Report on Collateral Management

Cross Border Mobilisation of Collateral

July 2016

Abstract
Following on its report on "Best Practices of Collateral Management for Cleared and Bilaterally Traded Products" published in March 2014, ISSA decided to focus on the aspect of collateral mobility, a particular aspect of the collateral management landscape. The purpose of this new report is to provide information on the emerging topic of collateral mobility and the various models, services and tools that are being offered to the market. The paper is designed to be informative but neutral, providing model information and guidance for those parties who are looking to engage with collateral providers.

Target Audience
Market intermediaries such as custodian banks, brokers, asset managers, issuers, industry associations / groups, market infrastructures and regulators.

Acknowledgements
This report is the result of efforts by a team of experts drawn from ISSA Operating Committee members and other parties. The names of participating firms and the individual contributors are listed in chapter 6. The ISSA Executive Board wishes to thank all supporters for their contributions as well as their firms having enabled their participation.

Disclaimer
None of the products, services, practices or standards referenced or set out in this report are intended to be prescriptive for market participants. Therefore they should not be viewed as express or implied required market practices. Instead they are meant to be informative reference points which may help market participants manage the challenges in today's securities services environment.

This document does not represent professional or legal advice and may be subject to changes in regulation, interpretation, or practice.

Neither ISSA nor the members of ISSA's Working Group listed in chapter 6 of this report warrant the accuracy or completeness of the information or analysis contained in this report.

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0. Executive Summary

Report Scope and Objectives

This report is focussed on a particular aspect of the collateral management landscape, namely collateral mobility. This follows on from the ISSA paper on collateral management completed in March 2014, which looked at defining collateral management, highlighting legal collateral structures and offering industry best practice ideas associated with collateral management practices. The purpose of this report is to provide information on the emerging topic of collateral mobility, and the various models, services and tools that are being offered to the market, to the ISSA community and other interested parties who may be entering into the space of sophisticated collateral management, such as investment managers, global custodians and broker dealers. The paper is designed to be informative but neutral (referencing much of the various industry work that has been done in this space), providing model information and providing guidance for those who are looking to engage with collateral mobility providers. The body of the report will cover the following:

- What is meant by collateral mobility and why is it becoming such an important topic to be addressed?
- What are the typical collateral mobility models that are available in the market, what benefits do they bring, and what challenges are associated with each of these models?
- What are the regulatory and industry driven initiatives that are aiding and/or obstructing the free movement of collateral on a cross border basis?
- A set of standard due diligence questions to determine whether an organisation has a need to consider collateral mobility, and if so, a set of likely due diligence questions to consider when approaching collateral mobility service providers.

This report is **not** designed to be a beauty parade of collateral mobility service providers, nor will it be exhaustive in the models documented. It will also **not** look to expose competitive information as regards different models currently offered by the various providers.

Chapter Topics

The body of this report contains 6 chapters.

- **Chapter one** covers key definitions as they relate to collateral mobility, and the background as to why collateral mobility has become such a hot topic.

- **Chapter two** examines the various industry models that exist and are emerging specifically to facilitate collateral mobility. The chapter provides flows for each of the models, and highlights the benefits and the potential risks (existing and new) that are present within the models. This chapter looks to remain agnostic as to which models are the best, and rather provides the reader with an understanding of each.

- **Chapter three** provides views on the regulatory and industry initiatives and trends that are both aiding and hindering collateral mobility on a cross border basis. It also looks to provide suggestions for how market players could feasibly improve and remove existing obstacles.

- **Chapter four** rounds off the paper by providing a practical set of questions that any firm should take into consideration when assessing whether they should take advantage of the collateral mobility services available in the market. These questions are split into two sections:
  - An internal set of questions around exposure management requirements and strategy, which should help a financial player determine if cross border collateral solutions are appropriate for their needs.
  - An externally focussed set of questions which could form the basis of a due diligence questionnaire for a financial player, after deciding that it would make sense to look at cross border collateral options, to compare and contrast the different mobility models that are available, helping them to make the right choice for their particular needs.

  It should be noted that for both sets of questions, these are not exhaustive, and any financial player should look to complement such questions with their own relating to their specific needs.

- **Chapter five** provides a choice of further hyperlinks (beyond those referenced directly in the report) allowing the reader to access other industry articles and reports on this topic, providing a more comprehensive view on the market discussion and views as regards this area (in particular, covering collateral supply and scarcity).

- **Chapter six** references those that have contributed to the completion of this paper.

1. Background and Key Definitions

1.1 What is Collateral Mobility and why is it Important?

Collateral mobility is a term that is used extensively in the market but is not well defined. The ISSA collateral working group defined collateral mobility as follows:

The seamless sourcing and pooling of collateral to minimise the shortage of collateral (resulting from fragmentation) by allowing the collateral giver the ability to move the required assets (cash or securities and other asset types such as funds, commodities) cross border to the right place at the right time in order to cover the right exposure.

This should not be confused with collateral transformation (which could be perceived to be a form of collateral mobility). Collateral transformation can be defined as the upgrading of collateral into a form that is normally of higher quality. It enables the collateral giver to change one form of collateral asset, which may be ineligible, into another form of collateral asset via a repo or lending mechanism in order to place eligible assets with a counterparty to cover a market exposure.

1.2 Why is Collateral Mobility Important to the Industry?

The main driver behind the increased interest in collateral mobility is the new global regulatory framework which requires the majority of counterparty exposures (trading and credit) to be collateralised. Some estimates show that firms may need between $130-450 billion in additional collateral to meet higher initial margin requirements. Whilst other sources have claimed that new banking safety rules that require firms to hold a greater proportion of cash and High Quality Liquid Assets will likely create a demand for $2-4 trillion additional collateral. This can be seen in the various key regulatory dossiers:

- European Market Infrastructure Regulation (EMIR), Dodd Frank and other regional regulations under the IOSCO/BCBS standards framework (focus on central clearing for derivative transactions, and the requirement to post variation and initial margin for all OTC derivative transactions). EMIR is in the final stages of implementation.

- The time line for mandatory clearing of Interest Rate Derivatives in the EU looks as follows:
  - Category 1 (clearing members of IRS subject to the mandate): 6 months from entry into force of RTS (21/06/2016)
  - Category 2 (Financials + Alternative Investment Funds above EUR 8 billion threshold): 12 months from entry into force of RTS (21/12/2016)
  - Category 3 (Financials + Alternative Investment Funds below EUR 8 billion threshold): 18 months from entry into force of RTS (21/06/2017)
  - Category 4 (Non-Financials): 3 years from entry into force of RTS (21/12/2018)

- The time line for mandatory exchange of margins in the EU looks as follows:
  - 1st Sept 2016: Mandatory IM and VM for entities whose total outstanding notional of non-cleared derivatives is above EUR 3 trillion
  - 1st March 2017: Mandatory VM for all entities
  - 1st Sept 2017: Mandatory IM for entities whose total outstanding notional of non-cleared derivatives is above EUR 2.25 trillion
  - 1st Sept 2018: Mandatory IM for entities whose total outstanding notional of non-cleared derivatives is above EUR 1.5 trillion

  - 1st Sept 2019: Mandatory IM for entities whose total outstanding notional of non-cleared derivatives is above EUR 0.75 trillion
  - 1st Sept 2020: Mandatory IM for entities whose total outstanding notional of non-cleared derivatives is above EUR 8 billion

- BASEL III (extra capital required for risky exposures which can be reduced through collateralisation)
- Markets in Financial Instruments Directive/Regulation II (moving of business to exchanges and clearing houses, and restrictions on title transfer collateral arrangements)
- Central Securities Depository Regulation (possible requirement for (I)CSDs to collateralise differently
- Securities Financing Transaction Regulation – the European legislative approach to the Financial Stability Board initiative on Shadow Banking (requirement to disclose risks related to collateral agreements & transparency on collateral re-use).

All of these regulatory requirements (and potentially others that have not been mentioned) force all parties in the financial value chain to consider their ability to collateralise their various counterparty exposures in a way different than before. On top of this, the risk parameters for most counterparties have fundamentally changed. With a more conservative approach to risk management comes a requirement to actively manage the risk, with collateralisation (incorporating adequate haircuts, tolerances and regular collateral valuation etc.) being the most obvious approach to this.

1.3 There is an Extra Demand for Collateral, but how does this Translate into a Need for Collateral Mobility?

For many financial counterparties new to the collateral requirements, there can be significant restrictions on the types of collateral that will be accepted by certain counter-parties (whether market infrastructures, central banks, repo counterparts or other financial counterparties). For Central Counterparties and other types of market infrastructure, the legislation stipulates the types of collateral that they can accept (predominantly high quality liquid assets such as cash and government bonds). For other counterparties, they will each have criteria for the types of collateral they will accept, and this will make for a complex decision making process of how to place the right collateral with the appropriate counterparts. Moreover, for any collateral giver, they will need to consider the costs (and lack of use) by providing collateral to cover an exposure. Many will not have the required eligible asset types (cash or government bonds), or if they do, they may hold them in a different legal entity and/or geographical location (giving rise to the term 'trapped assets').

Being able to optimise collateral usage

- by using the cheapest form of eligible collateral (cheapest to deliver)
- by transforming collateral into eligible collateral (collateral transformation)
- by utilising assets held on a cross border basis that would otherwise be trapped (collateral mobilisation)

is becoming a crucial means to effectively manage risk whilst keeping operational and regulatory costs to a manageable level. Based on the fact that the mandatory nature of many of the regulations is still to come into force, the expectation is that for most counterparties who need to manage exposures the ability to optimise collateral may only become more important in the coming years.

1.4 Key Market Players and their Roles in Collateral Mobility

1.4.1 Registered, Pension and Hedge Fund Managers

Not withstanding the transitional period for pension funds, these organisations will (if entering into derivative contracts or requiring credit) need to consider the regulatory landscape and the collateral obligations that they will be subject to. This will mean considering carefully the type of investment and trading portfolio they have (and the subsequent exposures that they will need to cover) versus the types of assets that they hold in relation to the collateral they will be required to put up.

