds payable at the commensurate rates. Quite often, spouses are employed to double the drawdown allowance.

The fact that salaries are not subject to corporation tax can make this an efficient tax planning option for contractors, especially when paying themselves dividends, which are with low rates of personal income, currently capped at 7.5 percent. Since 1997, corporation tax rates have hovered on or around the 20 percent level.

HMRC had a simple objective when introducing this legislation: to prevent two people from performing the same job and paying different levels of tax. The intention of the measure was to prevent workers from setting up limited companies via which they would work as employees, but saving on tax dues. It was also designed to counter the 'Friday to Monday' scenario, as it was referred to, to prevent the possibility of a worker leaving his or her job on a Friday evening and returning on a Monday morning to the same company or end-client and performing the same job, but paying less tax.

In this scenario, HMRC would be permitted to look through the contractual arrangement between the PSC and the end-client and formulate a hypothetical contract that showed that the worker was a 'disguised employee'. In such cases and, pertinently, if successfully challenged in court, then the fee paid to the PSC could be taxed as salary at the commensurate national insurance and PAYE rates.

However, HMRC have had little success in court since April 2000 with many cases found in favour of the defendants (the contractors). In many cases, the strength of the contract has been the key differentiator, with the contractor (or their legal representatives) seemingly successful in proving that that they are different from the client's employees, both in terms of the services provided and how they were performed.

Flexible working, investing in training, development and equipment, and working on a fixed package of work or for a fixed fee or a fixed period, have proved to be legitimate ways of evidencing that you are truly independent. Providing a substitution clause not only gives unequivocal evidence that you offer a personal service, and therefore cannot be a disguised employee, it can also argue that you are enabled to profit further from the assignment by supplying cheaper labour to perform the services on your behalf.

In April 2017, HMRC introduced new measures to the IR35 legislation, in the public sector only, that effectively shifts the IR35 status decision making from the contractor or agency worker, to the employee, end-client or hiring organisation. If the public sector client decides that IR35 should apply to the engagement, payment to the contractor will be taxed at source as if it were an employee through the real time information (RTI). Failure to do so accurately will result in penalties, charged to the end-client. It is estimated that this policy will raise an estimated £185 million in the year 2017/18.

Penalties

The penalties are steep. A charge all organisations will endeavor to avoid on all occasions. Therefore, what are they to do? The revenue have issued an IR35 calculator to assist organisations in deciding if their contract staff fall in or outside of legislation yet, the rules are so complex, clients will not be able to tell for sure whether the engagement is caught. This decision only comes under scrutiny at the point of investigation by the revenue, at which point all errors result in fines, as they cannot be reversed.

Because end-clients are culpable if they make the wrong decision, they are highly likely to take a risk-averse approach and apply IR35 if there is any doubt whatsoever. Many clients will work with many hundreds or even thousands of contractors at any one time, and may be unwilling or unable to make a calculated detailed assessment of each engagement. This may lead clients to apply IR35 on each engagement, regardless of their actual status. The consultation document alludes to an appeal process, but it has provided very few details on how this would work. The suggestion is that contractors can appeal at a tax tribunal, which they must raise and finance. The likelihood of which, seems too much of a burden for most individuals. It may be that public sector bodies will set up their own appeals procedures, but until the rules are applied in earnest it is not known whether this will happen and how it will work.

Existing contracts

How will this affect contracts that are already in place when the changes come into effect in April 2017? This will be difficult to answer. There will be cases where the engagement has been going on for a few months and the contractor has been satisfied that IR35 doesn’t apply. After April, the end-client may decide that it does apply and so terminate the contract under the old terms and engage resources for the same role under new terms.

There have been many instances in the public domain where this has been case. The public sector has had sufficient time to react to the legislation change and clients seem well prepared, but what does this mean to the contractor? Contractors are understandably worried that if their clients decide that IR35 should apply, then does this give HMRC the impetus to look at the months or years preceding April and ask if

IR35 should have been applied to that income too. There is nothing in legislation that prevents HMRC from doing this, but whether they do or not remains to be seen.

Retrospective legislation is now modus operandi, with a precedent set with the introduction of the disclosure of tax avoidance scheme legislation, which was designed to raise more than £4 billion in taxes from 'disguised remuneration' schemes, dating back 20 years. Due to be enforced in April 2019, this measure will open previously considered 'closed' years and tax individuals back to 1999. Currently, this standard is four years but six years can be applied if fraudulent activity is suspected. The next few years will prove to be critical to contractors caught by this legislation and it will remain to be seen if this change holds-up in a judicial court, if challenged.

IR35 in the private sector

The UK government is gearing up for a massive clampdown on the private sector, with many industry experts proclaiming that the introduction in the public sector is a precursory event to road-test the policy, as it does not make sense to operate two sets of rules. It is easy to introduce and to enforce because the government are the end-client in many sectors.

Research carried out by the Small Business Research Centre at Kingston University in 2014 estimated that there were 1.4 million contractors or freelancers working in both the public and private sectors in the UK. This represented a 10 percent increase over the 10 years prior, most of whom will be affected by this policy.

Why is this a concern?

There are several opinions in relation to this question. Firstly, contractors play a vital role in the UK's industries. There is a common misconception that that they earn too much or take jobs away from permanent staff. Many organisations prefer to employ a percentage of contract staff for various reasons. It allows them to periodically dip into the talent pool for short-term contracts where they don't have the knowledge or bandwidth internally and without burdening themselves with all of the liabilities associated with full-time employment.

Contractors do not get sick pay, maternity/paternity leave, holiday pay, health or life insurance, pensions, redundancy or development investment. Their appointment is unencumbered of all of the financial liabilities except severance terms, which is typically either a week or a month. This is usually aligned with their payment regularity, but not always. Many contractors feel the employment uncertainty the most and therefore must make provisions for lean periods, while financing all of the aforementioned employee benefits.

Under the new legislation, many contractors' take-home pay will be significantly reduced, with government analysis estimating this to be as much a 30 percent of their net pay. In many cases, contractors will reside in the higher-rate tax band of 40 percent, which starts at £45,001 and ends at £150,000, for the 2017/18 period.

Many of you reading this will believe this to be fair enough, as this is also the cross you have to bear being a full-time employee, but now imagine having to finance all of your benefits from this net pay.

Many do not realise how much these premiums cost. Coupled with the uncertainty of employment status, many in the industry see this as unduly unfair.

How will this affect the securities finance industry?

There are a lot of pop-up, short-term, regulatory or business change obligations that require the service of temporary professionals. The current hot-topic is the Securities Financing Transactions Regulation—how will organisations resource the associated efforts to apply this change? Whether they provide internal solutions or recruit vendors, there will always be a project to support this, which may require topical industry experts outside of their permanent resources.

There are also end-clients that insist on maintaining a portion of their task force as agency staff, because of the recruitment and financing flexibilities. These organisations will now be greatly affected, especially where it is not uncommon that this split can be half of their staff.

Again, many contractors in the public domain are citing this change as reasons to leave the self-employed route and look for permanent employment, citing that they may as well benefit from the financial downturn by reaping the associated employee benefit rewards. Of course, there are only a finite amount of jobs out there, which anyone who has been made redundant recently will testify to.

Others are simply stating that they will have to increase their rates to compensate for the tax hike, a cost that will be borne by the end-client. Or will it? Will the recruiters have to share this burden, reducing their margins to attract talent? The subject of recruiter margins has always been a bit of an enigma, with many refusing to disclose their cut.

Those who've been around a while know that they are often highly inflated with the recruiter often pocketing up to 40 percent of the day-rate not unheard of, a price many will believe to be excessive for what is simply an introduction.

How can Consolo help?

Consolo is a dedicated consultancy that specialises in business change within securities finance and can offer project management, resourcing and subject matter expertise within our industry. Contact us now for further information. **SLT**

> The current hot-topic is the Securities Financing Transactions Regulation—how will organisations resource the associated efforts to apply this change?

Richard Colvill, Managing director
Consolo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Head in the cloud

Securities finance will live in the cloud one day. It's a question of when, not if, say David Selwood and Per Karlsson of FIS Global

It's the year 2022. The Olympics are back in Beijing. The FIFA World Cup will be held in Qatar. And securities finance businesses have moved en masse to the cloud.

Skeptical? Consider two major trends that are affecting companies of all sizes and in many different industries around the world. First, consumers want everything to be accessible right here, right now, wherever they are. Let's admit it: smartphones have spoiled us all. With a single touch or even a word, we can instantly download music, order food, find a date and do any number of other activities. So why would we settle for less in our professional life?

Second, we are all tired of dealing with 10 different systems. We want one access point that lets us do everything from there—we no longer accept to go to multiple sites to complete an action. When we go to our bank's website and, say, transfer money from our savings account to make a trade in the market, we're most likely accessing two different bank systems. But it's all seamless to us.

Due to the current state with many disparate systems in the financial services industry, the only reasonable way forward for firms to realise this vision is to shield the end user from the back end. This is achieved, firstly, through managed services such as the cloud and software as a service (SaaS) and, secondly, through integrated technology platforms with a common user interface.

Managed services has been around for some time, but for some reason, it's still viewed by some as an expensive alternative to existing options. But it isn't a risky bet.

If you choose your partner wisely, this model works for very practical reasons. Users get the instant, web-based access that they want, no matter where they are at any given time. Upgrades move away from the painful costly exercises in previous years. And the provider handles not just maintenance but other headaches, such as ensuring prompt compliance with the latest rules and regulations. And maybe most importantly, it transfers the technology risk to someone with the large-scale advantage.

As our customers' technology partner, we can facilitate the movement of information between the regulator and participants via a single point that we manage. This level of service becomes part and parcel

By acting as your partner and through the managed service model, we take care of the entire process, from the front to the back

David Selwood, Vice president, head of managed services securities finance and collateral
FIS Global

of a service partner's delivery model. Industry change or adaptation through regulation or market conditions should be built into a service model and delivered as the business requires.

The word 'partner' is key. By acting as your partner and through the managed service model, we take care of the entire process, from the front to the back, freeing up your time and budget to focus on more valuable activities. We can also provide new perspective and expertise. In fact, we predict that in five years, our customers' topic of conversation will have shifted from technical details about installations, such as what hardware is recommended and what programming language a piece of software is written in, to business strategy considerations, such as how to respond to a regulation or new market opportunities. We see this change occurring now as securities finance refocuses on business and moves away from technology provision.

Technology partners will be judged on the performance of the environment and mechanism for the business advantage that we provide: Will it scale as my business grows, will it adapt to a change in strategic direction? How can you, our partner, facilitate my growth, whether it stems from increased trading volumes, better relationships with counterparts, more opportunity around settlement, integration with electronic communication networks (ECNs), or other market developments? Your decisions will be based on your business instead of what technological skill set you have within your organisation.

Our experience shows that unless technology is your business edge, firms are looking seriously at models that provides as little technology in-house as possible. They want to hand off the burden to experts so that they can focus on their business. Even large firms that have historically prided themselves on internal innovation and IT development are moving towards a more business-focused approach. We are seeing an ever expanding move to a new era, as technology becomes a tool to both reduce costs and free up firms to find more freedom.

And we're certainly responding to that. On the solution side, we've launched Securities 360, a managed service offering that brings together investor services, trading, compliance and risk, middle- and back-office services, securities finance, corporate actions, tax services, reconciliation and more into a single solution.

Customers get seamless access to critical services and functionality without having to worry about interfaces, integrations or even upgrades and maintenance.

Our customers are making the move to managed services. In our conversations with them, they cite the same reasons over and over again:

- Our expertise and the cost of gaining that expertise themselves
- The benefit of closer relationships with your technology provider, cost, scalability, adaptation to new requirements and legacy management are all within this conversation
- The ability to talk across securities finance and collateral as a whole instead of segmenting into individual product lines
- The single front-to-back service model that links multiple software solutions
- Broader market connectivity, such as access to ECNs and up and downstream third-party data providers and recipients via a single-partner solution
- The elimination of the administration and complexity of managing technology yourself

Managed services is a smart answer for the perpetual question of how to reduce costs.

Because when the technology is managed by the builders of the software, the incentives are correctly aligned to drive down the cost of installation and maintenance. The profit model of upgrades and technical installations goes away. So it's time to leap into the future, because the future is already here. **SLT**

Unless technology is your business edge, firms are looking seriously at models that provides as little technology in-house as possible

Per Karlsson, Chief technology officer, risk, compliance and global securities
FIS Global

Stronger as an industry

Securities finance has an opportunity to make strategic changes that could take it to the next level of sophistication, efficiency and profitability, only if participants work together, according to EquiLend's Iain Mackay

What are the key takeaways that your clients should consider about the SFTR final standards?

The adjustments made between the initial 'Level 1' text and the publication of the final standards for Securities Financing Transactions Regulation (SFTR) show that the European Securities and Markets Authority (ESMA) approached the process pragmatically and listened and responded to the industry.

This is most evident with the change of collateral reporting to S+1.

Clients will be assessing the impacts of the changes to the structure and number of reconcilable fields and whether they will be in a position to report directly themselves. For some, it may make sense to leverage established links to trade repositories (TRs) and manage the reporting in-house.

Others will look to third-party providers to offer a scalable, multi-asset-class solution that will offer a more cost-effective approach with regard to one-off setup and ongoing maintenance costs.

The requirements that remain unchanged are also noteworthy, notably the process for unique transaction identifier (UTI) generation. I'm sure many of our clients are only too aware that the biggest ongoing challenge for European Market Infrastructure Regulation (EMIR) has been establishing and maintaining a robust industry-wide UTI and timestamp generation process.

The UTI underpins the ongoing reporting requirements during the lifecycle of the trade. It also ensures that the trades and collateral can be linked together and are maintained within the regulatory structure.

The further importance of this process can be seen as we look at the disclosure and allocation model, which is likely to undergo changes and developments over the next few years. The potential availability of granular information regarding beneficial owners at point of trade, and the way in which undisclosed trades are reflected, may change the booking model for securities finance transactions going forward.

EquiLend is keen to assist clients in considering the implications and to provide a solution that maximises the benefits for both sides of the transaction.

Leveraging existing Next Generation Trading (NGT) functionality allows us to create a solution that has the potential to create a new agency lending disclosure process while also helping clients manage capital requirements more effectively and price trades more efficiently.

Was there anything unexpected or of particular note that was changed between the previous version and the final?