1.4.2 (Prime) Broker/Dealers

These organisations will need to consider their own and their customers' trading and credit strategies to determine where they are required to take in or post collateral. For those dealers that also act in the capacity of a GCM (general clearing member), they will also need to consider their obligations under their CCP (Central Counterparty) memberships where they will post collateral on behalf of their clients. Balancing the collateral they take in from customers, versus what they will post to CCPs, will be a key element to managing their collateral efficiently.

1.4.3 Financial Market Infrastructures (FMIs) – Exchanges, CCPs, Central Securities Depositories (CSDs), Payment Infrastructures

These organisations will need to consider how they manage their risk in light of their crucial market role. This consideration should cover the process (ie cut off times for the movement of collateral, intraday vs overnight margin calls, mandatory account structures etc.), risk parameters (ie size of initial margin, haircut, permitted reinvestment strategies etc.) and what collateral they are able to accept within the confines of what regulatory requirements. Effectively, this will mean a focus on high quality liquid assets (HQLA) which can be liquidated easily in the event of a participant default.

1.4.4 Triparty and Securities Lending Agents

These organisations will need to continue to focus on the products that they offer to facilitate customers' needs as regards the movement and management of collateral. They will need to take into consideration the evolving regulatory landscape and its impacts on their offerings. There are elements that would appear to encourage a need for such service providers. Securities lending agents would facilitate the reduction of settlement fails in the market, generating liquidity from asset pools held etc., matching lenders long assets with borrowers short assets. However, there are certain regulatory elements that could possibly discourage an expansion of such services, eg buy-ins covering some products (longer term repos and securities lending transactions), increased regulatory reporting, etc.

1.4.5 Global and Local Custodian Banks

Global legislation is pushing more liability onto this group of organisations, and they will need to consider how to manage this risk, whether through collateral or other means. Moreover, these organisations rely on managing assets within their custody network. They will need to adapt their service offerings to provide customers with value in this space, either through providing connectivity to specific collateral service providers, building their own asset pools or creating new models to specifically service their clients' needs, often working with infrastructures.

1.4.6 Trade Repositories

These organisations will need to expand their current services to capture collateral transactions as regulators are starting to require reporting of securities financing transactions and more broadly, collateral placed against the aforementioned transactions.

2. Collateral Mobility Models

Having covered the reasons for why there is a greater demand for mobilising collateral, this paper now considers what types of industry models exist to facilitate such mobilisation and provides model information ranging from triparty to bilateral custodian model and extends to cover the Central Clearing model.

The paper is not exhaustive, but attempts to provide a view on the main models, both existing and emerging, which are looking to aid all counterparts in their ability to ensure the right forms of collateral are available when required. During this process, emphasis is given to the benefits and challenges of each model facilitating the collateral mobility.

The choice of collateral model depends on various factors which need to be taken into consideration after careful due diligence. Some of the factors are:

- Current and future business models of the selecting institution
- Different types of risk exposure coverage resulting in collateral requirements, location of securities holdings
- Variety and diversification of asset type as collateral
- Demand for different levels of collateral servicing from a full-fledge outsourced collateral servicing offering to a high-level of operational involvement in selection and mobilisation of collateral to meet requirements etc.
- Close analysis of the current business relationship and business lines with the model provider.

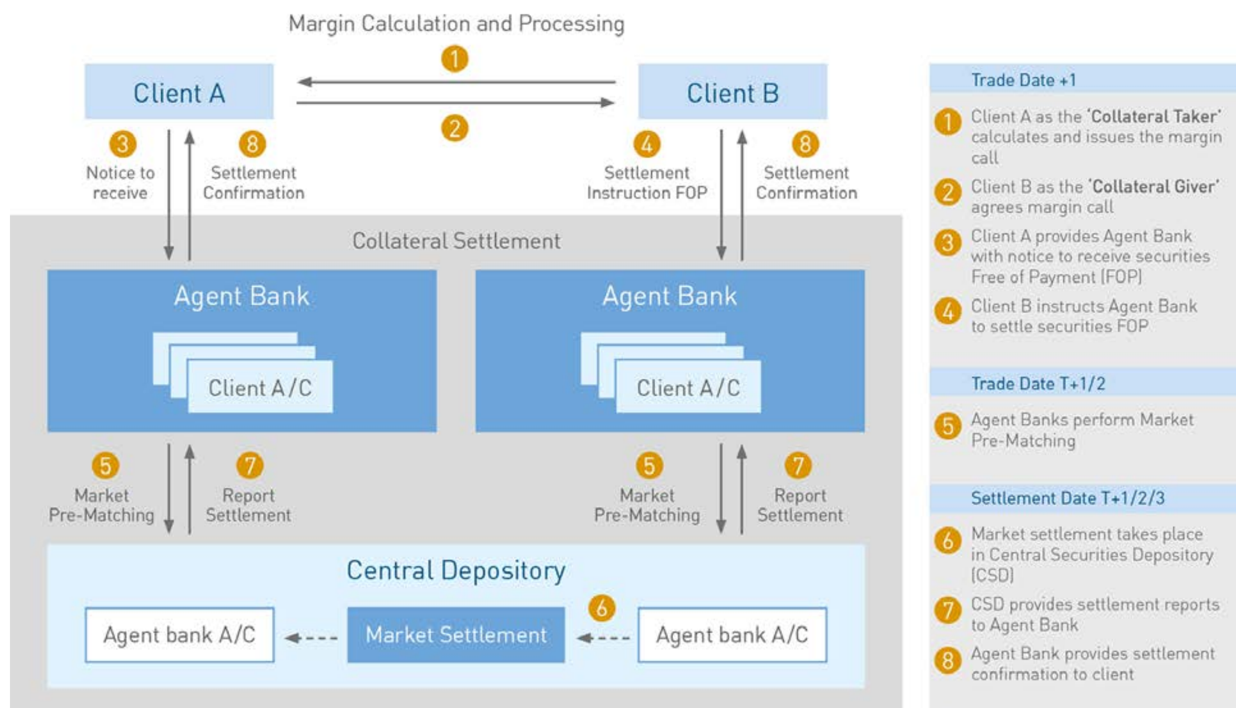
2.1 Bilateral Collateral Management Model

Bilateral collateral management is based on the concept of managing in-house the complete life cycle of the collateral management activity against counterparties, based on collateral management applications developed internally or acquired from a specialised software vendor. There are also certain financial institutions which utilize the collateral management applications offered as Software as a Service (SaaS) from a handful of niche software providers.

Under this model, clients are required to capture the necessary data and trade feeds, calculate and issue their margin requirements against each other in line with the governing legal documentation, signed on bilateral basis (usually via a Credit Support Annex, GMSLA and others). Depending on the business model of the clients, the margin and collateral management can cover different exposure types (ie OTC derivatives, centrally cleared, Repo, Securities Lending and Borrowing etc.) across different global business venues. For each of these different business lines and locations, different sets of legal documentation and possibly different collateral management applications and settlement processes may be required, which can increase operational complexity.

Focusing on the collateral mobility aspect of the bilateral collateral management based on the Custody Agent model, the parties will need to exhibit a high level of involvement in selecting and mobilising the collateral required between different locations. Following each margin agreement, both parties to the transaction are required to instruct their Agent Bank to mobilise the collateral (ie securities settlement for FoP) or their cash correspondent bank for cash settlement, delivery on T+1.

As part of the Agent Banks' tasks, they perform the market pre-matching on T+1/2 resulting in settlement taking place at CSD level on T+2/3. Following the settlement process, clients receive confirmation of their collateral settlement from their Agent Bank, once the CSD provides the settlement reporting.



Bilateral collateral management, where the collateral mobility is managed by a Custodian Agent Bank, provides the highest level of clients' involvement in the collateral management process to the extent that the client is required to maintain a complete string of front, middle and back-office staff to oversee the activity (although these activities could be outsourced to an administrator). The extent of decision making flexibility when it comes to selection and instruction of collateral to be mobilised needs to be weighted against the cost aspect of the activity.

Selected collateral is mobilised between different participants of the bilateral market to the extent that the available collateral is eligible under the legal agreement, free of any lien in the account, and that there is a settlement process in place with correct reference data availability.

Perceived Benefits of the Bilateral Model
The benefits of this model are that

- Each party is able to control their collateral process and directly manage their counterparty exposure risks.
- This model can be tailor-made to comply with the operational constraints of each organization. The legal documentation used in the relationship (Credit Support Annex, Global Master Repurchase Agreement) is standardized but can be adapted by the parties in function of their needs. They can agree with one another on the types of collateral that will be acceptable, the timings for delivery of the collateral and the locations where collateral can be held.

- Counterparties can use their existing agent bank and/or cash correspondent relationships and networks to move collateral and therefore do not need to appoint the same entity acting as custodian and collateral agent.
- Finally, this model is adapted to the posting or reception of cash (which represents approximately 80% of the collateral volumes exchanged on OTC derivatives for example according to the ISDA Margin Surveys).

Perceived Challenges of the Bilateral Model
However, there are perceived challenges with this model too:

- An increasing focus from regulators on the bilateral model. There are increased capital requirements, an increased need to post and collect initial margins and greater restrictions on the types of transactions that can be managed on a bilateral basis (eg in certain jurisdictions, most forms of standardised OTC derivative transactions need to be centrally cleared).
- Significant back office costs required with maintaining systems and personnel to manage collateral portfolios.
- Operational or transit risk with settling collateral directly with a counterparty to their agent account (not to mention the potential for significant settlement costs with physically moving assets cross border).
- Increased complexity when managing exposures and correspondent collateral positions with multiple counterparties (financial and/or infrastructures).

2.2 Triparty Collateral Management Model

2.2.1 Traditional Triparty Collateral Management

Triparty collateral management is best described as an outsourced end-to-end collateral management activity by the parties of the transaction to a third-party acting as neutral agent. Traditional triparty collateral management services have been in existence for the last 30 years or so and are designed to simplify the administration of various transactions under different legal agreements for both counterparties to the transaction: The Collateral Givers (CGs[1]) and Collateral Receivers (CRs[2]). The key users of triparty collateral management services are central banks, CCPs, investment and commercial banks, various securities lenders and corporate cash providers. A triparty agent offers different levels of services tailored to the underlying business requirements of each business area, as well as a bilateral agent. Triparty structures have long been used for repo and securities lending in global markets and currently services are leveraged to meet the requirements of the uncleared derivatives margining activity.

The objective of a triparty agent is primarily to mitigate counterparty and operational risk associated with such transactions by offering high degrees of automation, settlement, margining, safekeeping and monitoring services and to provide tools to efficiently manage the collateral across different underlying business lines.

[1] Collateral Giver: The party to a transaction that provides collateral securities and/or cash to the Collateral Receiver in exchange for securities and/or cash. CGs can be Broker Dealers, Commercial Banks etc. CGs are responsible for providing the required level of eligible collateral to meet their exposure coverage requirements.

[2] Collateral Receiver: The party to a transaction that lends securities and/or cash to the Collateral Giver in exchange for an amount of securities and/or cash that is held and monitored on the collateral account. In addition to the general CGs' participant profile, Central banks, Supranationals, State agencies, CCPs are also participants of the triparty collateral management activity.

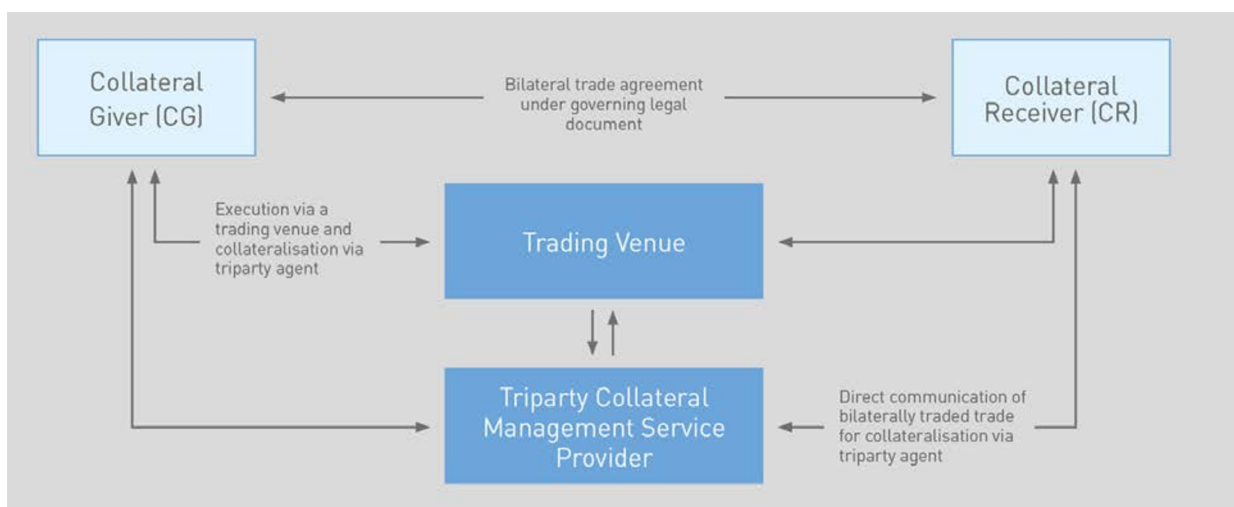
The triparty collateral agent fulfils a facilitating role:

- Undertaking administrative functions, thus reducing cost and workload for customers
- Providing a fully documented and neutral service
- Ensuring reduced risk through independent agency services
- Providing a secure environment for the settlement, valuation and safekeeping of the assets
- Providing a clear cost structure for management of collateral.

A triparty collateral agent performs the following administrative services on behalf of the clients:

- Depending on the model chosen, matching of trade instructions/notifications
- Collateral settlement (i.e. DvP, FoP) and valuation
- Proactive margin calls based on frequent (eg daily) mark-to-market (MtM)
- Automatic allocation of collateral and optimisation across different exposures and counterparts on real-time basis
- Screening and management of eligibility profiles and concentration limit across different contracts
- Application of security and cross-currency haircuts
- Automated collateral substitution
- Automated collateral re-use functionality across different exposure types
- Reporting to both principal counterparties ie transaction and exposure reporting
- Management of custody services and corporate actions on the collateral holdings, automatic substitution over record date
- Various secure connectivity and communication options.

The lifecycle of a triparty transaction is initiated once the underlying transaction (such as repo/reverse repo, securities lending, OTC derivatives etc.) is executed either on a bilateral basis or via a trading platform.



Triparty collateral management service is an outsourced activity providing end-to-end collateral servicing to the extent defined by the customer, automatic allocation and substitution of the securities according to the predefined eligibility profiles vs manual selection, and mobilisation of the selected collateral (as defined by the customer).

In order to leverage and maximize the triparty services offered, Collateral givers are required to have sufficient and eligible collateral holdings to mobilise and to meet the exposure coverage requirements in a timely manner. Participants to the triparty collateral management can either mobilise various assets through their custodian network upfront as collateral to their long box/source account within the triparty agent environment or choose to mobilise the assets on demand basis to triparty agent taking into consideration the potential risk of market settlement.

In addition the automatic allocation and optimisation of collateral, the management of eligibility profiles and concentration limit management[3] are some of the factors which may trigger the need for the mobility of collateral across different pools.
In the context of operating within the triparty collateral management setup, service participants can mobilise their collateral holdings:

- Through other custodian networks (i.e. client assets which are held outside the custodian network of the triparty agent). Customers will initiate and instruct the movement of the assets into the triparty agent network for further use. This is similar to the movement under the bilateral collateral management model.
- Internally between two accounts of the customer (i.e. main account to source account/longbox within triparty agent for collateralisation purposes).
- Through collateral pools or inventory management outsourcing solutions which are further explained later in the paper.

Concerning the documentation, the execution and completeness of the governing legal documents for the respective transactions (bilaterally or via trading platform) are under the responsibility of the counterparts. Although the triparty agent is not a party to the bilateral legal documentation, the triparty legal documentation is designed to cover and complement the key aspects of the recognised master agreements such as GMRA, GMSLA or ISDA CSA[4] for legal events and terms as title to collateral assets, manufactured dividend flows and others. Triparty legal documentation is agnostic to the master framework. Depending on the selected triparty agent, the legal documentation can be multi-laterally executed across a wide range of underlying transactions either through a standardised or bespoke documentation. Sets of documentation include operational procedures reflecting the full transparency of the service offering.

Given the wide range of services offered by the triparty agents, legal documentation signed with the triparty agent can address the account structures required for different legal frameworks for holding and safekeeping of collateral. Within the triparty collateral management service environment, collateral accounts fall into two categories: Transfer of Title (ToT) and Pledge structures (see ISSA Report on Best Practices of Collateral Management for Cleared and Bilaterally Traded Products of March 2014, for full details on such structures).

Triparty collateral management services operate on a real-time basis when it comes to margin coverage within the triparty environment. Depending on the availability of the eligible collateral, triparty agents can mobilise collateral between different pools and contracts on a real-time basis (T+0). This also results in a much shorter time to cover exposures within the triparty environment.

[3] Concentration limit relates to the diversity and the composition of the collateral that financial institutions are willing to take in.
[4] For further information regarding the legal documentation, please refer to respective industry bodies. Global Master Repurchase Agreement (GMRA) - ICMA (www.icmagroup.org), Global Master Securities Lending Agreement (GMSLA) – ISLA (www.isla.co.uk), ISDA Credit Support Annex (CSA) - ISDA (www.isda.org)

The cost associated with the collateral mobility achieved by the triparty collateral model contains various components. Each triparty agent is in a position to provide the details of their service cost components. However common components can be listed as follows:

- Triparty servicing fee
- Custody fee
- Safekeeping and transaction fees
- Reporting fees
- Bespoke solution offering fees, if applicable.

Perceived Benefits of Triparty Model:
The triparty collateral management model provides the following perceived benefits:

- Extensive STP and streamlined service coverage, providing integration between global collateral management, settlement and asset servicing.
- Designed to simplify the administration and operational processing of triparty agreements for both participants, on a global scale.
- Provides lifecycle management and monitoring of the triparty agreements starting from initiation, mark to market (MtM), margin calls, auto allocation, re-use of collateral within the system, enables auto substitution and performs unlimited round of substitution, if required, executes sophisticated eligibility checks and concentration configurations and extending reporting services.
- Capability of handling high volumes of data and transactions, providing a high level transparency to both parties of the transaction, not only at the level of collateral management but also for the settlement and custody level.
- Comprehensive management of credit exposures and risk (i.e. operational, market, control).

Perceived Challenges of the Triparty Model:
Although there are clear benefits offered by a triparty collateral management model, there are certain factors in the financial landscape impacting the potential take up of the model such as:

- Further development of “common” requirements for eligible collateral to be utilized cross-border: Custody segregation requirements, settlement discipline (buy-in) requirements, understanding of combined regulatory collateral management requirements (i.e. CRD IV, MMFR, EMIR, MIFIR etc.).
- Further emphasis and development on interoperability between (I)CSDs and other triparty agent solutions.
- Investigation into the impact of new technology and innovation in the collateral management space.
- Emergence of competing fin-tech vendors.
- Challenges in dealing with and operating in restricted markets (Taiwan, onshore China, India).
- Stricter limits on eligible collateral by regulation and market participants.
- Increased demand for bespoke solution for clients.
- Triparty Agent and custodian services are offered by the same provider (or mandatory custody with the triparty collateral agent).
- Pressure from regulators for more complex collateral segregation models.
- Complex calculation of value of funding trades from a regulatory ratio perspective (LCR / NSFR).

As a conclusion, once a market participant decides to leverage a triparty model to manage and mobilise their collateral, they are advised to further run a comparison on each service offering. There are fine differences in the context of legal documentation, settlement of collateral at securities settlement systems (SSS) level, coupling of the collateral

management application with the real-time settlement platforms, management of account structure, eligibility profiles, asset coverage, optimisation algorithms and re-use functionality, different connectivity options, extent of custodian/sub-custodian network etc.

2.2.2 Collateral Pool Creation

Pools of collateral exist in many central securities depositories and custodians, across different regulatory jurisdictions. The fragmentation caused by these different pools makes the mobilisation of collateral to the right place at the right time difficult.