The industry welcomes the collateral reporting requirement change and acknowledges that ESMA reacted to the concerns raised by industry bodies such as the International Securities Lending Association, the International Capital Market Association and the Association for Financial Markets in Europe. Anecdotal evidence had suggested that there would be no change to the reporting timeline, but it is encouraging to see that the efforts of the various industry bodies have borne fruit.

Throughout the industry, a profound shift is underway in the management and usage of non-cash collateral, and as complexity increases, clients will need to ensure that adequate, scalable models are in place to ensure collateral allocations are attributed to the relevant UTIs within the mandated timelines. That may require a change to the existing booking model and account structure within the triparty agents, or require the triparty agents to develop their product offerings to accommodate the changes.

The UTI generation and communication process remains the cornerstone of success for the reporting process, and EquiLend is utilising existing functionality to provide a low-impact solution for clients. By helping to provide a clearly defined, industry-wide standard for UTIs and execution timestamps, EquiLend's NGT and post-trade suite will provide certainty and reliability from the outset of the trading process through the completion of all lifecycle events.

How will EquiLend's offering tackle the reporting requirements of SFTR?

Industry bodies, regulators and vendors all recognise the importance of a robust UTI and timestamp generation process as the foundation its reporting regime. At EquiLend, we have been working closely with our clients to discuss and agree the necessary adjustments to the NGT protocol, which will allow us to provide a solution whereby NGT provides the optimal location for the generation of the UTI across the market. Risk management is a key element here as is acknowledging that volumes will increase by multiples of current flows. Clients are looking for automated solutions to provide the allocation break out and bookings, with a point-of-trade solution being the preferred option. Again, NGT is naturally aligned to be the ideal destination for this.

The securities finance industry has experience in using vendors for lifecycle trade management, and we expect this to continue and expand as firms will look to provide matched records when reporting to TRs. EquiLend's real-time post-trade suite (including unified comparison, our multi-asset matching and affirmation product) will allow clients to proactively manage and match the trade lifecycle events, putting clients in control of the process by which they can work to submit matched data across all the 90+ reconcilable fields. Finally, vendors also need to provide a full, cost-efficient, multi-asset solution that will encompass data enrichment and reporting solutions for those clients who are looking for a one-stop, third-party solution. By offering a flexible, modular solution, EquiLend will cater for all the various levels of service required across its diverse client base.

What should your clients be doing to prepare?

Clients need to learn the lessons from EMIR and ensure they are not repeated. This requires mutual agreement on some fundamental areas, and the UTI management is a classic example of that. Clients also need to consider the value chain and identify where the bottlenecks/challenges will be. By engaging with industry bodies and directly with vendors early in the process, clients can avoid fragmented processes that give rise to inefficiency and increased costs. We offer a data gap analysis tool, which we will share with clients over the coming weeks. This will help all parties to identify what gaps exist and how we can work together to close them.

Finally, clients should assess the costs both in terms of building and maintaining a scalable solution. Regulatory reporting will only increase in size and scope, and having a transferrable solution can only be of benefit.

Is the industry as prepared as you would like it to be at this stage?

Clients now have more certainty around the deliverable dates for SFTR and have the opportunity to plan accordingly. The industry bodies have been very vocal in discussing SFTR and its impact, and, overall, a good start has been made.

EquiLend has hosted a number of workshops with clients, discussing operating model changes, various options and some potential benefits that may accrue to clients as they contemplate how to address the requirements. All of this information will help clients to be appropriately prepared to live.

The biggest challenge is managing all of the different global regulatory initiatives that clients are facing right now. The second Markets in Financial Infrastructure Directive a huge task for most firms, and clients are currently focused wholeheartedly on this. The EMIR amendments in November are another additional distraction for SFTR project teams.

Clients that have centralised their SFTR solution need to be mindful that these shorter-term objectives do not mean that purely tactical solutions are provided for SFTR. We, as an industry, have an opportunity to make strategic changes that could take the market to the next level of sophistication, efficiency and profitability. **SLT**

> Clients now have more certainty around the deliverable dates for SFTR and have the opportunity to plan accordingly. Overall, a good start has been made

Iain Mackay
Global product owner, post-trade services
EquiLend

Joined at the trade

Broadridge's Martin Seagroatt and Gilbert Scherff map out an architecture for a more integrated, automated and industrialised collateral ecosystem

Effective global inventory management has become critical to firms transacting in collateralised business.

Global inventory management involves the centralisation of the firm's (collateral) assets across all business lines, pools and geographical locations into a single real-time global view through the use of technology solutions such as Broadridge's.

This consolidated view of assets on a firm-wide basis allows significant efficiencies in sourcing collateral and managing liquidity. It enables the firm to identify previously fragmented pools on a forward-looking basis.

From there, a central inventory solution allows the firm to match collateral to exposures across business lines.

This technology then enables the firm to mobilise the right kind of collateral to where it needs to be, when it needs to be there.

The use of global inventory solutions has arisen in parallel to the evolution of a new more integrated, automated and industrialised collateral ecosystem.

The industry is moving from an environment of individual competing firms to extended value chains of networked organisations.

This combination of inventory management technology at the firm level, closely integrated with a more interoperable ecosystem enables a significant increase in efficiency and straight through processing.

The increasing standardisation and centralisation of data also opens up new possibilities for deployment of pre-and post-trade analytics.

Driving the new collateral paradigm is greater attention to the way scarce collateral assets are deployed, in order to:

- Satisfy regulatory ratios such as the Basel III liquidity coverage ratio, net stable funding ratio, leverage ratio and Solvency II
- Source larger amounts of central counterparty (CCP)-eligible collateral for cleared derivatives trading
- Pledge initial and variation margin against uncleared derivatives for uncleared margin reform to meet demanding settlement cut-offs
- Expand business opportunities and the firm's range of counterparties through effective risk mitigation
- Manage the impact of collateral on the firm's capital and balance sheet

The diagram overleaf maps out one view of how the new more integrated ecosystem could look. In conjunction with the evolution of technology and processes at the firm level, a series of industry-wide

initiatives are currently in flight. These initiatives aim to create a more joined up infrastructure for moving collateral across geographic locations and pools. Fundamental to this more efficient plumbing is greater integration and interoperability between central securities depositories, custodians and triparty agents and market utilities.

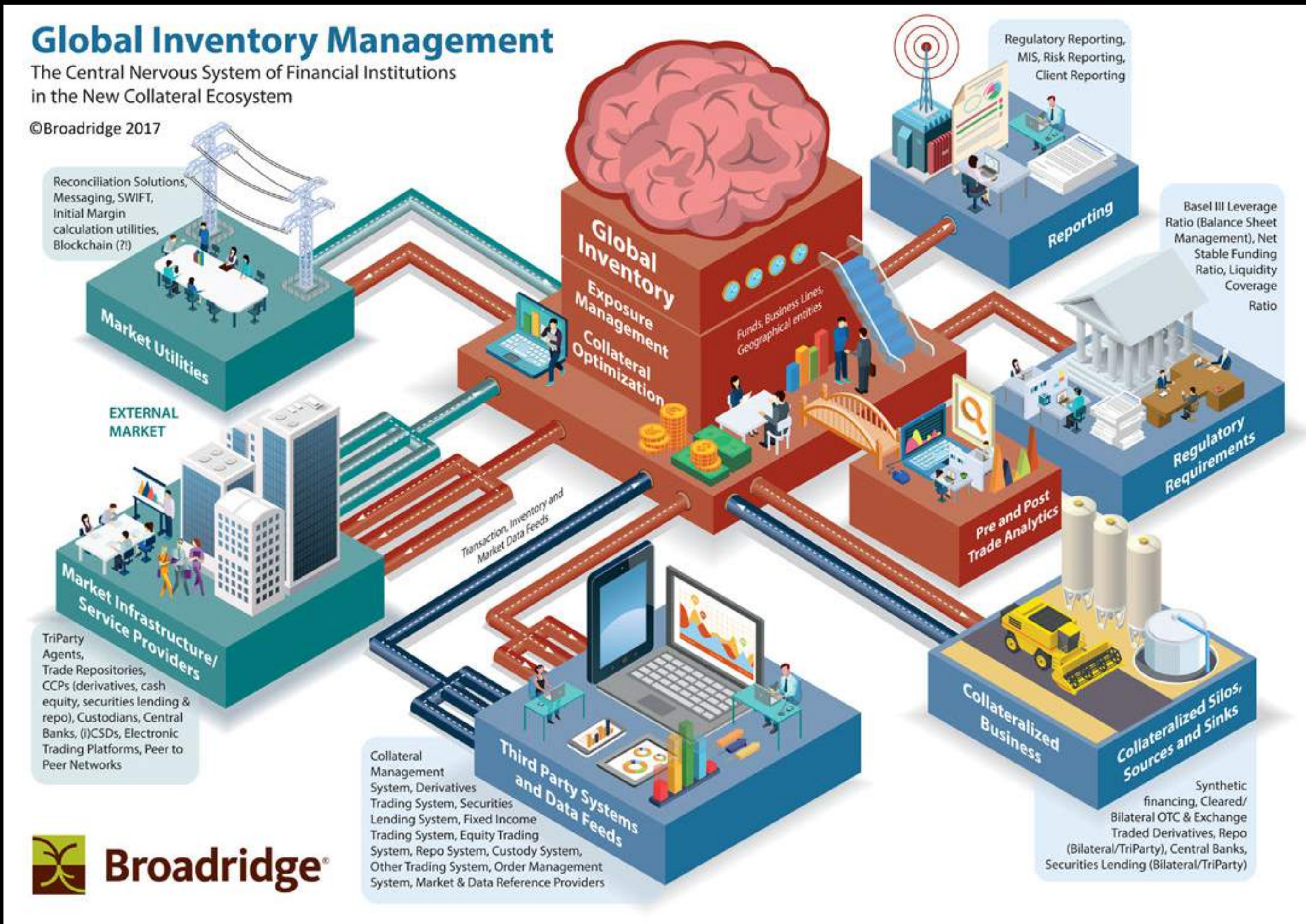
This sees a more integrated collateral ecosystem with an integrated market infrastructure and more connectivity between different systems, data providers and trading platforms.

This in turn allows an increase in automation and straight-through processing. There is also the potential for a collateral mobilisation infrastructure based on blockchain technology. This offers significant scope as a means to move collateral around more quickly and efficiently.

The network and efficiency effects of these more integrated channels will ultimately result in a collateral ecosystem that is more resilient to economic shocks, leading to a reduction in systemic risk.

> The industry is moving from an environment of individual competing firms to extended value chains of networked organisations

Gilbert Scherff, Senior business analyst
Broadridge Financial Solutions



At the firm level, we can break the processes covered in the diagram into a series of steps:

- What collateral you have
- Where it is located
- Where you need it to be
- Ways to mobilise it
- Measuring and optimising it
- Reporting it

Broadridge's whitepaper, Global Inventory Management: The Central Nervous System of Financial Institutions in the New Collateral Ecosystem, discusses each of these steps in turn and details how the global inventory solution supports these stages more effectively than legacy siloed processes and systems. The whitepaper also discusses future trends that could take shape, such as blockchain infrastructure for mobilising collateral and the emergence of central exchanges for collateral trading.

It covers the deployment of machine learning and artificial intelligence as key technologies that could be facilitated by the growing standardisation, centralisation, and visualisation of the increasing mass of information available in the new big data era of collateral. **SLT**

To read the full whitepaper, visit:
www.broadridge.com/global-inventory-management-whitepaper

Fundamental to this more efficient plumbing is greater integration and interoperability between CSDs, custodians and triparty agents and market utilities

Martin Seagroatt, Marketing director, securities finance and collateral management
Broadridge Financial Solutions

Securities finance: A practical approach to implementing Basel III

Tools exist that will help participants optimise the deployment of their capital, set prices and allocate resources, according to Andrew Powell of Softek

The Basel Committee on Banking Supervision's regulatory standards, better known as Basel III, introduced a range of capital adequacy and liquidity requirements that specify how much capital should be held against various kinds of risk.

As borrowers and lenders begin to implement the controls to support the new regulations, we are seeing structural change in the capital markets that securities finance operations are not immune to.

In order to operate effectively under Basel III, entities engaged in securities finance are faced with a complex series of challenges. The most apparent of these is the need to publish accurate and transparent calculations on a regular basis. The tools to do this will also need to show complete representations of the funding costs of both active and prospective transactions. Furthermore, managers will need to take this as input in the day-to-day operations of their business. Those who invest in these tools will be at an advantage when deploying capital, setting prices and allocating resources. Being better informed, they will also be in a position to develop innovative funding strategies in the face of structural changes in the markets due to regulatory compliance.

In the Q1 2017 International Securities Lending Association (ISLA) Securities Lending Market Report, ISLA noted "a permanent shift in borrowers' behaviour as they look to borrow securities from entities that better match their own regulatory requirements".

This has seen changes in the mix between non-cash and cash collateral, in the proportions of government bonds versus equities offered as collateral and in the terms of specific loan agreements.

ISLA also commented that "contraction of balance sheet and the high capital charges associated with equities means that banks appear to be holding less equities as inventory for trading and client facilitation purposes. The apparent shift back towards using government bonds as collateral in the securities lending markets could put pressure on the availability of high quality liquid assets (HQLA—defined in Basel III), as these are also sought after by market participants for broader collateral requirements".

Interestingly, the increase in the demand to use government bonds as collateral will further pull HQLA supply from the market and in turn may affect a firm's definition of the securities HQLA level—complexity abounds.

Softek has had early success at implementing regulatory compliance and business reporting to meet these new standards. In particular, we have the tools to help in the 'cost of funding' analysis that detail a trade or a future trade's impact on HQLA, liquidity coverage ratio (LCR) and net stable funding ratio (NSFR), allowing firms to make informed decisions. So what makes a successful implementation?

Gather your data

For many securities finance business lines, a key challenge is simply being able to gather all the information. This often entails interrogating multiple internal systems in order to have a consolidated view of transactions, positions and internal charges. You will need to capture the base data by trader, counterparty, position, asset type and term.

This in itself is often a complex task given the lack of uniformity between systems in regard to, among others, security codes, descriptions, and field definitions. For many firms, expertise around data management may well be limited or non-existent.

The process of capturing the assets that are available to the securities financing business is further complicated since much of the product availability is determined through the segregation process. This is embedded in legacy back office technology, which lacks the ability to filter and select the high-demand collateral. In addition, many of the long standing triparty agreements with custodians to provide products were also developed prior to the implementation of the Basel framework.