In order to optimize the collateral management process, the financial institution needs to have a view across its products and markets. This is probably the unique way that a global financial institution can efficiently allocate collateral.

In light of the need to mobilize the collateral, a small number of the large international asset aggregators have created solutions in recent years to address such market requirements. The solutions are designed around the concept of a "collateral pool" and the ability for customers to mobilize collateral both domestically and internationally without triggering any cross border transfers, irrespective of underlying asset type and location. They are designed also to ensure that assets remain in the local jurisdiction where countries may have exchange control restrictions. The solutions are designed to address the mobility of collateral between different CSDs and agent banks (where different assets may be held). Please see below some of the key solutions being offered:

- A solution delivering outsourced, white-labelled collateral management to infrastructure partners such as CSDs on a global basis.
- An inventory management solution in partnership with agent banks – enabling customers of both the agent bank and the solution provider (an ICSD) to use the assets under custody with the agent to collateralise triparty transactions at the ICSD, thereby pooling the collateral the clients hold at the ICSD and the agent bank. Securities which are selected to be used as collateral are mobilized to an ICSD account within the agent bank. The relationship between the client and the agent bank remains untouched as all domestic clearing, settlement and custody will still be provided by the agent. This is a full-STP service, utilising optimally the quantity of collateral in the domestic market to meet the exposure coverage. This concept tackles the challenges of fragmented pools of collateral locked away in different entities, geographic locations and time zones by helping users to source and mobilise their collateral inventory rapidly, efficiently and optimally to meet multiple collateral obligations. The solution is agent, asset-class and market agnostic.
- A solution where two global CSDs are partnering in the field of collateral management through a jointly owned subsidiary. The subsidiary solution aims at offering users a single global view of their assets, wherever they may be, accurate and timely reporting of collateral obligations and a consolidated view of collateral flows and obligations. Furthermore, assets will be optimally allocated and substituted to meet collateral obligations across businesses. The solution is also developing and streamlining margin settlement processes to enhance open access to securities collateral irrespective of location, thereby contributing to the stability and soundness of global financial markets.

Perceived Benefits of Collateral Pool Solutions:
The collateral pool model provides the following perceived benefits:

- Extensive STP and streamlined service coverage, providing integration between global collateral management, settlement and asset servicing.
- Simplified administration and operational processing of securities collateral on a global scale.
- Improved efficient use of assets as collateral that would otherwise remain trapped in a particular jurisdiction. This allows a user to take advantage of a global coverage model utilizing multiple collateral types (equities, bonds etc.).
- Comprehensive management of credit exposures and risk (ie operational, market, control) to multiple counterparties (infrastructures, financial institutions and increasingly corporate).
- Improved settlement risk as assets will be moved book entry only within the pool rather than physically across border between multiple parties.
- Improved substitution and allocation capabilities for swapping one form of collateral for another within the pool.

Perceived Challenges of the Collateral Pool Model:
Although there are clear benefits that such models can bring to the market (as highlighted in the descriptions above), there are potential challenges that will need to be considered by any party signing up :

- Further development of "common" requirements for eligible collateral to be utilized cross-border: Custody segregation requirements, settlement discipline (buy-in) requirements, understanding of combined regulatory collateral management requirements (i.e. CRD IV, MMFR, EMIR, MIFIR etc.).
- Further emphasis and development of interoperability between different pools (including determining where the risk lies between different models).
- Challenges in dealing with and operating in restricted markets (Taiwan, onshore China, India). This can restrict the ability to use trapped assets from all markets.
- Ensuring a clear understanding of who has the legal rights to collateral assets in a 'default' scenario (especially due to the cross border nature of the solutions).
- Complex legal contracts often involving multiple parties (infrastructures, custodians etc.).
- In certain cases, customers utilizing services may need to provide solution providers with power of attorney rights over their accounts.
- The solution may not cover all locations and/or products required by the customer.

2.2.3 Experience with Outsourced Triparty Collateral Management Services in Domestic Markets

Collateral mobility models offered by ICSDs can be carried over to the domestic markets in the form of global outsourcing offerings. Such initiatives can accelerate the transition of the local models to international standards.

Looking at a specific implementation case, the domestic market in question had certain challenges to overcome. Some of these were:

- Existence of legal structures without any standardization, i.e. in one pledge model assets remain in the custody account of the giver, in another the asset pledged moves, FoP, from the custodian of the initial receiver, which is acting as a securities lending agent, to an account in the name of the original collateral giver at the custodian of the ultimate receiver and is pledged in favour of the ultimate receiver. This procedure was to avoid taxation on transfer of title as there is no change in

title in the aforementioned model. This model will dissipate with the recent changes to the taxation laws for equities placed as collateral.
- Most transactions were on a bilateral basis and a fair amount without Master Agreements.
- Lack of system linkages to build a re-use chain across different exposures coverage activity.
- Manually intensive collateral movements based on standing instructions to Custodians.
- Lengthy duration of collateral re-calls in the local market.
- Discrepancy on the value of the underlying collateral value resulting in disputes etc.

Following the implementation of the outsourced triparty collateral management services jointly with an ICSD, the CSD offers a true triparty programme which aims to bring more standardisation and improved collateral mobility. Settlement instructions will be generated within the triparty service, which are then forwarded to the CSD's settlement systems. The movement of the collateral and legal framework is now standardised under the new offering. The CSD operating the triparty programme preforms the tasks of the triparty agent in the domestic market.

Perceived Benefits of the Outsourced Model:
The benefits of such an implementation as perceived from different market participants' views are:

- Collateral Receivers (CRs)
    - Efficient and accurate monitoring of credit exposure
    - Reduction of operational risk
    - Business growth by outsourcing to an efficient agent
    - Simplicity and ease of service through just one collateral management service for any kind of financial obligation/exposure
    - Centralise concentration risk management of collateral received
    - Back-office efficiency from outsourcing to a collateral agent
    - Opportunity to reduce costs of maintaining or purchasing collateral management systems and head count
    - Regular mark to market of collateral with automatic top-ups and reductions
    - Asset safety through segregation of accounts at the CSD

- Collateral Givers (CGs)
    - Efficient use of securities collateral compared to relatively expensive use of cash collateral
    - Reduction of credit risk of cash and operational risk of placing securities
    - Asset safety – pledges marked and re-use fully tracked and prevention of disposal of assets ceded to receiver
    - Simplicity and ease of service through just one collateral management service for any kind of financial exposure
    - Back-office efficiency from outsourcing to a collateral agent
    - Collateral optimization cross-product and cross-location
    - Opportunity to reduce costs of maintaining or purchasing collateral management systems
    - Regular mark to market of collateral with automatic returns of excess collateral

- Market
  - Increased mobilisation of high quality liquid assets (HQLA[5])
  - Collateral moves on T+0
  - Certainty of current size and location of collateral
  - Lead times required for collateral recall significantly reduced due to the audit trail of the re-use chain in the triparty solution
  - Standardised method of monitoring and managing Corporate Actions/Capital Events on collateral assets
  - Ability to help facilitate tighter settlement timelines
  - In the absence of formal lending agreements such as ISDAs, ISLAs and GMRAs, the triparty solution introduces a level of security
  - Elimination of significant manual intervention and decentralised view
  - More transparency through simplification of complex account structures and elimination of limited bilateral view
  - Set fixed cost to place collateral as opposed to uncertainty of current costs of placing collateral
  - Market-wide collateral optimisation

During the implementation of the legal stream of such a model, an approach similar to the traditional triparty model is taken into account.

Existing agreements between CGs and CRs that determine and govern the relationship between these two parties continue to govern the bilateral relationships. These agreements include aspects such as collateral eligibility, valuation methodologies and calculations, early termination and default. A triparty programme provider is not party to these agreements and does not assume any of the risks emanating from this relationship.

A Collateral Management Service Agreement has been developed to ensure full compatibility with local law. This agreement focuses on the operational obligations of a triparty programme provider in providing outsourced / white label services offered by ICSD through its technology platform.

The cost component of such a service offering in the domestic market can be summarised into components such as servicing fee, administration fee and others which are communicated to the clients on a monthly basis with a detailed breakdown.

Perceived Challenges of the Outsourced Model:
In terms of challenges and perceived obstacles identified for the take up of the solution, a local triparty programme provider points out the following areas for further attention:

- Delays in signature of legal agreements by clients, especially where the client has a foreign ownership (parent) structure
- Delays in on-boarding specific markets such as:
  - Regulatory monitoring and implementation delays
  - Delay in the implementation and monitoring of BASEL III Liquidity Coverage Ratio which negatively impacts the service provider since the market participants may continue to use unsecured credit interbank lending
  - The delay in the implementation of regulatory changes such as mandatory clearing of Over the Counter (OTC) derivatives and collateralisation of non-cleared OTC derivatives.
- Taxation of fixed income securities collateral transferred under different legal framework

[5] High Quality Liquid Assets (HQLA) consists of cash or assets that can be converted into cash at little or no loss of value in private markets to meet liquidity needs for a 30 calendar day liquidity stress scenario (BIS – www.bis.org)

- 'Marriage broking' of clients; signing up client counterparties to be in the triparty service
- Finalisation of banks' enterprise wide review of their current collateral management systems capabilities and requirements.
- Influence of key counterparties in monetary operations, such as Central Banks and Central Counterparties, on the types of eligible collateral acceptable in the market
- Lack of standardisation of pricing and valuation on eligible unlisted securities

2.3 Central Clearing Model

This section details a general central clearing model (utilizing a Central Counterparty) as an example to illustrate the flows, however, market participants should understand that there will be other models and that they will each have their nuances depending on several key factors such as local regulatory jurisdiction, customer demand, CCP risk model etc.

Central clearing for derivatives has gained increased importance under the incoming regulatory requirements such as EMIR and Dodd-Frank Act. As of first half 2016, market participants will be mandated to submit and clear selected sub-groups of OTC derivatives transactions at a recognised CCP. Moves such as this are considered one of the key drivers for the collateral mobility.