In the end, it is vital that each position be understood in the context of its source and uses. For example, is the asset segregated? What restrictions are contained within the counterparty agreements? Is there perfection over hypothecated collateral? Figure 1 below shows how management could view this detail.

Once you understand the sources of collateral, you then need your firm's view of the HQLA level assigned to each asset. Treasury will have determined this based on the firm's capital strategy. While there are some fundamental and market related characteristics of HQLA, when it comes to defining which assets fall into which HQLA bucket, firms may well interpret securities differently.

Take Japanese government bonds as an example. One of the measures used to help determine the HQLA level is the depth of the repo market. Some firms will assign Japanese government bonds as a 'Level 1' asset while others may view the market as limited in depth and assign these as 'Level 2'. In another example, a loan in one business may improve inflows for liquidity coverage but in another business it may worsen it.

It is interesting to note that not only do firms have internal costs to take into account but also must understand how these could affect the ability to transact at a competitive level. As a consequence, desks may be tempted to go to the street for funding rather than approaching internal treasury.

The calculations

Figure 2 overleaf illustrates the range of results required to fully understand the cost of funding a counterparty relationship. To be fully informed firms will require this type of view across all counterparties, across individual accounts and perhaps at the individual trader level.

The key liquidity measures are LCR and NSFR. LCR addresses the sufficiency of a stock of HQLA to meet short-term liquidity needs under a specified stress scenario for a 30-day time horizon.

It does this by measuring cash inflow and outflow, which by its very design creates a net cash outflow and should be covered by holding sufficient HQLA.

$$\frac{\textbf{Stock of HQLA}}{\textbf{Net cash outflows over 30-day time period}} \geq \textbf{100\%}$$

Short-term funding (LCR)

$$\textit{Stock of HQLA} = \sum_{\textit{Collateral}} \textit{HQLA Market Value x Rate} - \sum_{\textit{Loans}} \textit{HQLA Market Value x Rate}$$

$$\textit{Inflows} = \sum_{\substack{\text{Loans Closing} \\ \text{(30 Day Loans)}}} \textit{HQLA Market Value x Rate}$$

$$\textit{Outflows} = \sum_{\substack{\text{Collateral} \\ \text{(30 Day Loans)}}} \textit{HQLA Market Value x Rate}$$

$$\textit{Net Short-term Funding}_{\text{Pre-treasury}} = \textit{Stock of HQLA + Inflows} - \textit{Outflows}$$

$$\textit{Net Short-Term Funding} = \textit{Net Short-term Funding}_{\text{Pre-treasury}} + \textit{Short-term Funding from Treasury}$$

Long-term funding (NSFR)

NSFR, on the other hand, establishes a minimum acceptable amount of stable funding based on the liquidity characteristics of an institution's assets and activities over a one-year time horizon.

NSFR seeks to improve the funding profile by requiring a reliance on funding sources determined to be sufficiently stable and longer term in nature.

$$\frac{\textbf{Available amount of stable funding}}{\textbf{Required amount of stable funding}} > \textbf{100\%}$$

$$\textit{Required Long-Term Funding} = \sum_{\substack{\text{Level 1} \\ \text{HQLA} \\ \text{Collateral}}} \textit{Short-Term Loans x 10\%} + \sum_{\substack{\text{Non-Level 1} \\ \text{HQLA} \\ \text{Collateral}}} \textit{Short-Term Loans x 15\%}$$

$$\textit{Net Long-Term Funding} = \textit{Available Long-Term Funding} - \textit{Require Long-Term Funding}$$

Internal haircut

Any cost of funding analysis will need to take into account the internal haircut to be applied to a security. This will be 'bespoke' to the firm

Figure 1

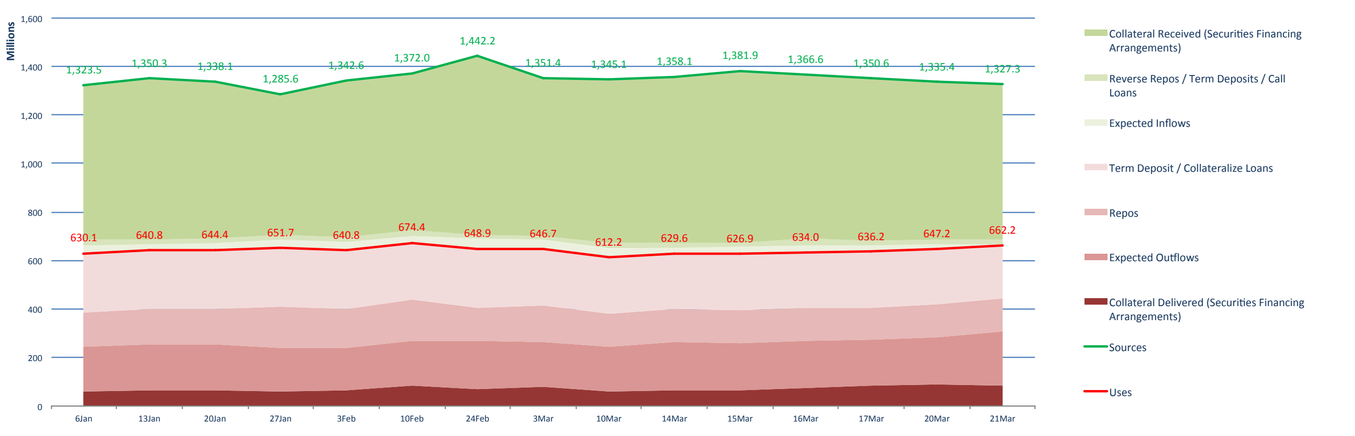


Figure 2

Funding Requirement Summary

Currency USD | Trade Date: 10 January 2017

Counterparty		Asset Type	Asset Sub Type	Collateral	Borrows	Net	Collateral Haircut	Borrow Haircut	Net HQLA
ABC-XYZ	Overnight Lending	Level 1 HQLA		3,000,000	66,547	2,933,453	-	-	2,933,453
		Level 2A HQLA		2,000,000	1,000,000	-	300,000	150,000	850,000
		Level 2B HQLA		66,182	2,872,613	-2,806,432	33,091	1,436,307	-1,403,216
		Other		-	560,000	-	-	560,000	
		Total		5,066,182	4,499,160	127,021	333,091	2,146,307	2,380,237
	Term Lending	Term Deposits/Loans		2,800,000	3,400,000	-600,000	-	-	-600,000
		Level 1 HQLA		1,200,000	908,000	292,000	-	-	292,000
		Level 2A HQLA		3,500,000	300,567	3,199,433	525,000	45,085	2,719,518
		Level 2B HQLA		1,890,000	4,320,000	-2,430,000	945,000	2,160,000	-1,215,000
		Other		-	-	-	-	-	-
		Total		9,390,000	8,928,567	461,433	1,470,000	2,205,085	1,196,518
	Collateral Pool	**Asset Type**	**Asset Sub Type**	**Collateral**	**Borrows**	**Net**	**RWA**	**Borrow Haircut**	**Net Collateral**
		Level 1 HQLA	Cash	2,800,000	3,400,000	-600,000	-	170,000	-770,000
			Sovereign Debt	4,200,000	974,547	3,225,453	-	48,727	3,176,726
		Level 2A HQLA	Sub-Sovereign Debt	5,500,000	1,300,567	4,199,433	-	65,028	4,134,405
		Level 2B HQLA	Corporate Debt (Qualifying IG)	1,890,000	-	1,890,000	-	0	1,890,000
			Common Stock (Non-Financial)	66,182	7,192,613	-7,126,432	-	359,631	-7,486,062
		Other	Common Stock (Financial)	-	560,000	-560,000	-	28,000	-588,000
			Corporate Debt (Non-Qualifying)	-	-	-	-	-	-
		Other	Other	-	-	-	-	-	-
		Total		14,456,182	13,427,727	1,028,454	-	671,386	357,069
	Current Funding	**Source**		**HQLA**	**Cost**	**Outflows**	**Stability Haircut**	**Short Term Liquidity**	**Net Liquity**
		Treasury (overnight)		-	0.0000%	-	100%	-	-
		Treasury (30 day ticket)		-	0.0000%	-	100%	-	-
		Treasury (1 year)		1,700,000	0.6580%	31	0%	1,700,000	1,700,000
		Total		1,700,000		31		1,700,000	1,700,000
	Liquidity	**Liquidity Type**		**HQLA**	**Inflows**	**Outflows**	**Required Liquidity**	**Available Liquidity**	**Net Liquity**
		Short Term (LC)		3,567,755	2,352,854	4,733,091	4,733,091	7,629,609	2,896,518
		House Surcharges		-	-	-	-	-	-
		Total		3,567,755	2,352,854	4,733,091	4,733,091	7,629,609	2,896,518
		Long Term (NSF)		-	-	-	1,664,159	1,700,000	35,841
		House Surcharges		-	-	-	-	-	-
		Total		-	-	-	1,664,159	1,700,000	35,841

and may take into account risk measures such as concentration, value at risk or specific market stresses.

Overcoming the challenges

We've documented some of the challenges faced by securities finance firms implementing Basel III: acquiring and organising data, performing complex calculations, and providing transparency to the results. The outcome must then be presented in meaningful reports for all levels of the business.

Best practice reporting will produce:

- The ability to manage the funding cost for the liquidity and stable funding requirement for each desk, client, trade and stock loan demand
- The ability to select inventory for potential hypothecation obtained from the margin lending business to improve the starting position of the stock loan desk
- Comparison of the value of different sources of funding
- An understanding of the available liquidity coverage or stable funding as a potential business asset

Security finance operations face many other challenges. Another good example is the conflict between Basel III and the self-regulatory organisation (SRO) requirements for bank-owned broker-dealers. Bank funding will be regulated by the standards defined by the banking regulator whereas the broker-dealer will be governed by the SRO.

It may well be capital efficient to own certain positions as hedges in terms of SRO requirements, but very inefficient when faced with Basel III-compliant treasury funding from the bank parent. In order to provide true optimisation across these potential conflicting policies, it is necessary to have tools that concurrently evaluate both requirements and suggest collateral optimisation. **SLT**

The challenges of implementing Basel III include acquiring and organising data, performing complex calculations, and providing transparency to the results

Andrew Powell, COO
Softek

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Detect, contain, respond

Luke Moranda of OCC delves into the murky world of cyber risk to explain why, with the threat of attack increasing, fortune favours the prepared

Cyber risk is a top concern for most companies across all industries, and it is a hot topic for senior management and boards of directors. Threat actors are becoming more sophisticated, and the frequency of these attacks is increasing. According to the 2016 PwC Global State of Information Security Survey, the number of security incidents across all industries rose in 2015 by 38 percent, the largest increase in the 12-year history of this study. In addition to attacks that are targeted at stealing sensitive data, attacks also focus on disrupting the availability of key systems, or the integrity of the data in those systems.

At OCC, we take our role in providing a secure and stable foundation for the markets we serve very seriously. Our main priority is assuring and delivering world-class risk management, clearance and settlement services, so it is critical that we ensure the confidentiality, availability, and integrity of our systems on behalf of market participants in our role as a systemically important financial market utility.

Even with a well thought out and implemented set of layered defenses, most firms recognise that it is virtually impossible to repel all cyber attacks.Therefore, focus must be given to how to detect, contain, and respond to an attack that has breached one or more levels of defence.

Firms have been investing in these capabilities for some time now, and the convergence of cyber risk and business continuity has been an ongoing and natural evolution. For example, increasingly, as part of their business continuity plan, many firms have a cyber response plan that addresses key cyber security scenarios and how the firm would respond in a timely fashion.

As firms develop these response plans, the complexity of the scenarios, and therefore the responses, increase.

The time it takes to detect a cyber breach is a significant complicating factor for certain types of events. The average security breach went undetected for 146 days in 2015 (down from 205 days in 2014, according to Mandiant M-Trends reports). This means that the cyber response plan must consider that systems or data have been compromised for a significant period of time.

For example, consider an advanced persistent threat (APT) scenario where the threat actors have been in a company's systems for months and then activate an attack against the company's data and systems. The traditional recovery mechanisms for business continuity scenarios, such as real-time replication of data to a disaster recovery (DR) site work against the company, as these technologies will replicate the same issue or breach to the recovery site. Furthermore, code could have been compromised months in advance with a delayed trigger, so rolling back to a recent previous version of code may not resolve the issue.

Therefore, companies must start planning and investing in recovery strategies for this type of attack well in advance to ensure they have the proper data and tools available to recover in a timely manner. For instance, in previous example, having multiple copies of data and code available is critical for both forensics and recovery. This allows the team to trace back to when the compromise happened, and to restore to a known good state as quickly as possible. Furthermore, it is critical that these back-ups are protected from corruption by such an attack through strict segmentation from the rest of the network and/or through the use of read-only storage media.

Delving further into the concept of back-ups raises several thorny questions, such as: what to back-up, how often to back-up, how to protect these back-ups, how long to retain the back-ups, how to find the last good back-up in case of a breach, and how quickly and efficiently the back-ups can be restored.

For complex cyber events, there are myriad different combinations and permutations of variables to consider, and each may require a somewhat different recovery approach. This can be very different than a traditional disaster scenario, where often there is a binary option: fix the current production system, or switch the entire system (or even the whole production environment) over to the disaster recovery site.

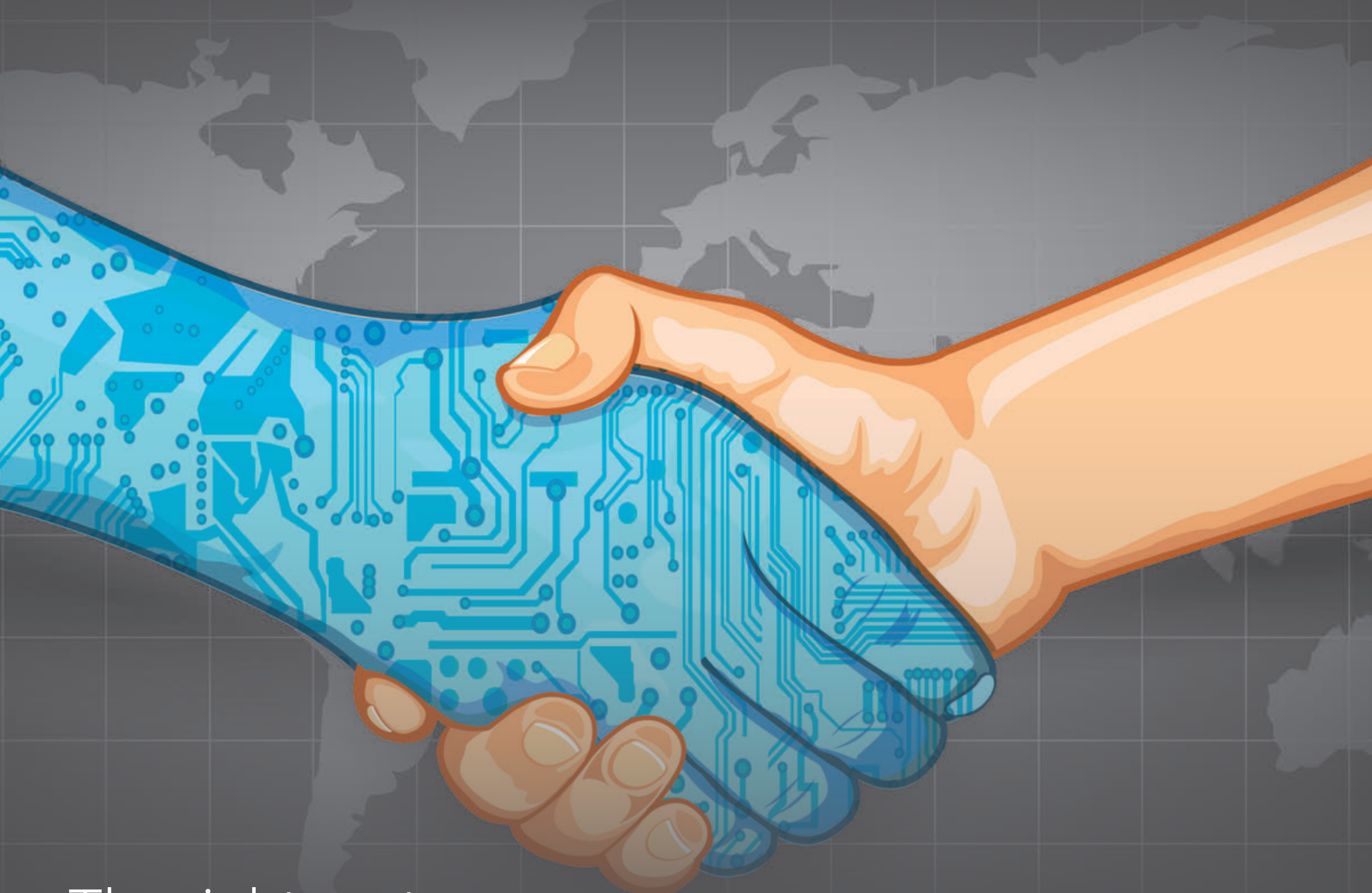
Therefore, the cyber response playbook will be much less prescriptive, and will need to contain a variety of tools that knowledgeable personnel can use to respond to the specifics of the particular event. It is also important that the business understands that not every scenario can be recovered in the typical two-hour recovery window for a DR event, and that they plan accordingly to manage the risk and attempt to limit the business impact in other ways where possible.

Cyber recovery planning is not a one-time event. The cyber threat landscape is constantly evolving, and the responses need to evolve as well. At OCC, we have access to federal-level resources that provide us with valuable insights into emerging methods of attack. It is imperative that we continue taking the new and emerging information on attacks and integrate it into our processes. Sometimes this also requires development of new tools, infrastructure improvements, and development of expertise to strengthen our ability to respond quickly and efficiently. It is always issue number one for a central counterparty like OCC to make sure that market confidence remains high, that issues are addressed, and that business continues.

As we continue to work to fulfil OCC's mission; which is to promote stability and market integrity through effective and efficient clearing, settlement and risk management services, addressing all risks including cyber is a top priority if we are to serve market participants at the high level of service they expect from us. **SLT**

Cyber recovery planning is not a one-time event. The cyber threat landscape is constantly evolving, and the responses need to evolve as well

Luke Moranda, Senior vice president and senior information technology adviser
OCC



The right partner

Proven technology, business and technical expertise, customised solutions and frequent software updates aligned to market changes are among the traits of a successful IT vendor. Laura Allen of Trading Apps explains

The reliance on IT has increased dynamically for securities finance firms as a strategically important competitive advantage. If planned, developed, and managed properly, IT can achieve greater efficiency, smarter workflows and effective decision-making processes.

Not surprisingly, the search for new securities finance technology most commonly takes place when traders recognise a need, or when the current solution isn't delivering the right results. Traders tend to consider themselves as early adopters when it comes to technology but often view their firms as lagging relative to their peers.

This often results in critical parts of the business being managed on Excel spreadsheets or macros developed by technology savvy traders. These solutions are often tactical and fragmented by asset class, region and even desk.

The increase in trading volumes through trade automation continues to exert stress on these standalone solutions, and can potentially lead to problems downstream as the calculations are rarely vetted. With so many different users sharing and adapting the spreadsheet to satisfy their needs, they are prone to error.

Traders need transparency across the global book and at any given time need to be able to determine availability, potential counterparties, volume and costs. As most firms have at no other time needed to build software that can respond systematically to multiple vehicles on a global basis, many traders can't answer these fundamental questions.

There is demand from front-end users to acquire IT applications that will effectively and efficiently support one or more business processes. However, the decision making is no longer solely left in the hands of the head of business. It used to be that managing directors and executive vice presidents often had budget authority, but the reality now is that across many firms, larger purchases require approval from the C-suite.

Buying committees at financial services firms are growing and it's estimated that more than 50 percent of technology decisions at banks involve 10 or more people. Whenever a big technology investment is being considered, stakeholders from various functional and regional divisions have to reach consensus on a strategy in order to move forward.

It is therefore important that process requirements are identified, business objectives are listed and the value versus risk of building or buying the IT application is weighed before the buying committee is engaged. The offerings should also be evaluated over the short and long term, with comparisons made between the cost and impact of a new build, and the cost of acquiring a proven vendor solution that can offer a quick return on investment.

Budget pressure and the inability to make unanimous decisions could direct security finance firms to build the functionality themselves. Of course, most organisations have highly experienced IT architects, but there are significant advantages to engaging with a vendor. For example, Trading Apps offers greater flexibility and cost and time savings, rather than building the software from scratch. Our apps sit on top of your existing core system, offering a full front-end suite and, when you buy from Trading Apps, you gain the ability to progress from one generation of technology to the next, to expand your technology solution without disrupting downstream solutions, and to decommission obsolete technology.

The factors that contribute to a successful IT acquisition are:

- Understanding of company objectives
- Strategic vision and planning
- Executive and management support
- Financial justification
- Use of external expertise in decision process
- Open communication with users
- Ongoing management of the system
- Future enhancement opportunities

The first issue the buying committee must deal with is an economic one: should the firm invest in a project involving new technology? Traditional capital budgeting approaches do not adequately answer this question. Consequently, they are seldom used. Instead, investments in new IT projects are based upon intuition, rather than hard evidence, as normally a major portion of the value of new IT projects accrues from future projects that use the technology. However, in the case of Trading Apps, we can demonstrate our apps provide a quickly discernible return on investment. One of our clients confirmed that within six weeks of using Trading Apps, its value on loan was up across all asset classes—24 percent for bonds and 23 percent for equities.

It is important to note that there are three aspects to this growth. Firstly, Trading Apps is more efficient as a locate/manage/booking system. Second, the connection to EquiLend's Next Generation Trading solution has been critical. Finally, the efficiency from Trading Apps has afforded traders with more time to engage with borrowers and work on refinancing and bespoke transactions rather than spending time booking generic tickets.

Although Trading Apps is not the sole contributor, our software acts as the enabler to achieve increased market share and revenue growth. The need for highly efficient execution of securities lending transactions grows with the automation of the market and there is intense competition between organisations to gain market share. Yet, despite huge investments in technology, many firms still struggle to make a decision on IT acquisition. Since it was founded in 2011, Trading Apps has signed up several large agent lenders and broker-dealers as clients, including some top-tier names. However, others have been stalled by the inability to reach a consensus, and, in an industry where everyone is chasing the same wallet, making no upgrades or changes means moving backwards.

Our clients obtain economic benefits from fundamental alterations to work processes. They receive true book transparency and full history across locates, borrow requests and trades. This allows them to look at individual markets or securities and recognise what is happening across specials and general collateral trading in terms of fills and fee levels. This data allows them to be proactive in how they leverage both the technology and trading processes globally.

The more automated trading that our clients conduct, the more they have to rely on their own team to manage pricing, availabilities or allocations and the technology that supports it. Trading Apps clients can do more analysis on the pre-trade, post-trade, and intra-trade stages, with real-time processes that look at trades as they happen.

Finally, it is recognised that peers are the first and most likely source of information about software solutions. It is a testament to our technology that Trading Apps was recognised as the best software solutions provider in 2016, as voted for by the market, in recognition of our innovative technology solutions. More importantly, one of our clients was also ranked top for trading connectivity and automation, demonstrating the impact our software has on workflows. In addition, Trading Apps's reference clients are some of the largest organisations participating in the securities finance market today.

IT acquisition is expected to increase as more organisations seek a greater share of the market and higher revenue. IT acquisition strategy is often considered to be faster, easier, and the most powerful way for firms to meet their business needs. If the buying committee chooses the right vendor, this method can be successful and boost their company's competitive advantage.

The right vendor should have proven technology, business and technical expertise, defined cost structure, customised solution and frequent software updates that are aligned to market changes and business evolution. Trading Apps has all of these attributes. We adopt a partnership approach with our clients and continue to develop our software and know how, to ensure constant innovation in our trading tools. **SLT**

We adopt a partnership approach with our clients and continue to develop our software and know how, to ensure constant innovation in our trading tools

Laura Allen, Director of sales
Trading Apps

Liberating liquidity

Roberto Verrillo of Elixium explores the harsh landscape of liquidity management following the arrival of post-financial crisis regulation

Changes to the regulatory environment that have already taken place, and those that will occur over the next few years, have put us on a path that will change the industry forever. The impact on how the industry executes its business has been fundamentally changed. Regulatory changes aimed squarely at improving the resilience of financial markets, and their participants as an unintended consequence, have had a direct impact on the pricing and liquidity provided by traditional intermediaries (banks).

Balance sheet costs have risen substantially as significantly more capital is now required to support outstanding transactions. These changes have had a disproportionate effect on low-margin, high-volume businesses, such as repo, which are balance sheet-intensive. As a result, balance sheets have been scaled back dramatically and, consequently, banks have reduced their trading operations and risk appetite. A clear consequence of the reduction and pricing of balance sheets has been a pronounced pass-through of this additional cost from banks to their customers, and a knock-on effect on the pricing and liquidity of the underlying assets.

More specifically, spreads offered to clients for balance-sheet intensive repo transactions have increased to reflect the additional costs incurred by banks by virtue of regulation—increasing the overall cost of trading. This has also affected dealers' ability to act as maket

makers because the cost of holding and funding inventory has risen. Looking at this issue in its entirety, we can ascertain that:

- Illiquidity in secured and unsecured markets is reported across the spectrum, be it buy-side, sell-side or brokers
- Current intermediated capacity is stretched and is causing fragmented pricing
- Intermediated capacity is only likely to deteriorate further
- There is more than ample liquidity in the form of cash as a result of global quantitative easing
- Collateral providers have significant reserves of previously un-lent and unencumbered inventory
- There is an increasing need for capacity on the back of new margining rules for over-the-counter (OTC) products
- The transmission mechanism for collateral transformation to be executed is severely impaired

The potential for more serious market dislocations where collateral provision/transformation can be severely affected in stressed environments is set out more comprehensively in a Bank of England staff working paper (No 609).

Liquidity in anything other than short-dated, balance sheet-neutral trades has dried up substantially, with brokers and market professionals all reporting a lack of activity and interest in price making across the inter-dealer community.

The more balance sheet-intensive a particular business area is, the higher the hurdle rate for returns should be. In this regard, market-making (via capital costs for holding positions) and repo stand out.

We believe that as this process of re-pricing and charging business areas for the regulatory cost of partaking in certain businesses (and transactions) progresses, the market will find many more institutions cutting back and re-structuring their current business models, or simply pulling out of certain markets or product lines altogether—clearly, this will exacerbate the problem.

Evidence of the liquidity situation in the market suggests the need for a platform such as Elixium is becoming even more compelling. The most recent UK DMO T-bill auction yielded negative rates for UK one-month bills, implying -4 percent rates for this quarter-end. A study by the International Capital Markets Association, Closed for Business: A Post-Mortem of the European Repo Market Break-Down Over the 2016 Year-End, found that the weighted average rate for German TomNext general collateral was close to -8 percent, with a low point of -9 percent. French general collateral also averaged around -8 percent.

Mandatory margining for OTC derivatives, which began on 1 March 2017, has already highlighted the dwindling capacity in the repo market. Forthcoming regulation will contribute further to this situation. Daily averaging for liquidity coverage ratio and the implementation of net stable funding ratio are both due in January 2018, just nine months away. The requirements of the fundamental review of the trading book take effect a year later (January 2019).

All will further increase the cost of balance sheet for banks, which, in turn, will have to charge ever wider spreads for financing transactions, be they secured or unsecured.

Liberating capacity

By facilitating the flow of cash to collateral, and vice-versa, Elixium releases liquidity from counterparties that previously may not have been actively engaged in secured financing.

Elixium is a global all-to-all electronic marketplace, designed to provide an unbiased venue for the trading and financing of collateral, which addresses the growing issues around liquidity that have been affected by ongoing market evolution.

The platform has been designed to address the impact of regulation, balance sheet pressures and deteriorating levels of liquidity in the repo market by providing participants with collateralised liquidity on a fair, transparent, inexpensive and equitable basis within a regulated multilateral trading facility environment.

Elixium can help reduce the heavy lifting traditionally associated with access to the repo market. Elixiums's bespoke, inclusive, all-to-all global master repurchase agreement (GMRA) addresses the issues of cumbersome documentation.

The marketplace can also help solve know-your-customer (KYC) latency and facilitate credit benchmarking and risk-management.