Looking closely at a European CCP, the main actors of the CCP landscape involve:

- Clearing Member (CM) and Client acting as Collateral Giver (CG)
- Collateral Manager
- Collateral management service provider and custody service provider
- CCP acting as Collateral Receiver (CR)

Collateral Provider	Client Collateral Location	Collateral Locations	Lien Type	Lien Model	Collateral Receiver
Client	ICSD/CSD/ Custodian and/or Collateral Manager	Place of safekeeping	Pledge	ISA	CCP
Clearing Member (CM)			Transfer of title	OSA	

Within the category of CG, CM can only be the counterparty to the CCP in this case and all CGs are responsible for the full collateralisation and delivery of collateral to the CCP[6]. On the other hand, a CCP acting as CR provides the complete clearing and risk management services including the exposure calculation, collateral evaluation and issuance of margin calls as well as the complete default management processing. Part of the CCP activity is not only the determination of the clearing-eligible instruments, but also the definition of the admissible financial instruments for the collateralisation of the cleared business, e.g. margin requirements and default fund contribution. This is linked to the close cooperation with collateral locations for settlement and custody of the assets received.

[6] Note, historically, CCPs use to have a limited direct membership structure; however, there are ongoing initiatives in the industry to allow direct access for buy-side clients.

In certain cases collateral managers may act on behalf of CGs and are responsible for the selection of an optimal collateral mix, the delivery and the withdrawal of securities. As other main actors in the CCP landscape, the collateral management service providers and custody service providers are responsible for offering safekeeping services according to the selected segregation models while ensuring immediate access to the collateral and execution of the transfer of the collateral solely upon instructions of the CCP. They also provide settlement and custody services next to collateral management services (CMS) which entail application of eligibility checks, concentration limits and valuation criteria as defined by the CCP.
In terms of account structures, CCPs may accommodate both pledge and transfer of title legal frameworks in relation to the selected clearing models and collateral locations. Further focus on the segregation models indicates that there could be different set-ups in place in order to meet the different requirements of the CGs.

Segregation Model and Impacts

Segregation Model	**Individual Segregated Accounts (ISA)**	**Omnibus Segregated Accounts (OSA)**[7]
Segregation/Level of Protection	➢ Full physical segregation of actual assets per client ➢ Direct delivery of securities available for ISA customers ➢ The greatest level of protection envisaged under EMIR	➢ The model segregates the collateral related to client business from the house business ➢ Collateral that is related to OSA clients is held in one or multiple OSA accounts and is ring-fenced from CM's own collateral.
Portability	➢ Very likely porting; segregation and porting of clients actual collateral	➢ Porting under the Omnibus model is possible if all clients in the collateral pool port to a single replacement Clearing Member and CCP receives this confirmation in due time.

Perceived Benefits of the Centrally Cleared Model:
Operational efficiencies from a CG's perspective can be summarised as follows:

- ➢ Ongoing introduction of collateral enhancements to improve processes and mitigate costs for segregation
- ➢ Level of automation of relevant daily processes
- ➢ Netting of risk by portfolio based position assessment leading to lower margin and hence reduced collateral requirements
- ➢ Possibility to maintain one omnibus account at the CSD for the benefit of each ISA client/ omnibus segregated client
- ➢ Broad range of securities (governments, corporates, equities) that can be used
- ➢ Comprehensive product range allowing collateral transformation (e.g. cleared lending to get HQLA vs. equities for fulfilment of margin requirements)

[7] OSA might be used to segregate positions and collateral in compliance with the CASS rules.

Perceived Challenges of the Centrally Cleared Model:
When it comes to taking up the CCP model, following points could be further analysed by the market participants:

- Specific functional and legal requirements to become CCP member (e.g. credit assessment)
- Market coverage, i.e. derivatives, cash and securities financing for equity and fixed income
- Technical readiness to cope with different segregation models
- Level of protections and likelihood of portability of positions and collateral in case of CM's default
- List of eligible cash and non-cash collateral and applicable haircuts
- Possibility to re-use general collateral as margin collateral
- Margining methodologies and observation of concentration and wrong way risk limits
- The quality of waterfall model and default procedures
- In terms of cost, each CCP publishes their transaction and service fees on their website and can provide details upon request from clients. However, additional costs may be applied by the CM vis-à-vis the Client depending on the segregation model / level of service offered.

3. Collateral Mobility Enablers and Obstacles

Having considered the models, the paper now focuses on the environment that these models are operating in. As highlighted in the introduction to this paper, there are a number of key regulatory initiatives that are driving the need for collateral mobility. In addition, there are a number of market-driven non-commercial initiatives that are pushing for improvements in this space and will help to facilitate mobility. At the same time, contradictory as it may seem, new legislation is also creating certain barriers to the ability to mobilise collateral, and these add to the many existing obstacles (e.g. legal, technical and operational). We now look to cover the main areas that are both enhancing and holding back the ability of participants to move their assets on a cross border basis.

3.1 Enablers and Obstacles to efficient Collateral Mobilisation

3.1.1 Account Structures

During the past few years there has been a long debate about the perceived and practical benefits of various types of account structures for the custody and safekeeping of assets. The main aspects that have been taken into consideration were the benefits and downsides of different types of accounts held through the intermediary chain, thus focusing on the operational efficiency gains stemming from the use of omnibus accounts versus the perceived higher level of asset protection for individual investors based on various levels of account segregation. Other rationales cited in favor of account segregation are related to financial stability issues (e.g. in EMIR, segregation is deemed to minimize disruptions from a clearing member's default) and to transparency (primarily for tax, shareholder participation and financial crime combat purposes). This debate became even more detailed as a result of the proposed reporting requirements for settlement internalisation, which have later been introduced in Article 9 ("Settlement internalisers") of the CSD Regulation. Two interesting papers cover this debate very well, both published by AFME: "CSD Account Structure: Issues and Proposals"[8] and "Settlement Internaliser Considerations: Issues and Proposals"[9].

The choice of different levels of asset aggregation or segregation in the structure of safekeeping accounts is also quite relevant for the efficient movement of collateral. In the cases where collateral is posted in the form of securities, the ability to hold a pool of eligible assets in aggregated form in 'omnibus' accounts simplifies the operational processes required to move such collateral: For example, the use of the same account for both the tradable assets and the assets earmarked for potential collateral needs can significantly facilitate the rapid transfer of securities collateral; collateral substitution becomes simpler; in case of need, additional collateral may be obtained through ad-hoc trading and the use of the same omnibus account would mean that these securities would be available for reposting as collateral immediately upon settlement of the receipt. Conversely, if the same securities assets are held in segregated accounts, for example tradable positions segregated from the eligible collateral, or the trading book held separately from the investment positions, it would often become more difficult to achieve the same level of operational efficiency in the movement of assets for collateral purposes, since additional movements would be required between different accounts even though they may belong to or be controlled by the same entity.

[8] "CSD Account Structure: Issues and Proposals", dated 19 March 2012, http://www.afme.eu/WorkArea//DownloadAsset.aspx?id=5897
[9] "Settlement Internaliser considerations: issues and proposals", dated 8 April 2013, http://www.afme.eu/WorkArea//DownloadAsset.aspx?id=8733

3.1.2 ISSA Views/Recommendations

ISSA believes that there needs to be an open dialogue between market participants and regulators on the impact of segregation on collateral mobility. There should certainly be choice provided regarding account structures (from omnibus to fully segregated at CSD level) by market participants, disclosing the different risks and costs associated with the different models. However, at the same time, it is important to understand the macro impacts of account structures on collateral mobility (especially a move towards a more segregated model), and the knock on implications that this can have to the way the market will tackle the collateral challenge; if too expensive and operationally difficult to manage, the market will not use the mobility models available.

3.2 Collateral Liquidity

Over the last year the question of a potential shortage of collateral has changed to collateral liquidity and whether sufficient collateral will always be available at the right place and at the right time.

New regulations have a large negative impact on broker/dealers being able and willing to provide a market in OTC traded fixed income instruments. Currently it is clearly visible that broker/dealers do not provide pricing anymore on many fixed income instruments. This lack of pricing caused by regulations that either prohibit broker/dealers to provide pricing or that make it very expensive to provide this service has had a large negative impact on liquidity. Fixed income products are often used as collateral assets, and therefore the impact on this part of the market may have longer term implications. How the market(s) will manage, should there be a wave of collateral selling, is largely unknown at this stage and is certainly a cause for serious concern.

3.2.1 ISSA Views/Recommendations

ISSA believes that there would be significant benefits in further considering market scenarios (e.g. stress conditions created by a significant market player default, changes to interest rates, down or up etc.) to determine what impacts this might have on collateral liquidity.

3.3 Harmonized Settlement (e.g. T2S and T+2)

Market participants are increasingly reliant on collateral for secured funding and treasury management operations. The increased use of (cross-border) collateral, however, requires the efficient mobilisation of assets (where they are securities) across one or more securities settlement systems (SSSs) throughout the day. Currently, market participants often experience limitations in the effective management of their positions and liquidity (trying to ‘square/ balance positions’ by the end of the day). Typical limitations include operational and functional differences amongst various SSSs, different operating times and service deadlines, specific rules for domestic versus cross-border settlements, etc. Additional differences result from the multiplicity of operating business models and processing practices that are adopted by the various actors involved in settlement activities (trading firms, intermediaries, settlement agents and custodians, CCPs and clearing houses, CSDs and ICSDs).

Harmonized settlement (e.g., T2S and T+2 in the EU, T+2 and Settlement Matching in the US, and other similar post-trade harmonization initiatives in ASEAN markets) may have both positive and negative effects. Shortening settlement may be beneficial to reduce settlement risk, but it may also be a cause of over-collateralization or of operational

difficulties in meeting shortened deadlines. There may be a tie in to cross-product margining, particularly as it may result in over-collateralization. This will intensify collateral management processes at banks and intermediaries, requiring additional intra-day collateral and shorter time frames to meet margin calls. In fact, collateral exposures will (often) need to be addressed on a quasi-real-time / T+0 basis.

3.3.1 The Advent of T2S (& Other Global Approaches to Settlement) – Enhancer of Collateral Mobility?

The overall objective of T2S is to facilitate post-trading integration by supporting core, borderless and neutral pan-European cash and securities settlement in central bank money. This enables CSDs and custodians to provide their participants with harmonised and commoditised securities settlement services in an integrated technical environment with efficient cross-border capabilities. By allowing all participants to use a common shared platform for the completion of all steps involved in the settlement process, T2S creates a single infrastructure with standardized procedures, business and operating rules for all post-trade activities. These activities include trade matching requirements, allegement processing, message formatting checks, provisioning and reconciliation of cash and securities, credit risk assessments, management of failed trades and anti-money laundering requirements.