Our purpose has been to design and build an effective, all-to-all electronic trading medium that meets the following criteria:

- Transparent, unbiased, free-to-join, regulated all-to-all marketplace
- Flexible, client-driven trading interface
- Multiple execution options
- Pre-trade anonymity
- Credit framework where participants control credit and counterparty limits
- Connectivity (accommodates and agnostic to all settlement and clearing mediums)
- Secure, cloud-based technology with industry-standard governance controls and audits
- Single-sign documentation (flexible and simplified onboarding, KYC, credit and bespoke GMRA)
- Meet current and future regulatory requirements **SLT**

All will further increase the cost of balance sheet for banks, which, in turn, will have to charge ever wider spreads for financing transactions

Roberto Verrillo, Head of markets and strategy
Elixium

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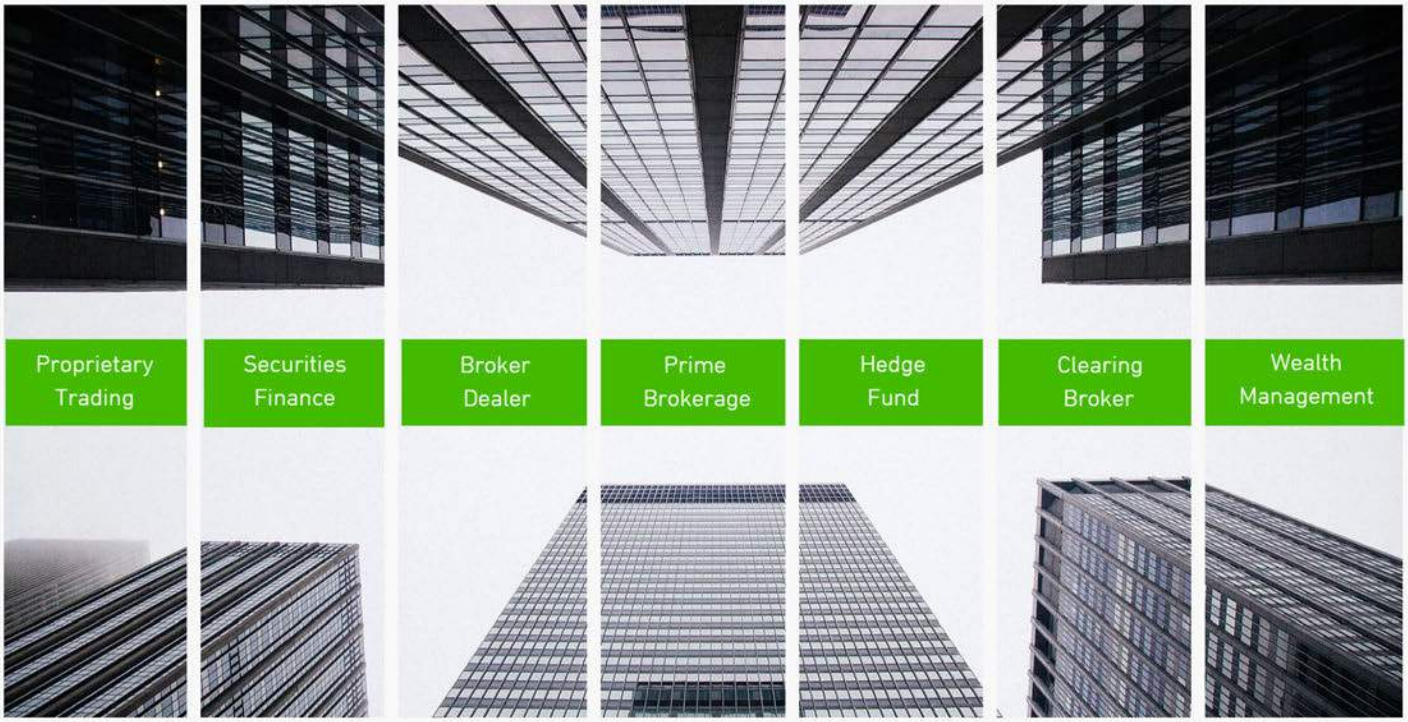

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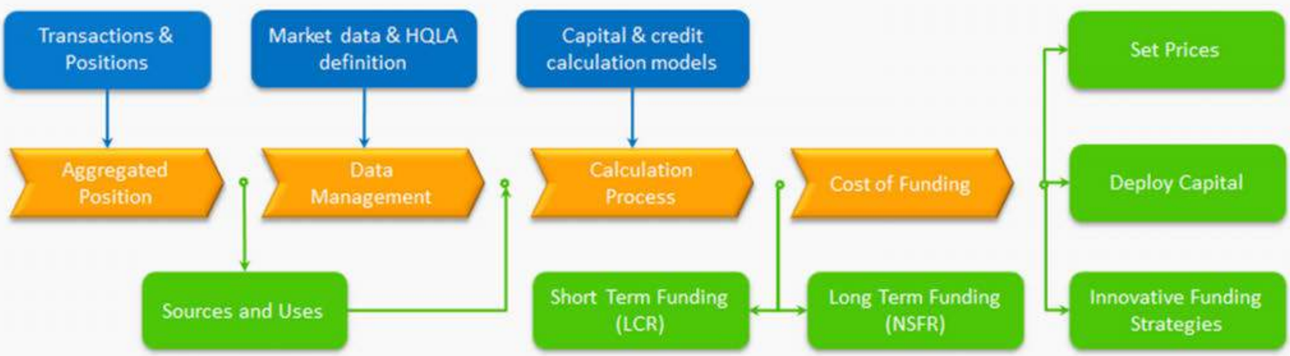

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Repo and lending: The journey to electronification

Repo and securities lending have historically been slow to move up the electronification curve. Phil Buck of ION explains how this is changing

For many financial products, the days of manual, voice trading are gone, replaced by a flow trading world.

This is a world where sophisticated dealers use a single solution to interact with a plethora of liquidity sources and distribution channels. Responses are timed in milliseconds.

Negotiation is mostly automated and rule-driven, so traders can concentrate on high-value deals.

Hedges are booked automatically. Competitive advantage depends on getting the right real-time data to drive decisions, either automatic or manual.

Some markets have made the leap into this world, while others are hanging back. Equities and futures trading are now fully electronic. Fixed income government and credit bond trading are primarily a flow business. Swaps and other derivatives are going the same way, spurred on by regulation and the proliferation of swaps execution facilities.

Repo and, more so, securities lending have historically been slow to move up the electronification curve.

One repo segment that has gone electronic is interdealer short-dated repo in liquid products. Europe has had multiple liquidity pools for some time, and the US is catching up.

At ION, we've moved quickly with solutions to help. Our Repo OM solution connects you to diverse liquidity pools in a homogeneous way. It provides aggregation so you can see best prices and execute on them fast, taking into account the specifics of the order book.

In turn, this electronification is driving automation, something that we're passionate about at ION. For example, our trading tools liberate traders from manual jobs such as firm funding.

However, there is currently very limited repo dealer-to-customer electronic flow, despite increasing attempts from various platforms to introduce it.

We're beginning to see some movement of securities finance to electronification, but the bulk of the business is still highly manual.

The repo and lending world is changing

Change is in the air as the repo and lending industry is finding itself under pressure from several directions.

Regulatory pressure is creating a need for systematic order recordkeeping, execution tracking, and transaction reporting.

Although many organisations are still figuring out how the second Markets in Financial Instruments Directive (MiFID II) will affect securities finance transactions, it's clear that they'll need to capture more data to satisfy the regulators.

It's critical that your firm keeps pace with the evolving regulatory landscape.

Balance sheet pressure is driving a need to trade via central counterparty (CCP) to realise the relief from netting.

Meanwhile, cost pressure is ever present. Do more with less is the order of the day. Laborious processes, like managing customer requests and lifecycle events, are ripe for optimisation.

Figure 1: The electronification curve

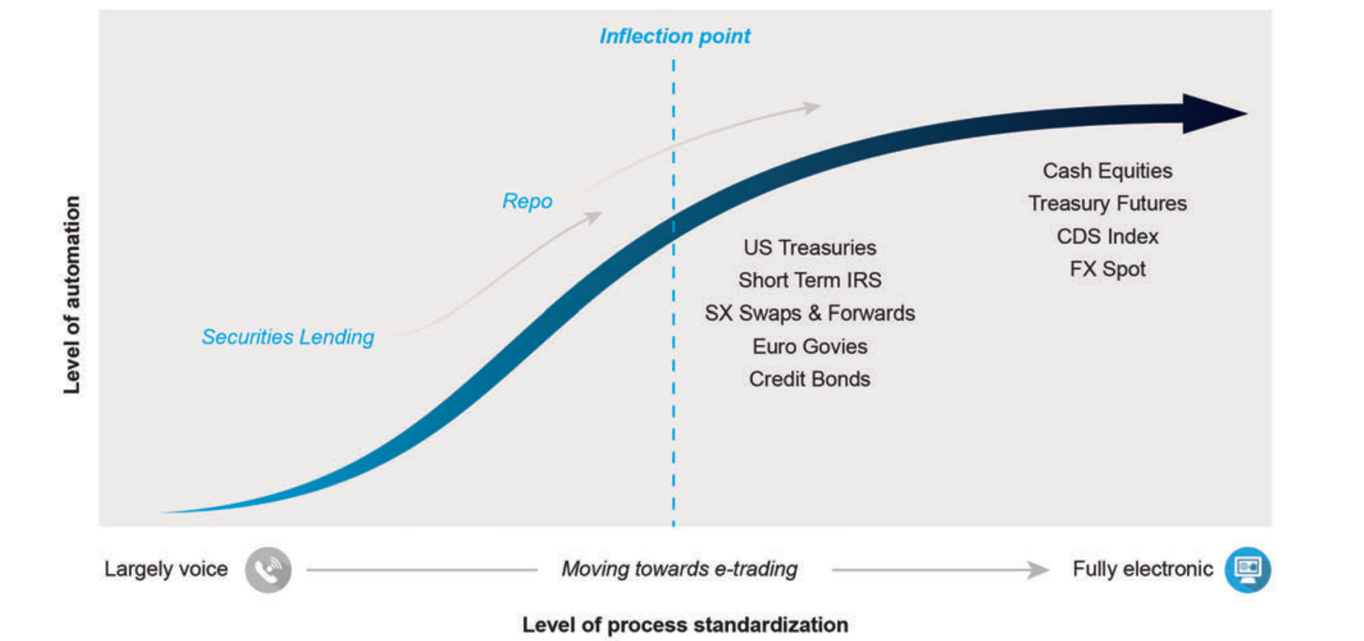
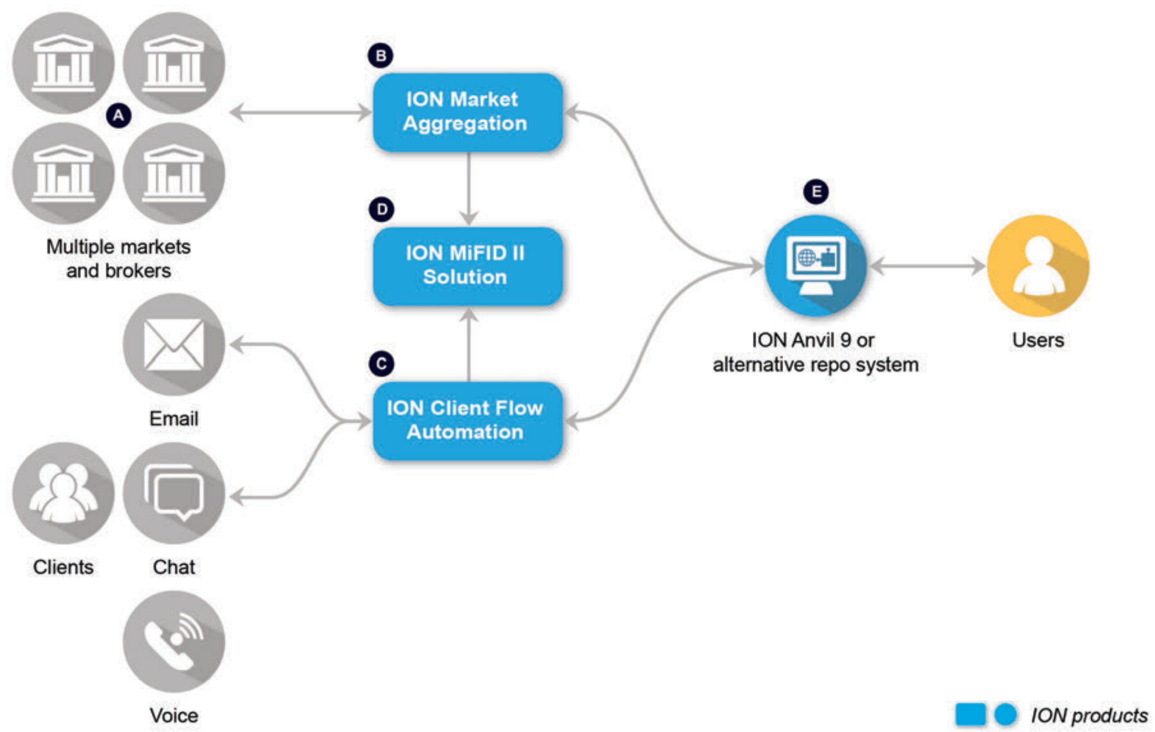


Figure 2: ION products



The industry is responding to these pressures in several ways:

- Platforms are emerging for new asset classes. Volumes on lending platforms are growing. Peer-to-peer platforms are coming on the scene
- More ways for the buy-side to interact electronically
- Multiple market or utility-provider pipes for registering trades executed via CCP
- A desire to go electronic and digitise the manual flow is growing

How can ION help?

At ION, we share a vision of a fully digitalised trading world. It runs deep in our DNA.

With our market-leading repo e-trading solution, we already support the electronic segment of the repo market, inter-dealer short-dated repo flow.

And across the board, we're engaging with the drivers and industry responses that are accelerating electronification.

As indicated in Figure 2, we offer:

- Market connectivity gateways, to support new electronic markets as they emerge and existing markets as they move into new segments (A)
- A single point of entry to a range of venues, giving you cross-market aggregation with fewer screens and custom pipes (B)
- Digitised customer flow: capture of flow conducted outside electronic venues; enrichment with decision-support data; and order flow analytics (C)
- A regulatory compliance solution for e-trading and manual flow (D)
- Native linkage to Anvil 9, our complete solution for front-office and middle-office trading (E)

If you don't use Anvil 9—no problem. We provide:

- Seamless integration with a range of solutions for cross asset-class connectivity, trading tools, and trade processing
- Open solutions, allowing easy integration with other front-office systems **SLT**

Repo and securities lending electronification is on the up. You need to be ahead of that change

Phil Buck, CEO, Anvil repo and securities finance division
ION

It's a marathon, not a sprint

When selecting a new collateral management system, market participants should take a long-term view toward the future, says Calypso Technology

Demand for collateral management systems is generally driven by externalities such as new regulations or shifting market dynamics, creating a sense of urgency in the buying process.

Changes to global margin rules, for example, have been a big driver, as firms on sides have been scrambling to comply with the increased margin requirements for both bilateral and over-the-counter cleared trades.

Likewise, the trend toward direct securities lending on the buy side has been another big driver, as it allows investment managers to transform a traditional back-office cost centre into a vibrant profit centre.

Naturally, once a firm decides to acquire a new system, it wants to implement the systems as quickly as possible, causing them to prioritise their buying decisions around their near-term needs. They focus on immediate concerns such as functional coverage and ease-of-deployment.

But for a new collateral management and securities finance system to truly succeed and support the business into the future, long-run considerations are just as important as today's requirements. Firms that fail to balance those two objectives during the purchasing process are likely to outgrow their system, and sometimes it can happen quickly.

Calypso was recently approached by a successful North American hedge fund that was looking to replace a collateral management platform that had only been live in production for one year.

The hedge fund bought the system in a bid to streamline its operations and automate its processes, but it quickly discovered that the new system could not meet its needs. Not only was the basic functionality insufficient, but more importantly, it was too inflexible to support the growth of the business, which left the hedge fund with no option but to replace it.

Every organisation has its own IT roadmap, and it is essential that any system purchased aligns with both medium-term and long-term goals. This is particularly important today, as emerging technologies such as the cloud, blockchain, microservices, artificial intelligence, and big data are fundamentally altering the financial technology landscape.

What follows is a list of the key questions you need to ask your vendors to help determine the alignment between your own technology roadmap and theirs. Some questions are straightforward, whereas others are more challenging to assess. But all of them are important.

How flexible is the architecture?

Your very first question should be about system flexibility. As the hedge fund experience demonstrates, nothing will cause you to outgrow a collateral management platform faster than a rigid data model. You need to ensure your new system can expand to take on new business lines and/or asset classes. And you should insist on a demo that proves it works as the vendor claims. You should also ask about the platform's application programming interface (API) framework.

Specifically, does it offer a range of open APIs that make it easy to integrate with other systems and well-established commercial data feeds? You should not need to spend time building custom hooks to major data providers such as Bloomberg and Markit. These should come out of the box.

Integrated or standalone?

The next major question is whether to select a standalone collateral solution or to buy a bundled product. The answer to this is usually determined by your IT roadmap, though not always. Pure standalone collateral management systems solve today's problems, but they cannot be extended to cover other areas of the business. Standalone systems are a good fit if you don't anticipate making major changes to your existing IT infrastructure, or if you already have a trusted partner who can help you manage the other areas of your IT ecosystem as your business evolves.

Bundled platforms, on the other hand, provide a collateral solution as well as related functionality, such as trade processing, clearing and risk. Some integrated systems, including Calypso, allow you to install the collateral module on its own, but still give you the ability to add components in the future.

We find that this is a popular approach among our clients, as it allows them to address their near-term needs while paving the way for continued improvements going forward. They can implement their infrastructure upgrades at their own pace, and they can replace legacy systems with components that are natively integrated.

On-premise or on-cloud?

The next big question is whether to install your new collateral system on-premise or on-cloud. This is a relatively new decision—only a few years ago everything was installed locally—but now you need to consider this in the context of your own IT roadmap. What are your near-, medium-, and long-term objectives? Most institutions we talk to these days are interested in some type of cloud deployment, but not all.

The biggest reason we see clients favouring on-premise systems is that they can customise the functionality, which is not possible with cloud solutions. Also, plenty of institutions still maintain their IT infrastructure on internal hardware or local data centres, so they are more comfortable adding another on-premise application.

Security concerns are another factor, even as vendors such as Calypso work with top-tier cloud providers to offer the most robust security standards in the industry.

Clients that prefer on-cloud deployments have a variety of motivations, mostly around reduced costs, improved agility and faster compliance. The decision to move onto the cloud is generally driven by the firm's IT roadmap and long-term objectives, which also influences what sort of cloud deployment they want.

Do-it-yourself or hosted?

If you opt for a cloud-based solution you still have another decision to make. Specifically, do you want to install your new collateral solution on your own cloud (ie, do-it-yourself), or do you want the vendor to handle everything (ie, hosted)?

Again, this is where your IT roadmap takes centre stage. A popular trend among financial institutions, commonly referred to as 'lift and shift', is to spin up their own cloud environment and migrate their existing on-premise applications to the new remote location.

This removes the expense and headache of hardware maintenance but still leaves the institution largely in control of its IT ecosystem.

If this is your situation, you need to focus your vendor search on collateral management solutions that can support a do-it-yourself implementation.

As you might expect, installing an on-premise platform on the cloud involves some adjustments, so you need to make sure your vendor has the necessary expertise to ensure a smooth transition.

At Calypso, we are certified with both Amazon Web Services and Oracle for our DIY support, and we are prepared to support any other cloud provider.

One nuance to the DIY approach is that we find some firms are more comfortable placing their development, test and backup systems on the cloud, but not their production systems.

In this case, you need to make sure your solution provider can simultaneously support both flavours of deployment.

Of course, the other cloud option is full hosting, where the vendor takes ownership of the entire hardware and application infrastructure. Again, this decision will depend on your own IT roadmap.

If your firm aspires to reduce its technology footprint, hosting is definitely the right choice. It fundamentally transforms the ownership experience, reducing costs, improving agility, and creating more bandwidth to focus on your clients.

One key benefit of a hosted solution is that upgrades are much easier to execute, which ensures you can take advantage of innovations as soon as the vendor makes them available.

Is the technology future proof?

The last, and perhaps the most difficult decision, is determining whether the vendors on your short list can provide future-proof technology. Fintech is in the midst of a disruptive cycle that will likely continue for the foreseeable future and you need to evaluate how your vendors will adapt.

Does their cloud strategy include a marketplace of microservices that you can access easily and cheaply? What is their blockchain strategy, and how will it integrate with your existing ecosystem? What relevant blockchain partnerships do they maintain? What proof-of-concept projects do they have underway? How does their artificial intelligence and big data strategy allow you to better understand and exploit your data?

All of these emerging technologies will lead to substantial changes in how capital markets operate. Before selecting a collateral management vendor, you should feel comfortable with their vision for the future and confident in their ability to innovate.

Your collateral management system is a long-term investment and your vendor is a long-term partner. To ensure a successful relationship, you not only need to validate the business functionality meets your near-term requirements, you also need to confirm that the underlying technology is compatible with your medium and long-term objectives. **SLT**

> Nothing will cause you to outgrow a collateral management platform faster than a rigid data model. You need to ensure your new system can expand

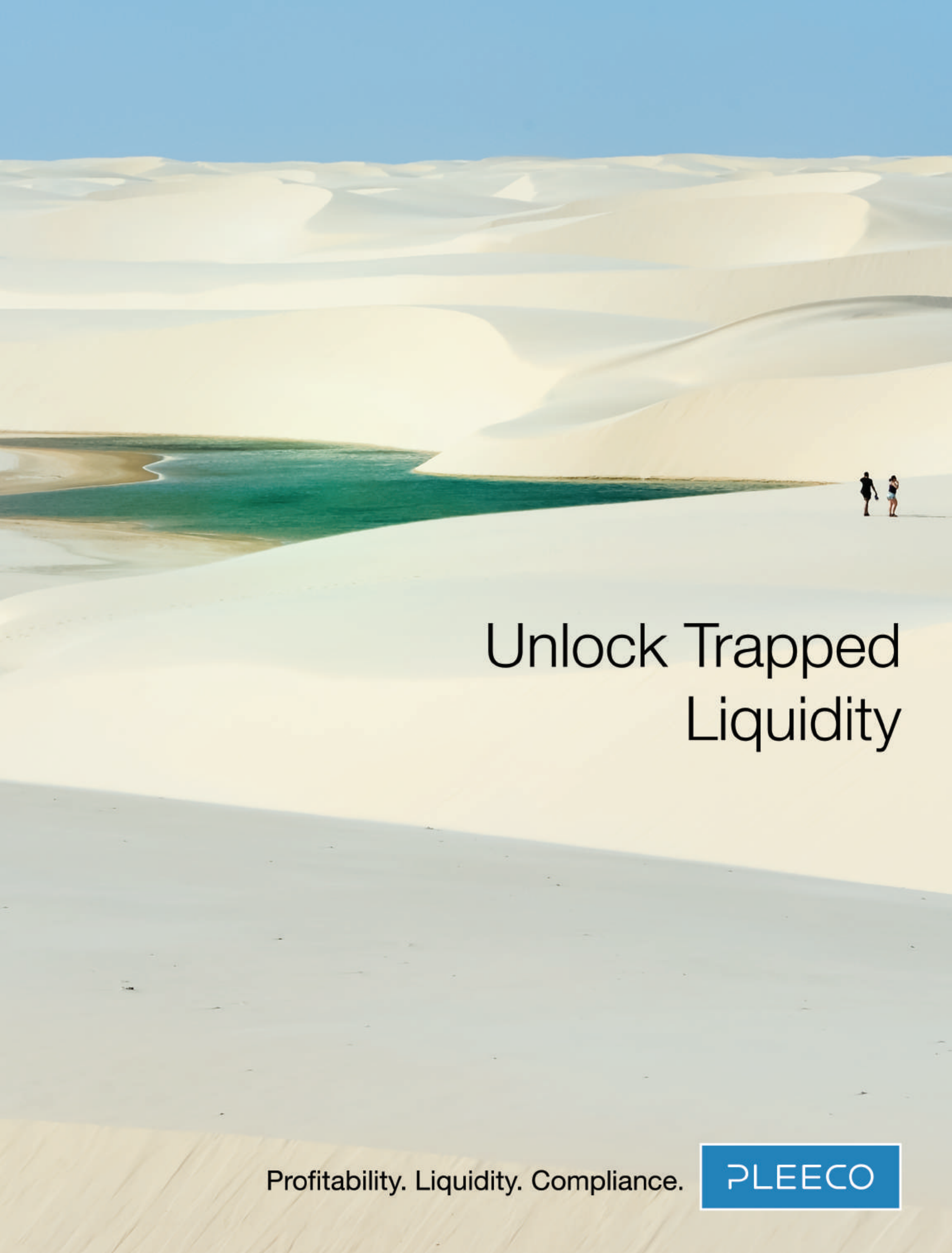
Is evolution the antidote to regulatory pain?

A robust collateral management solution provides an aggregated single source of truth, according to Tory Clements of Lombard Risk

The 2008 financial crisis highlighted substantial weaknesses in global capital and liquidity requirements. Consequently, the Basel Committee on Banking Supervision made significant revisions to its guidelines intended to strengthen capital adequacy. Basel III regulatory changes pose a significant challenge, with market participants and regulators at odds regarding the impact of upcoming regulations.

The 2016 year-end liquidity squeeze in the repo market, largely attributed to the effects of European Central Bank quantitative easing and regulation, raised concerns about the ability of markets to handle stress in the new regulatory environment. Repo markets have historically served as vital sources of funding and the more stringent regulatory leverage and capital ratios have reduced market activity due to balance sheet cost.

The US Dodd-Frank Act has caused banks to reduce market making activities and shed proprietary trading desks, reducing the number of market participants.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Consequently, traditional sources of liquidity have become limited and expensive at a time when collateral requirements are increasing. Regulations affect market participants differently and it can be expected that uneconomical strategies will be replaced with alternative funding structures. However, demand for high quality assets is immediate and expected to grow globally across business lines.

The International Capital Market Association's European Repo and Collateral Council has requested a delay to evaluate the regulatory impact ahead of enforcement. With no foreseeable abatement in forthcoming regulation, securities lending market participants must find alternate means to survive in this new world order.

The industry has yet another hurdle to surmount with the impending Securities Financing Transactions Regulation (SFTR) reporting requirements. SFTR covers securities and commodity lending, repo and sell/buy-back transactions and Article 4 stipulates arduous trade repository transaction reporting and recordkeeping requirements. Banks, investment firms, central counterparties (CCPs), central securities depositories, financial counterparties and corporates must all comply with the regulation.

Likewise, the requirements affect any counterparty transacting with an EU-based branch entity. Institutions will be required to report on data points like those required in the European Market Infrastructure Regulation (EMIR), such as trade and loan data, counterparty, collateral, jurisdiction, and documentation. Presently, the SFTR reconciliation requirements exceeds that of EMIR, implying a more significant industry burden than in the past. The volume and disparity of required data, plus dual-sided reporting, presents an implementation challenge for many organisations that do not have all the data currently reported or aggregated from a single golden source. With implementation in 2018, firms must choose a reporting solution quickly, then formulate and begin implementation immediately.

Compliance with the new regime will prompt fundamental changes to a firm's internal infrastructure and require new workflow processes. The unintended benefit of industry regulatory overhaul may be risk reduction in the long run stemming from incremental process efficiency and improved data quality.

The progressive nature of Basel requirements may allow market participants to comply with regulations gradually, but the complexity and cost of meeting multiple requirements will likely result in a reduction in the number of institutions participating in the securities lending market. With regulation as a change catalyst, we can expect to see a continued increase in the use of alternative lending structures (such as CCP, principal lending, peer-to-peer, pledge and evergreen).

CCPs have grown in popularity and are building new models to satisfy market demand. This, in turn, requires platforms to support new lending structures end-to-end and in near real-time. As initial margin rules phase in, demand for highly-quality liquid assets will only increase.

If regulations correlate to high-quality asset constraint, expansion of eligible collateral guidelines could be the outcome—but not necessarily the correct antidote. Monitoring and managing liquidity intra-day efficiently is key to trading institutions' profitability. This hastens the need for interoperable connectivity and alignment across front office, risk, treasury, collateral and settlement processes for both the sell and buy side.

Technology investment might be likened to regulatory impact insurance. Regulation is driving considerable change to conventional business models, forcing a shift from vertical to horizontal management. Non-cleared over-the-counter derivatives margin requirements demanded large sell-side participants to comply by 1 September 2016, prompting many institutions to upgrade their system infrastructure and overhaul business processes. Smaller firms, which fell under the 1 March 2017 regulatory deadline, faced similar challenges.

Repo and securities lending institutions are addressing similar issues and cross-product synergies may ease the operational burden. Firms will likely need to address internal operations and systems, and adopting a holistic view, rather than a siloed approach, may prove advantageous.

Now more than ever, in an asset-constrained landscape, the transparency between front, middle and back office is essential to risk and cost management. Internal integration and external connectivity are critical for real-time management of exposure risk, collateralisation, compliance and reporting.