T2S will make the post-trade environment safer and more efficient. Depending on client types and activities, it will reduce the cost of settling securities transactions and bring about significant collateral savings for market participants through the introduction of new (for many markets) techniques of auto-collateralisation of securities via participating National Central Banks, thus reducing the need to provide cash liquidity into the settlement system. These collateral savings are particularly valuable at a time when demand for high-quality collateral continues to increase, as a result of both the crisis and new regulatory developments.

In addition to settlement-specific activities, T2S also acts as a catalyst for further integration and harmonization of other core functions and services in the post-trade space, in particular the so-called asset services, e.g. where settlement of securities movements are required to complete the corporate action events (stocks and rights issuances, conversions, etc.).

3.3.2 T2S Autocollateralization

One further specific benefit arising from T2S will be the introduction (or, in some markets, the enhancement) of new operational processes for the automatic collateralization of securities settlements through available intraday liquidity provided by a connected National Central Bank (so called "auto-collateralization" and "firm-collateralization" procedures). The availability of these services, which can be used as optional services in T2S, means that many users will be able to simplify their liquidity management monitoring for the securities settlements function, and therefore will have the option of achieving greater efficiency in the overall management of available high-quality assets for any other collateral posting requirements.

The implementation of T2S, which is now already a reality in some markets and which will cover 23 CSDs by 2017, representing a very significant part of the European capital market, will significantly enhance the possibilities for the cross-border use of collateral for Eurosystem credit operations and for bilateral funding arrangements. Further benefits are expected from market-led initiatives to enhance the interoperability of triparty services in Europe, that will also significantly hinge upon the increased efficiency of settlements in T2S.

However, it is not clear yet how quickly the new settlement platform will be able to fulfill its promise of standardized and streamlined settlements for a majority of all European ISIN's. Wave One "go-live" was completed in June and August 2015. However, only after the completion of all other migration waves (that are now expected to complete by September 2017) will the market have the opportunity to settle a majority of trades directly in T2S and not anymore within the local CSD settlement systems.

Outside of Europe, the ASEAN trade and post trade initiative continues to drive improved connectivity to market infrastructures (exchanges, CCPs and CSDs) for market participants. China is also enhancing the ability for foreign investors to access its securities market via its StockConnect programme. These initiatives both require mobilization of collateral on a cross border basis. It should be noted that legal and operational challenges remain with these models (see section 3.6 on legal certainty).

3.3.3 Harmonised Settlement Cycles – A Global Move to T+2

The move to a T+2 settlement cycle across all 31 European Economic Area (EEA) markets was mandated by the CSD Regulation (CSDR), which entered into force on 17 September 2014. DTCC in the US is currently working on a move to T+2 in 2017 for equity and fixed income products, and many Asian countries (including the ASEAN bloc) are also looking at a similar timeframe for such a change. The compression of the settlement cycle reduces the window within which to achieve settlement finality and introduces a shift in pre- and post-trade behaviour for all types of investors. Such changes will bring both benefits and challenges as far as collateral management is concerned:

- Standardised settlement cycles on a global basis = easier to plan for exposures, liquidity and collateral potential
- Shorter exposures between trading and settlement for non derivative financial instruments = less need to collateralize exposures over a longer term
- Greater levels of automation are required between parties to meet T+2 settlement cycles especially where trading cross border (due to potential time differences). This should mean fewer fails and outstanding exposures
- For the purposes of liquidity management and associated treasury functions, it is clear that treasury managers will have one day less to ensure the necessary liquidity is present for settling the transactions of their institutions
- Collateral will increasingly need to be able to be mobilized intraday or on a T+1 basis at the latest to cover exposures, and to potential multiple parties (CCPs, triparty agents, custodians etc.)

3.3.4 ISSA Views/Recommendations

ISSA is a strong supporter of the above examples of harmonization in the post trade space. As all jurisdictions look to enhance approaches to cross border investment and removal of operational barriers through the introduction of such initiatives as T2S and a move to T+2, there should be a subsequent improvement in the operational and technical ability for market participants to mobilize their assets for collateral purposes with greater levels of certainty and lower cost than today.

3.4 Market Driven Initiatives

In spite of the above mentioned harmonization initiatives (largely driven by authorities), at a high level of analysis, there remain two main issues to be considered:

- A structural problem: The increased collateral demands required to meet the obligations of the new regulations are likely to create a shortage of high quality

collateral, given that eligibility criteria often restrict the type of assets that are acceptable as collateral.
- A practical constraint: Additional negative impacts, deriving from the multiplicity of collateral requirements, related to the availability of such collateral, which needs to be adequately utilized to cover all the various needs. This implies a highly complex and sophisticated process for tracking, sourcing and mobilizing collateral pools in a fast and efficient mode. However, pools of collateral exist in many repositories, many custodians and across different jurisdictions. The fragmentation in silos makes the moving of collateral to the right place at the right time even more difficult and time-consuming.

Optimizing the collateral management process, the financial institution needs to have a view cross products and markets. This is probably the only way that a global financial institution can efficiently allocate collateral. Interoperability between the whole intermediation chain and collateral taker / receiver is therefore critical to ensure that an institution can view and allocate collateral efficiently (no matter where they sit as part of the intermediary chain).

A very detailed and comprehensive study of the complexities of these collateral structures and of collateral mobility is available through the ECB COGESI work on Collateral Management and on Settlement Efficiency[10]. In particular, the study on COBM settlement operations sheds some light on the intricacies of collateral movements across different layers of intermediaries in a settlement chain and offers some recommendations and best practices to be adopted by the various actors in order to create more efficiency in these movements. The study highlights the following challenges as a result of market fragmentation:

- Information on collateral obligation and collateral availability is quite fragmented (not a primary concern before the crisis)
- Organised by asset class in different locations--> fragmented activities
- Multiple custodians involved
- No single view of the firm's aggregate securities holdings and assets
- Custodian providing core custody services, with collateral allocations upon instructions of the firm's desk
- Each desk manages its information separately

3.4.1 The Role of Market Infrastructures in a Post Crisis World

Moreover, the role of market infrastructures has grown considerably in the post crisis years, since CCPs in particular acted as a last defense during the 2008 crisis. They contained the consequences of the Lehman Brothers default, stopping contagion of losses to cascade to other financial institutions cleared by those CCPs. This is the reason why, in 2009, they became the drivers of the G20 decision to mandate central clearing for standardized OTC derivatives. The establishment of a CCP reduces the need of banks' interconnectivity on a bilateral basis. A CCP guarantees the performance of open positions despite the failure of one of the clearing members. However, CCPs and the enhanced role

[10] **ECB COGESI home page:** https://www.ecb.europa.eu/paym/groups/cogesi/html/index.en.html
2013 paper on Collateral eligibility requirements - a comparative study across specific frameworks:
https://www.ecb.europa.eu/pub/pdf/other/collateralframeworksen.pdf??a9ca332bcb4e23aa71aaa8f4742833eb
2014 additional papers
1) Collateral eligibility and availability: Follow-up to the report on "Collateral eligibility requirements - a comparative study across specific frameworks"
https://www.ecb.europa.eu/pub/pdf/other/cea201407en.pdf??62198014e6401011996555ea1c0edc8a
2) Euro repo market: improvements for collateral and liquidity management
https://www.ecb.europa.eu/pub/pdf/other/erm201407en.pdf??2190c7d46f8cc6efe6873872882d85ad
3) Improvements to commercial bank money (COBM) settlement arrangements for collateral operations
https://www.ecb.europa.eu/pub/pdf/other/cobm201407en.pdf??a0006bfb2fcdc0e6eeec69fd5327b359

of CSDs in this space add a different complexity to the intermediary chain, as they themselves have a need to manage & settle collateral assets:

- CCPs need to consider their connections to their members and one another, as well as their connections to other financial market infrastructures such as ICSDs & trade repositories
- Different interconnected processes (cross-CSD) and bridge transactions bring complexity
- The design of linked CSDs, however, can positively influence efficiency in cross-border settlement (but there still remains the timing issue e.g. internal settlement in a CSD vs bridge transaction)
- The deadline in a cross-CSD settlement is also an obstacle in cross border settlement (different local legal requirement)
- The use of different formats creates complexity

3.4.2 Market Initiatives: Making the Difference

Based on the above, how is the market adapting to such changes and challenges? Various market initiatives are in progress (and in different stages of implementation) in Europe and on a global basis. The ones that are mentioned in this section are particularly important for their potentially significant impact over the structure and efficiency of post-trade services in general, and of collateral management solution in particular.

3.4.3 T2S Post Trade Harmonisation: Beyond the System Itself

T2S has the potential to make settlement across all participating CSDs safe, efficient and harmonised. The extent to which this potential will materialise, bringing benefits to CSDs, their users and the entire European post-trade industry, largely depends on all stake-holders adapting to and using T2S in a harmonised way. This is why both the Eurosystem and the T2S community of stakeholders consider post-trade harmonisation to be a central objective of T2S and a key contributor to the integration of financial markets in Europe, going far beyond mere settlement.

Over the last few years the T2S Community has been working to create a single rulebook for post-trade processes (messaging protocols, operating hours, regulatory and legal rules, etc.) across the 21 European markets and 24 CSDs that will connect to T2S. All such rules and standards are described in detail in the ECB's Harmonisation Progress Report[11] and, have been endorsed by the T2S Advisory Group (AG), i.e. by representatives of market infrastructures, national central banks and financial intermediaries. AG members are committed to achieving full compliance with the harmonisation standards in their respective markets and are supporting their markets in this goal.

Before the migration to T2S, CSDs typically operate in a non-standardised way with varying cut-off times, differing instruction and reporting formats and in some cases also some specific procedures and services that significantly differ from those available in other markets (in most cases due to the successive layering of national legislation, domestic markets practices, clients' requirements, business models, etc.).