As in other business lines, the high cost of collateral will be a key driver in the securities lending business. In an environment where high-quality liquid assets are in increasing demand, across multiple business lines, optimisation and transformation of collateral is essential to manage costs.

The 'optimal' optimisation module is adaptable rather than prescriptive and scalable to the evolving needs of the firm. Likewise, expansion of collateral eligibility aligns well with scalable optimisation. Efficient automated substitution, coupled with safe settlement functionality, provides a real-time risk advantage, especially in times of market dislocation.

A robust collateral management solution serves a dual purpose, in both managing risk and in mitigating the burden of regulatory reporting requirements, by providing an aggregated single source of truth. Technology solutions today offer a unique opportunity to standardise processes, support interoperability and help buy-side and sell-side firms create and realise bespoke competitive advantages. Evolution, clearly, can be both a benefit and an antidote to regulatory pain. **SLT**

Efficient automated substitution, coupled with safe settlement functionality, provides a real-time risk advantage, especially in times of market dislocation

Tory Clements, Regional product head collateral management for the Americas
Lombard Risk

Winning the fragmentation battle

Businesses can strategically address their collateral and liquidity management operations and regulatory needs by adopting a more holistic integration approach, says Bimal Kadikar of Transcend Street Solutions

Financial institutions today are increasingly evaluating how best to manage their collateral needs in the face of dual challenges: adapting their business and operational structures to become more efficient and responding to and complying with ongoing demands around changing regulatory requirements. These issues resemble a seemingly impossible, task, like transferring passengers between two moving trains. Firms that approach front-office transformation challenges, decoupled from regulatory and compliance challenges, will miss opportunities to solve larger systemic issues in a strategic and integrated fashion. We strongly believe that technology strategy and architecture can play a critical role as firms meet these challenges.

Businesses can strategically address their collateral and liquidity management operations and regulatory needs by adopting a more holistic integration approach that takes into account their organisational complexity, unique business requirements and compliance mandates. Firms that get this strategy right will establish a competitive advantage and maximise limited budgets by significantly enhancing their front-office capabilities, while also meeting regulatory requirements.

Managing transformations and challenges simultaneously

Regulations are demanding significant changes to securities finance and derivatives businesses, which are primary drivers of collateral flow. An organisation's overall portfolio mix dictates the cost of doing business, and having an integrated view of the complete liquidity situation is critical and can't be done in isolation. These regulatory and economic forces are driving firms to integrate their collateral businesses that traditionally operated as silos.

At the same time, new global regulations are mandating that firms implement specific capabilities and requirements that are often quite broad, affecting many aspects of collateral and liquidity management capabilities. Consequently, these requirements are quite onerous to accomplish especially because they need to be implemented at an enterprise level.

What is required for front-office optimisation?

Typically, financial business units were structured and incentivised to take a highly localised approach to addressing the collateral requirements for their specific business lines. This historical constraint was driven by a need for domain expertise and reinforced by budgeting protocols and performance expectations that were more closely aligned with local returns on capital, revenue and income. In the current environment, making decisions within a single function misses the opportunity to achieve broader benefits to drive valuable optimisation across an enterprise. The outlying boxes in Figure 1 overleaf illustrate the standard, localised organisations that exist in most firms today, where individual business units make collateral decisions without consideration of their sister business' needs.

Firms that move beyond the silo approach and evaluate and prioritise collateral and liquidity requirements in a more integrated fashion across all of their collateral management processes are better positioned to ensure the optimal allocation of capital and costs, realise efficiency gains, and enhanced profitability. Some organisations are doing this by establishing collateral optimisation units that have a mandate to implement technology and organisational changes across multiple businesses on a front-to-back basis. Potential areas that organisations are evaluating include maximising stress liquidity, streamlining operational processing, reducing the balance sheet by retaining high-quality liquid assets (HQLA) and improving the firm's funding profile by reducing liquidity buffers against bad trades for non-liquidity coverage ratio (LCR)-compliant transactions.

What is required for regulatory compliance?

While many front offices typically focus on creating optimal technology architecture to improve financial return metrics, there are specific regulatory-focused technology enhancements that additionally need to be implemented. In most cases, these regulatory requirements are implemented by compliance and/or operations areas potentially away from the front-office functions. This is a big challenge as these requirements are at the firm level and most firms don't have a coordinated collateral architecture in the front. In particular, the US Federal Reserve's recovery and resolution planning (RRP) requirements, qualified financial Contract (QFC) specifications in the US, and the EU Securities Financing Transactions Regulation (SFTR) are just a few examples that have pressing requirements and deadlines in the near future.

These regulations are creating significant demands on large institutions' business and technology architecture:

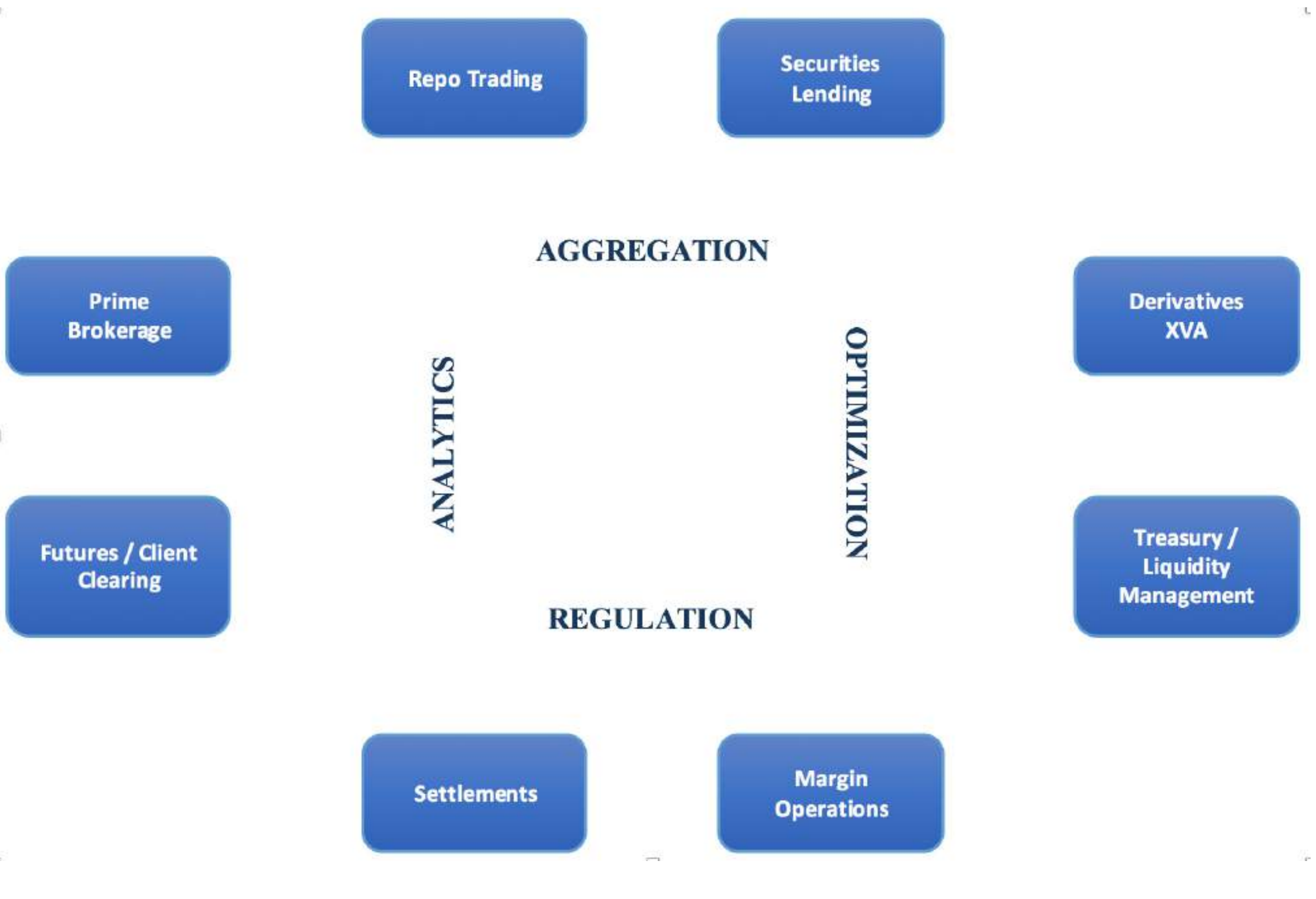
- Track and report on firm and counterparty collateral by jurisdiction (RRP, SR 14-1)
- Track sources and uses of collateral at a security level across legal entities (RRP, 2017 guidance)
- Conduct scenario planning to simulate market stresses, such as a rating downgrade or other environmental changes, that estimate impact on collateral and liquidity position in stress scenarios on a periodic basis (RRP, SR 14-1 and 2017 guidance)
- Deliver daily information on their collateral and liquidity positions—specific QFC reports will cover position-level, counterparty-level exposures, legal agreements and detailed collateral information QFC specifications)
- Report on all securities finance transactions (SFTR)

To fully meet these compliance deadlines within the next 12 to 24 months, most firms do not have the luxury of adopting a strategic approach to reengineer their business and technology architecture and have been forced to take tactical steps to ensure compliance. However, it is likely that achieving compliance in a short timeframe will create huge business and operational overhead costs, as one-off solutions may not be tightly integrated and may require additional manual work and reconciliations over time. The ongoing need for changes to front-office business processes will have an impact on compliance solutions, potentially causing firms to significantly increase the operational overhead of supporting these businesses. This can lead to costs for collateral businesses significantly increasing, despite working hard to drive cost and capital efficiencies.

A better approach—holistic architecture

Firms that choose to tackle these operational and regulatory challenges head-on by investing to create and establish an integrated

Figure 1



collateral architecture across business lines will have a significant competitive advantage. In a dynamic marketplace where business needs and regulatory requirements are constantly changing, a component-based architecture can be an effective approach. This allows seemingly complex processes to be managed through careful consideration of the distinct business and technology architecture elements of each stakeholder to achieve the appropriate balance for their strategy in an effective manner.

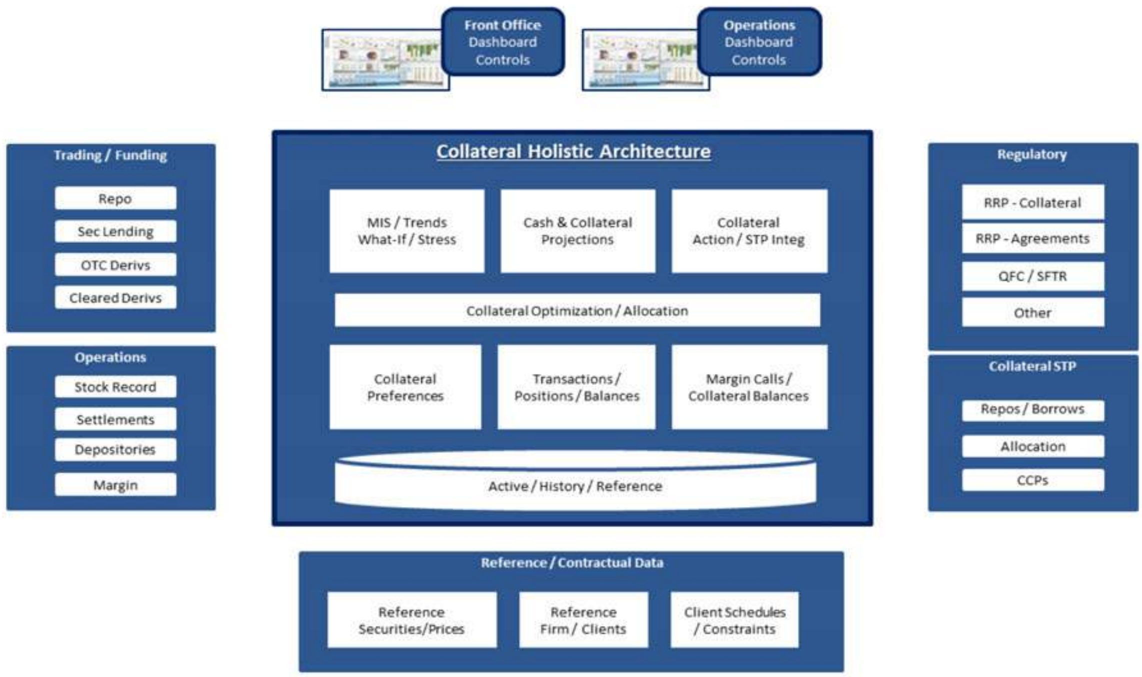
Key components of holistic collateral architecture

Here are some important drivers to consider in your planning:

- Real-time inventory management capabilities across business lines that can be leveraged by both the front and back office (this is a critical component of the strategic architecture, with the key requirement of knowing firm, counterparty and client collateral by jurisdiction)
- QFC trade repository that is integrated across all securities finance transactions as well as derivatives trades that can be linked with positions, margin calls and collateral postings
- Harmonised collateral schedules/legal agreements repository
- Enabling collateral traceability across legal entities with the ability to produce sources and uses of collateral will ensure regulatory compliance, as well as the ability to implement appropriate transfer pricing rules to drive business incentives in the right places
- Utilising optimisation algorithms with targeted analytics can maximise a variety of different business opportunities and most importantly recommend actions through seamless operational straight-through processing

This transition can be difficult for firms as it will need to cut across business and functional silos and it can have significant people and organisational hurdles along with technology challenges. One key point is that these changes don't need to happen all at the same time and firms can prioritise the approach in a phased manner in line with their pain points and priorities as long as leadership is behind the vision of the holistic architecture. Many firms have started this journey and those who can make demonstrable progress will have a significant competitive advantage in the new era. **SLT**

Figure 2



> In a dynamic marketplace where business needs and regulatory requirements are always changing, a component-based architecture can be an effective approach

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

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

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The Broadridge (formerly 4sight) Securities Finance and Collateral Management Solution provides an integrated front-to-back office solution for financial institutions of all sizes. The system is a real-time, multi-currency solution for all Securities Finance trade types. It helps smaller direct lenders through to custodians, brokers and other intermediaries to manage the Securities Finance process more easily.

The solution supports both agency and principal trading of equities and fixed income securities on a global basis.

Broadridge offers integrated or standalone systems for Securities Lending, Repo, Synthetic Finance, Collateral Management and Collateral Optimisation.