The adoption of T2S will bring harmonised services and procedures, based on the fact that all participating markets (CSDs together with their respective communities of users) will adapt their service and operating models to the use of one single settlement platform. Some examples of these standardisations include the adoption of extended operating times that are valid across all markets, standard messaging and reporting formats (based on ISO20022), common formats for all relevant static data, uniformed scheduling of the business day activities, etc.

[11] The Fifth Edition of this Report is available here: https://www.ecb.europa.eu/paym/t2s/progress/pdf/ag/fifth_harmonisation_progress_report_2015_04.pdf

Such broader harmonization efforts should result in a major improvement in the ability to efficiently mobilise collateral within T2S, since any transfer of securities that will settle between securities accounts in T2S will be processed with exactly the same level of efficiency within the same CSD and on a cross-CSD basis.

3.4.4 Work on Triparty Settlement Interoperability and Upgrade of the Bridge

An important development in the European repo market is the growing integration of repo post-trade infrastructures, involving automated trading platforms, clearing through a CCP, triparty collateral management services and settlement at (I)CSD level. In the Euro area, the increased use of CCPs for repo transactions in recent years is a noticeable development, whereby more than half of the repo transactions are cleared by CCPs. Triparty collateral management services are provided by 'triparty agents'. Collateral management service providers include, but are not limited to, (I)CSDs, custodian banks or other entities offering such services. "Triparty settlement interoperability" (TSI) is an initiative that aims to improve the use of collateral in different collateral management and settlement locations in Europe. TSI aims to "unlock" liquidity and reduce costs/increase efficiencies. The implementation of robust and automated procedures in the context of TSI arrangements could also reduce systemic risk. Enhancements to the link between the ICSDs (referred to as the "Bridge") are currently being explored by the ICSDs to better support settlement in CoBM, which include the extension of deadlines and improvements for same-day settlement (see ECB's report "Euro repo market: improvements for collateral and liquidity management"[12]). Additional important enhancements will also be beneficial in the area of facilitating the use of international bonds (corporate bonds, eurobonds, etc) as eligible collateral.

3.4.5 ISSA Views/Recommendations

ISSA recognizes that challenges of fragmentation and silos will continue to exist due to the complexity of cross border collateral activity. Market players (no matter where they sit in the intermediary chain) should look to support and advocate on all market driven initiatives that will aid in the reduction of operational, legal and technical barriers to mobilizing assets.

3.5 Optimisation and Technological Innovation

The ability to optimize and mobilize collateral increasingly relies on greater levels of technology, both to be employed internally (optimization tools), and externally (collateral services offered by other parties). Technical innovation can therefore be seen as an enhancer to the challenge of cross border collateral mobility.

3.5.1 Effort to Aggregate the Views of Customers' Holdings

- Many custodians have implemented custodial platforms, allowing customers to have a single view on available collateral
- A number of custodians are making technological improvement to support a view of holdings across multiple custodians (crucial as their custodians might not be able to provide collateral management services in certain jurisdictions)
- ICSDs also enable an aggregated view of holdings (held at ICSDs or link arrangement)
- Aggregation can be also made via a partnership custodian – ICSDs and automated FoP transfer of collateral.

[12]https://www.ecb.europa.eu/pub/pdf/other/erm201407en.pdf?1c063e7be2bf1440c88528df8ed93c52

3.5.2 Optimisation Tools

Collateral Management Service Providers (CMSPs) are seeking to embrace new technology to improve their existing local collateral management service offering (rather than building their in-house infrastructure). The innovation in the collateral optimisation tools should somehow force the CMSPs to adopt new technology that would fit the customers' need, such as:

- The transactional costs of deploying a piece of collateral
- The tax implications of deploying a piece of collateral
- The desire to maintain a minimum cash balance
- Securities that are likely to be in high demand
- Concentration issues
- The applicable haircuts or margins
- Trade or regulatory attributes

3.5.3 A Way Forward

- When the CMSP is also the custodian, the information on available securities is real-time. However, in cases where the assets are held at a custodian that is not the CMSP or does not belong to the same corporate group, the accuracy of the information on available securities will be a function of the frequency with which the information is provided. In some cases, customers are asking secondary custodians to provide information once a day early in the morning, to facilitate the efficient deployment of collateral to fulfill obligations during that business day in that jurisdiction. Others are providing multiple updates throughout the business day. The most sophisticated model observed includes the sending of a duplicate SWIFT message to the primary custodian when a transaction takes place at a secondary custodian, allowing for a near real-time update of the aggregate view.
- Application provider that offers the technology (TBD)
- Reporting standardisation (TBD)
- Regulation with potential operational burden (e.g. account segregation)

3.5.4 Distributed Ledger Technology (Blockchain)

Automation provides a great opportunity for banks to tackle the challenges they face when it comes to collateral management and also intraday liquidity. The new regulatory environment has placed an emphasis on the use of collateral and its management. Basel III, EMIR and Dodd-Frank have driven a number of initiatives and many firms are looking at how they can streamline operational processes and investment in technology and automation to support their future needs.

The market is looking for utility style solutions, but as yet there is no single answer to the challenges. Although, for example, SWIFT is helping with standardised messaging for collateral management, many banks, brokers and the larger asset managers are still in the process of preparing for the new rules. Real-time, online insight into data and business flows should be seen as an effective approach to intraday liquidity and collateral management.

In this context new technologies are being discussed across the industry to determine if they can solve the cross border collateral challenge. If we take the example of "blockchain", the decentralised ledger process and the immediate nature of transaction processing would certainly bring a lot of efficiency to collateral processing. Additional criteria such as traceability, velocity, conditionality and trust, which are proper character-ristics of "blockchain", would further expand the potential for rapid adoption of these new technologies. Assuming these technologies are not expensive and enable rapid develop-ment, there is significant potential for newcomers to start new ways of providing collateral

mobility solutions, thus effectively re-shaping the collateral space within a relatively short period of time.

For example, posting collateral to a CCP in the form of initial and variation margin can be done either by escrowing cash on a cash ledger, or by allocating assets held on other asset ledgers to a collateral ledger. In the future, if a central bank issues freely available electronic currency on demand, it would allow dealers to pledge the eligible portion of their inventory to the central bank and use central bank cash collateral when trading.

Another example of using blockchain technology for the efficiency of collateral movements would be that through a decentralised ledger system and an in-built transparency and traceability of all movements, the questions of "who owns what" and "where is my collateral" would be immediately answered.

3.5.5 ISSA Views/Recommendations

ISSA recognizes that technology is vital to improving the ability to mobilize collateral across borders, and there are an increasing number of providers (vendors, market infrastructures and custodians) looking to offer state of the art solutions to customers. However, it is the promise of disruptive technology that ISSA believes has a real chance to make the most significant impact. Blockchain discussions remain at a fairly theoretical level when it comes to collateral management but regulatory authorities are starting to take note of its potential, and it is likely that we will see proof of values in this space start to emerge. The questions that will need to be answered are whether such proof of values can demonstrate that the promise of the technology can truly improve the efficiency or whether they will simply add more complexity to the existing process. ISSA will be tackling the broader opportunity and challenge of blockchain as part of its ongoing work, focusing on the business principles required to integrate this into the post trade securities landscape. Collateral mobility will inevitably be a part of this broader discussion.

3.6 Legal Certainty Around Collateral Assets on a Cross Border Basis

3.6.1 The Challenge of the Current Global Legal Environment

When utilising collateral on a cross border basis, it is critical that all parties, i.e. collateral taker, collateral giver, collateral holder (could be separate to the collateral taker) and any intermediaries involved in the maintenance of collateral assets know what their rights to the collateral assets are in a default scenario (of any of the above mentioned parties). Understanding this will in part be dealt with by any legal contract covering the collateral arrangement, e.g. the type of collateral arrangement, the accountability and liability generated by the roles and responsibilities determined within the contract. However, it will also be the subject of local asset ownership law, and this is both complex (it can overrule a contract), and very different across the globe. Further complexity is added by the recent focus on Recovery and Resolution measures for banks, which although set at global level through the Financial Stability Board, are being rolled out at different times and in slightly different ways by different jurisdictions across the world.

These aspects are relevant as there are approaches being rolled out that will protect Financial Market infrastructures in the event of a bank being placed in resolution by a home resolution authority, as well as ensuring that credit institution counterparties do not liquidate their collateral positions immediately, e.g. Financial Stay protocol. Although eminently logical, the result is that the collateral giver may feel a restriction in being able to protect itself.

This means that many parties would prefer to not use eligible collateral assets cross border as the legal risks outweigh using them. This clearly has a major impact on collateral liquidity, collateral acceptability (collateral takers and givers will resort to using only low risk forms of collateral), and restricts who parties will be willing to do business with (if legal jurisdictions restrict the ability to recover or liquidate assets).

3.6.2 What Solutions can be Considered?

- **Transparency of Law:** As a first step, it is simply important to understand what the differences of law are on this topic across the globe. With transparency, all parties can better make the right risk versus cost assessment on how and when they utilise assets as collateral cross border. In Europe, the Capital Markets Union initiative by the European Commission has focused on securities law and its impact on collateral mobility. The ECB as part of its T2S harmonisation work has subsequently started a survey to determine how securities law across the T2S landscape is different, with a view to highlighting potential issues. This will then allow the European Commission to identify where they may need to focus any future Securities Law Reform package, and look at what can realistically be done in the short to mid term.
- **Operational Convergence in Application of Securities Law and Insolvency Law:** It is key to ensure collateral can become truly cross border in nature. It is also the most difficult to achieve as such laws are enshrined in sovereignty for many countries and changing it has significant ramifications, not least political ones. Europe has attempted to put forward securities law reform packages in the past, the most recent focusing on the key principle of who owns what, but this stalled. Europe also has a Financial Collateral Directive, which could be reviewed and extended as a means to covering this topic without opening the full securities law debate (see AFME paper on Securities Law covering this topic). Achieving global consensus would prove even more difficult but there should be some convergence if global standards bodies are able to take a lead here.
- **Further Post-trade Harmonization Efforts:** In addition to the above mentioned initiatives, the European Commission has launched a market-wide initiative to identify, prioritize and help remove some of the remaining barriers to efficient securities movements across the EU markets as a truly single market for financial services. The newly formed European Post-Trade Forum will undertake a broader review on progress in removing Giovannini barriers to cross-border clearing and settlement, as well as any new impediments that have emerged or are arising as a result of the implementation of recent legislation and market infrastructure developments. The main focus will be on key post-trade services and functions (e.g. clearing, settlement, collateral optimisation, collateral transformation, reporting).