Broadridge's solutions help customers to:

- Make more intelligent use of capital, balance sheet and liquidity
- Increase efficiency, reduce costs and free up time for strategic decision making through automation of manual processes and clear views of complex data
- Comply with new regulations with minimal headcount increases
- Improve customer service and expand trading opportunities
- Reduce IT costs by replacing multiple systems with a single global solution

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

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Calypso Technology Inc is a leading provider of cross-asset front-to-back technology for financial markets. Calypso software and cloud services support trading, processing, accounting, risk management, and compliance in a uniquely integrated platform, bringing simplicity and cost efficiency to today's business and regulatory imperatives.

With 35,000 users in 68 countries, Calypso addresses the needs of capital markets and investment managers, providing solutions for collateral optimization, securities lending, clearing, treasury management, and enterprise risk. The firm is consistently granted the most prestigious product and technology awards in the industry.

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Consolo Ltd is a recently created company whose aim is to provide a specialised business analysis and systems change service within the Securities Finance industry. The senior management each possesses over 20 year's industry experience, which enables Consolo Ltd to offer expertise and focused solutions for all aspects of the industry.
With direct expertise in agency lending, including cash and non-cash lending, collateral management, regulatory development, risk mitigation and control monitoring, we believe that Consolo Ltd is uniquely positioned to help firms strategically review their service, identify and implement change.

Consolo Ltd differs from other consultancy firms; specialising in Securities Finance and resourced by market practitioners who have a deep understanding of market dynamics, processes and infrastructure.

We have a wealth of experience working across the securities lending industry with clients such as agent lenders, investment banks, hedge funds and professional investors.
The management team consists of industry veterans with an in-depth knowledge and a measure of the consistently changing landscape. We additionally have access to a range of expert consultants, with skills, including technology, development, project & process management, delivery and business.

As well as having a rich history of business change, design, construction and implementation of bespoke system solutions, our consultants also have great working knowledge of the industry's leading service provider platforms, including; 4sight, Global One, Trading Apps, Apex, Markit's Data and Risk Explorers, Euclid, Equilend and Pirum, to name a few.

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

This offering extends EquiLend's position as the standard of excellence in the securities finance industry. DataLend builds on EquiLend's strengths in technology and benefits from its economies of scale. EquiLend, as a regulated trading platform, is a trustworthy repository for sensitive securities finance data.

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

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Delta Capita is an international business and technology consulting and managed services provider that specialises in the securities finance, collateral and prime space.

Managed Service Solutions
Post trade operations and technology managed services: Collateral and exposure management and billing, asset servicing, operation controls, stock settlement record and financial transaction ledger. UK based industry practitioner servicing team.

Software Solutions
Front office inventory management, trade booking and position keeping
Pre-trade risk tools: credit limit management and balance sheet usage/optimisation

Consultancy
Target Operating Model
Vendor selection
System Implementation
Regulatory - BASEL III, SFTR, MiFID II, EMIR, BCBS IOSCO
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Repo and Securities Lending are the engine of the financial markets. However regulatory initiatives, designed to improve the robustness of the financial markets, have made many transactions economically unviable. This has led to the normal liquidity channels for collateral markets becoming impaired.

Where does Elixium fit into all this?

Elixium is global All-to-All electronic trading venue, designed to provide a transparent and unbiased market place for trading collateral. It seeks to address the growing issues around liquidity which have been affected by ongoing market evolution.

- Regulated as an MTF
- Diverse range of participants including corporate treasurers, CCPs, asset managers, hedge funds, banks, government issuers, central banks, insurers, and agencies
- Designed to address the impact of regulation, balance sheet pressures and deteriorating levels of liquidity in these markets
- An efficient conduit to raise/invest cash/collateral on a secured basis to manage margin and cash-flow
- Uses standardised products (collateral baskets with a range of maturities and currencies), standardised processes and documentation
- Offering a range of settlement methods
- Auction, CLOB, RFQ, IOI protocols
- Collateral transformation

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

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

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

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FIS's Astec Analytics offers the most up-to-date rate and volume information on securities lending transactions globally through intraday transactional data. It also provides analytics and benchmarking tools for trading, performance measurement and program management to global financial institutions involved in investment management and securities finance.

Astec Analytics customers are able to see on-screen streamed and analysed data for the previous 48 hours, backed up by online trend analysis of over twelve years.

Astec Analytics advanced reporting services web solution provides securities lending reports specifically designed to allow managers to evaluate their programme, quickly understand its strengths and weaknesses, and benchmark performance against accurate and relevant peer-groups.

Astec Analytics unique intraday data offering allows you to:

- Access continuously updated information on global securities throughout the trading day
- Be alerted to stocks movements and adjust strategies in real-time
- Maximise opportunities and spot securities as they become hot
- Reduce risk by predicting stocks with potential recalls or short squeezes
- Make sure supply/demand channels are available and rebates/fees represent the best execution possible
- Access data solutions to suit you, from hourly data file updates to an advanced secure API into our intraday databases

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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: from enterprise collateral management, collateral optimisation, order routing, trading, real-time positions management, operations, accounting, settlement, trade analytics to 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.

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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, P&L 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.

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ION is a market leader in providing software and consultancy services to customers around the globe, including large financial institutions, multinational corporations, central banks, and niche trading firms.

We pride ourselves on being visionary innovators in automation technology. Our mission is to simplify complex processes, liberate people from repetitive manual tasks, and provide our customers with a competitive advantage. Our products empower leading organizations around the world to do more, in better and simpler ways than ever before.

Our repo and securities lending solutions support your businesses by automating key front and middle-office activities, simplifying workflows and reducing the operational risk associated with chat, email, and voice trading. We provide easy integration with all repo interdealer broker markets and access to new securities finance markets as the industry evolves toward electronic trading.

To learn more, please visit our website.

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Lombard Risk is a leading provider of collateral management and regulatory reporting 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 for competitive advantage. As well as bringing immediate and urgent solutions to clients' needs, Lombard Risk's global team of experts look beyond today's reporting and collateral management to develop technology solutions that help them adapt as industry challenges evolve.

COLLINE is a web-based solution that supports all of your regulatory and strategic collateral management needs anywhere your business operates, across all time zones. The solution enables firms to move away from managing collateral in business silos. COLLINE supports multiple asset classes on a single platform thus permitting efficient collateral management, inventory monitoring and proactive management of liquidity and capital charge constraints.

At the heart of the system is a powerful, configurable enterprise inventory manager that interfaces with your existing systems. With this holistic understanding of the underlying assets, the system is then able to:

- Automatically calculate exposure and balance collateral needs
- Manage end-to-end margin call workflows
- Reconcile margin call disputes
- Calculate interest and produce fully configurable client statements
- Provide consolidated information in user-defined dashboards
- Support an array of sophisticated risk and trade analytics

Lombard Risk recently launched AgileCOLLATERAL, a cloud-based collateral management system which offers the functionality of our market-leading COLLINE solution in a modular, light touch delivery format.

AgileCOLLATERAL is targeted at asset managers, buy-side brokers, pension funds, corporates and investment firms which need the agility to "turn-on" a collateral-in-a-box solution that is hosted in the cloud and eliminates the need for onsite installation and infrastructure costs. The solution is intuitive—reducing the need for training; modular—adding asset classes as needed, scaling up over time to handle more complexity and volume; and implemented in layers—to control costs to match business needs.

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Murex—MX.3 for Collateral Management
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 45,000 daily users in 65 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 extendable, 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 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 optimisation 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 supports the mandatory collateralization of un-cleared trades, it is compliant with BCBS/IOSCO and regional or local jurisdictions, as well as initial margin methods, including ISDA SIMM.

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Pirum provides a secure, centralised automation and connectivity hub which seamlessly connects market participants with each other, allowing them to electronically verify key transaction details and fully automate the post-trade lifecycle. By combining an in-depth understanding of both the Securities Finance industry and Information Technology, Pirum has created a set of highly innovative and flexible services which are tailored to fully support the complexities of the underlying business processes.

Pirum's platform also provides onward connections to other infrastructure service providers. This position, at the heart of the Securities Financing market, allows Pirum clients to reuse their connection to Pirum to access triparty agents, market data companies, CCPs and trading venues with additional connectivity being added all the time. Financial Institutions from around the world have increased processing efficiency, reduced operational risk and improved profitability by using Pirum's services to reduce manual processing.

Pirum's Core Service delivers:

- Contract compare
- Billing compare and billing delivery to your clients

Pirum's Live service delivers:

- Marks automation with STP rates over 99%
- Automated triparty RQV processing, with links to BNY Mellon, J.P. Morgan and Euroclear
- Bilateral exposure reconciliation
- CCP gateway
- Automated returns with STP rates over 97%
- Automated prepay and cash return compare
- Real-time contract compare and pending compare
- Automated loan release
- Trading venue connectivity
- SFTR Reporting

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www.pleeco.com

Optimization of Securities Finance

Pleeco helps banks and broker-dealers analyze and optimize the Cost of Funds and Funding Liquidity. Our cloud-based analytics platform enables integrated management of Balance Sheet, Funding, Collateral and Liquidity and collaboration between front-office, treasury and risk control functions.

Pleeco solutions:

- Inventory and Cash Traceability
- Balance Sheet Management
- Funding Strategy Management
- Liquidity Management
- Daily Cash Projection
- Client and Counterparty Analysis
- Funds Transfer Pricing

Our promise is to reduce funding frictions and inefficiencies so our clients can achieve higher return on their financial resources.

Softek

Softek

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Softek is a leading provider of Capital and Credit Management services with a focus on regulatory capital, margin lending, security finance and risk reporting. Softek's full service utility delivers an innovative suite of integrated post trade solutions by combining data management, risk, margin and capital calculations in near real time. All asset classes are covered by Softek and importantly fungibility links between products are researched enabling cross asset offsetting where appropriate.

Softek services a diverse range of financial businesses including: banks, prime brokerage, securities finance, broker-dealers, Proprietary Trading, Correspondent Clearers, Wealth Management and Hedge Funds.

Softek's services include:

- Client Credit Management
- Margin Replication
- Margin Optimisation
- Regulatory Capital Optimisation
- Clearing Capital Requirements
- Stress Testing
- Basel III Funding Analysis
- What-if Modelling
- Concentration, Exposure and Liquidity Risk Analysis
- Reference Data Management

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Stonewain Systems Inc. develops software solutions for the securities finance industry. Our modular and scalable securities finance platform— SpireTM—is a comprehensive, fully-integrated solution that combines industry-specific functionality with ground-breaking technology and automation.

Our deep domain knowledge lends itself to relevant functionality resulting in accelerated workflows, greater operational efficiencies and lower costs. Spire's extensive reporting capabilities also lead to significantly improved risk management and control.

With unprecedented power, more capable functionality, open standards compatible with a wide range of solutions, and a fixed-cost model that holds steady through volatile markets- Spire has emerged as the preferred choice of the Industry.

spire

Offerings and Solutions
- Global Stock Loans and Borrows
- Agency Lending
- Repo/Financing
- Collateral Management & Optimization
- Cash Management
- Regulatory Locates

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OCC is the world's largest equity derivatives clearing organization and the foundation for secure markets. Founded in 1973, OCC is a low-cost, customer-driven organization that delivers world-class risk management, clearance and settlement services to 20 exchanges and trading platforms for options, financial futures, security futures and securities lending transactions. It operates under the jurisdiction of the U.S. Securities and Exchange Commission (SEC) and the U.S. Commodity Futures Trading Commission (CFTC). OCC has been designated by the Financial Stability Oversight Council as a Systemically Important Financial Market Utility (SIFMU), which reflects OCC's critical role within the U.S. financial markets infrastructure.

In 2016, OCC cleared 4.17 billion equity derivatives contracts, representing its fifth-highest volume year ever. OCC stock loan activity in 2016 was up 37 percent from the previous year with nearly two million new loan transactions.

More information about OCC is available at on our website.

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At Trading Apps, we have recognised the tangible value that speed, automation and efficiency can provide to a securities finance business. Since our foundation in 2011, we have developed targeted applications that continue to raise the bar regarding trade and process automation, transparency, revenue optimisation and risk mitigation.

We have demonstrated our Flexibility by connecting to numerous underlying systems; our Speed through quick deployment; and our Sophistication by designing workflow's that are transformational and have an immediate impact on the bottom line.

Transcend Street Solutions

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Transcend Street Solutions provides next generation collateral and liquidity management technology solutions for fast changing capital markets industry. Transcend team has decades of hands-on experience in top tier wall street banks, driving strategic solutions across finance trading, funding, prime brokerage, liquidity, clearing and operations. Our successful track record of developing and delivering enterprise-wide strategies and solutions for complex business challenges led us to build CoSMOS – the future of collateral and liquidity management.

About CoSMOS:
CoSMOS gives you a highly effective means of collating, harmonizing and analysing all dimensions of Collateral information across your enterprise, without the need for expensive systems replacements. CoSMOS is built with state of the art real-time trading technologies and can be implemented for a specific business or scaled across the enterprise.

Key features & modules are:

Agreements Insight
Innovative way to harmonize and analyze collateral terms embedded in various legal agreements.

Real-time Inventory Management
Real-time view of inventory and settlement ladders with projected and actual values across the enterprise.

Collateral Optimisation
Flexible algorithms and workflows to optimally allocate and STP collateral placement across business areas.

Liquidity Analytics
Sophisticated analytics of business metrics and sources and uses of collateral from firm and client perspectives.

Margin Dashboard
Aggregated margin calls and collateral balances across business areas and clients for enhanced transparency.

Regulatory
Address increasing regulatory complexities through integrated data and analytics tuned for SR 14-1 and other rules.

Transcend
Street Solutions

CoSMOS: The future of collateral and liquidity management

AGREEMENTS INSIGHT
Innovative way to harmonize, analyze and simulate key terms embedded across diverse agreement types.

COLLATERAL OPTIMIZATION
Sophisticated algorithms and flexible workflows to optimally allocate collateral across Derivatives, Financing, Triparty or CCPs.

INVENTORY MANAGEMENT
Real-time inventory of securities and cash settlement ladders with projected and actual values across the enterprise.

LIQUIDITY ANALYTICS
Flexible yet robust analytics for Sources and Uses allocation engine coupled with sophisticated Transfer Pricing functionality.

MARGIN DASHBOARD
Aggregated margin calls and balances across Derivatives and other margin centers that can be optimized along with enterprise wide demands.

REGULATORY SUPPORT
Address increasing regulatory complexities through integrated data and analytics tuned for major rule regimes.