3.6.3 ISSA Views/Recommendations

ISSA supports the approach the ECB and the European Commission are taking in relation to the harmonisation topic. It is critical to understand the gaps and differences in laws and in market practices before attempting to change them. ISSA would recommend that other jurisdictions follow suit and look to make transparent their laws on this topic, so as to allow comparison. ISSA would encourage a global body such as FSB or IOSCO to take on the global approach to this, but it also stands ready to contribute or coordinate further work on a global basis towards making progress in these initiatives.

4. What Should a Potential User of Collateral Mobility do in such a Changing Market?

This chapter focuses on the practical application of the first chapters. An organisation either well versed in collateral or new to this space, will need to take decisions in order to determine whether the existing or new models that are available will fit their needs and facilitate more efficient risk management processes and support their investment strategies. This will require two sets of thought process.

One set of questions will need to look at an organisation's investment strategy and the types of risk exposures that it has. By analysing these aspects, an organisation should be able to determine whether it has a collateral mobility need or requirement in the first place which would allow it use non utilised assets in an efficient manner to reduce exposures and costs.

This will give rise to the second set of questions which will focus on the questions that the organisation should as a minimum look at in order to ask any provider of collateral mobility services to help in determining which model and organisation will be best suited to its needs.

Neither sets of questions are designed to be exhaustive, but they should provide a base level to determine approaches.

4.1 Internal Questions

Internal question to ask organisation	**Implication of answer to the question**
Does your firm operate on a cross border basis?	If "no", unlikely that collateral mobility will be an issue. If "yes", likely that an organisation will have cross border exposures to manage
Does your firm's strategy give rise to significant exposures that will be required to be collateralised? Today or in the future?	If "Yes", will need to consider if these are cross border in nature. If domestic only, then likely collateral mobility is not going to be a consideration
Within your firm, whether acting as principal, agent or intermediary, is there a requirement to post collateral?	If "Yes" need to consider what form of collateral (cash, securities etc.) and how an organization sources this today (domestic or cross border). If cross border, would imply a need for mobility services
Where are you required to post collateral, e.g. CCP, bilateral counterparty, triparty agent?	If an organization is required to post collateral to a number of potential parties, on and offshore, it may signal a need for optimization tools or mobility services
How are you required to post collateral, e.g. term, overnight, intraday?	If an organisation is required to post collateral regularly and on an overnight or intraday basis, they are likely to be faced with the challenge of ensuring they are posting efficiently. This might suggest a need for mobility type services.

What is the normal collateral mix that you are required to post? Is this collateral that you have as part of your inventory or do you need to source it externally?	If an organisation is unable to post assets that they have in their inventory, then it may be that they could have need of a provider who could help in sourcing your collateral
How is collateral currently managed? On internal systems, spread sheets, access databases? Or do you use an external collateral management provider or triparty agent?	Depending on the answer to this question, it may help to determine how sophisticated an organisation's collateral management operations and technology are compared to the collateral activities they are undertaking. They may want to review what external offerings are available.
Do you have an internal collateral trading function?	If "yes", this would suggest that an organization has significant exposures and/or collateral assets to manage. It might make sense to review market offerings.
What is the value of the daily volume of your collateral management book in business?	If significant, this would suggest that an organisation has significant exposures and/or collateral assets to manage. It might make sense to review market offerings.
How many people are employed in the management of collateral?	If significant, this would suggest that an organisation has significant exposures and/or collateral assets to manage. It might make sense to review market offerings, and see if there are more cost effective means of managing collateral
Is there an internal cost assigned and if so how is it calculated?	If significant, this would suggest that an organisation has significant exposures and/or collateral assets to manage. It might make sense to review market offerings, and see if there are more cost effective means of managing collateral
When collateral is needed how does your firm find the right and available collateral? How are the collateral needs of the various businesses needing it, managed?	When answering this question, it might reveal less than optimal processes that external providers could help with
What criteria are used to determine the most efficient use of collateral i.e. how does your firm optimise collateral?	When answering this question, it might reveal less than optimal processes that external providers could help with
If you use external collateral agents how does your optimisation capability dovetail with the collateral agents?	This question is there to ensure that an organisation's external provider's service is aligned to that of their needs.
When you have a shortage of collateral, are you able to source collateral externally e.g. through a securities loan or repo or do you have arrangements in place with service providers to help you transform collateral?	This question is there to ensure that an organisation's external provider's service is aligned to that of their needs.

When looking at your collateral needs are you able to identify all global pools of collateral? Are there any restrictions internally in mobilising/centralising that collateral so that it can be used as a firm resource globally?	This question is designed to determine whether an organization might have any assets that would be deemed as “trapped”. It may be that external mobility providers can help to utilize these to improve your collateral efficiency
If you are required to post collateral to a CCP, how do you manage the daily and variation margin calls? Do you use a clearing broker and does the broker provide collateral transformation services?	This question should help an organization to determine whether they are best set up as regards their central clearing obligations
With impending legislation (e.g. mandatory clearing etc.), are you expecting any change to how and where you are required to post collateral? Have you considered what these changes are likely to be?	This question should help an organization to determine what changes the new regulatory regime might do to their existing collateral arrangements. It could trigger the need to mobilize collateral assets.

4.2 External Questions / Information to be Obtained

- Please describe the benefits of your service.
- Describe the asset types you service on your collateral platform. If you accept cash as collateral how is it managed?
- In what markets are you connected to for collateral for Cash, Fixed Income and Equity?
- Under what legal structures do you operate (repo, CSA, pledge, Securities lending, others)?
- What type of clients do you service (hedge funds, banks, insurance, asset managers, corporates, securities lending agents)?
- What pricing sources do you use (BBG, Reuters...,).What is the pricing frequency and what is your policy on age of pricing?
- How does your optimisation process work? Please give details.
- Please describe the process to receive in extra collateral or to return excess collateral.
- How do you manage corporate events on securities posted as collateral?
- How do you manage failed and unsettled instructions on the collateral accounts?
- What reconciliations do you perform?
- Please describe your legal documentation structure.
- Please indicate your SWIFT capabilities specifically with respect to collateral movements.
- Please indicate how you would report collateral activity. Is it web based, if so, how often are we able to run reports? How often are the collateral allocation runs scheduled?
- In situations where there is a lack of available collateral what is the process?
- Please provide a detailed summary of your charging structure including all components that will be charged for.
- Please describe how the collateral assets are held and the levels of segregation from other clients and from the collateral managers own assets.
- In the event that my organisation holds assets with a custodian/agent in a particular market, please explain your process (operational and legal) for utilising such assets as part of your collateral program.
- In the event of a default please describe your process in full, detailing the risks that a user will need to manage.

5. Further Reading (Collateral Supply & Scarcity)

This chapter provides a choice of further hyperlinks (beyond those referenced directly in the report, providing a more comprehensive view on the discussions in the market.

5.1 Collateral Supply Reading

- CCPs are the entities/frameworks with the most restrictive collateral schedule of all large collateral holders, (see the COGESI report on "Collateral Eligibility Requirements: a Comparative Study Across Specific Frameworks, July 2013" www.ecb.europa.eu/pub/pdf/other/collateralframeworksen.pdf??a9ca332bcb4e23aa71aaa8f4742833eb and the follow-up report
- www.ecb.europa.eu/pub/pdf/other/cea201407en.pdf?62198014e6401011996555ea1c0edc8a
- Collateral requirements for intraday liquidity. The DNB study on "The post-crisis world of collateral and international liquidity" www.dnb.nl/en/binaries/DNB_OS_0903_WEB_tcm47-256045.pdf)
- An excellent summary of the key drivers for collateral demand is provided by the BIS in its "CGFS Paper No 49" www.bis.org/publ/cgfs49.pdf
- Another excellent paper is available on the DTCC web site www.dtcc.com/~/media/Files/Downloads/WhitePapers/LSE%20Report%20Summary.pdf
- "The Economics of Collateral" is a study done by the London School of Economics and provides a detailed analysis on many collateral questions.

5.2 Collateral Scarcity

Much has been written about the collateral supply and demand, with a strong focus on a real or perceived collateral shortage. In 2012/2013 several consulting firms, large triparty agents and public authorities wrote about the 'to be expected' collateral shortage.

- www.dnb.nl/binaries/DNB_OS_1001_WEB_tcm46-268455.pdf (Is collateral becoming scarce?)
- www.bis.org/review/r121002b.pdf (speech by Benoit Coeuré)
- http://ec.europa.eu/finance/bank/docs/high-level_expert_group/report_en.pdf (Erkki Liikanen report)
- www.federalreserve.gov/pubs/feds/2014/201460/201460pap.pdf (The scarcity value of Treasury Collateral)
- www.banque-france.fr/fileadmin/user_upload/banque_de_france/publications/Revue_de_la_stabilite_financiere/2013/rsf-avril-2013/20-HOUBEN_Aerdt.pdf (Collateral scarcity and asset encumbrance)
- www.ecb.europa.eu/pub/pdf/other/cea201407en.pdf?62198014e6401011996555ea1c0edc8a (ECB Collateral Eligibility and Availability Follow-Up Report)
- ECB implementation of the Public Sector Purchase Programme, announced by the ECB on 22 January 2015 www.ecb.europa.eu/mopo/implement/omt/html/pspp.en.html
- The speech by the ECB President, Mr. Mario Draghi, on 15 April 2015 at a press conference www.ecb.europa.eu/press/pressconf/2015/html/is150415.en.html
- Additional restrictions on collateral re-use are continuously being discussed and various new legislative measures are being considered that would restrict collateral re-use and rehypothecation. A very helpful paper from the FRB Philadelphia looks at and explains "Rehypothecation" https://www.phil.frb.org/results?sort=rel&start=0&text=Rehypothecation

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