

Business Process Requirements Document
Broker Matching Solution

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1. Introduction

1.1. Overview

The securities processing environment has undergone a period of significant change over the last decade. These changes have impacted all parties to transactions, enhancing processes for Investment Managers, Broker Dealers and the Custodians that support these transactions.

The introduction of central counterparty [CCP] clearing for exchange execution has provided significant benefits to the wider industry. Most notably a significant impact on the process efficiency when providing market execution services to investment managers and hedge funds has been achieved. Additionally, when coupled with other technological advancement, this has removed processing constraints enabling a higher volume of executions to be supported by both Exchanges and Broker Dealers.

Similarly, with regard to buy-side transaction processing, significant process improvements have been achieved. The majority of the larger market participants demonstrate clear support for a Block Level, electronic trade affirmation. The levels of same day trade booking and same day trade confirmation are achieving historical highs, but have not yet penetrated lower volume clients. The result is a fragmented market where the 'haves' achieve low cost STP processing and the 'have not's' remain labour intensive to service without achieving electronic trade economic comparison early in the trade lifecycle.

Further change is anticipated in Europe, including shortened settlement cycles, stricter settlement discipline and potential CSD consolidation. Such proposals will challenge the existing market structure and, if securities markets are to continue to operate in an orderly manner, it will require changes in the behaviour of all market participants.

It is the view of the contributors to this document that the securities landscape is best served by setting out "best practice" standards in order to support the necessary adjustments to processes.

The purpose of this document is to outline proposed standards from the Broker Dealer community and solicit feedback from other industry participants. The aim of this approach is to:

- Adopt a processing model that maximises efficiency based on "best practise" standards.
- Achieve common standards applicable regardless of the participant's scale.
- Lower barriers to entry for full STP.
- Introduce competition across the service provider community and influence innovation and pricing given existing market conditions.
- Facilitate the processing of transactions at a CCP to achieve significant additional cost reductions for market participants.

This document sets out the view of AFME members with regard to the optimal process for broker to broker transactions, including executing and prime broker participants. Initial focus is on the cash equities product, but will in future include an appendix for debt specific considerations.

The AFME Post Trade Execution Services (PTES) Broker Matching and Netting taskforce will produce additional documents pertaining to;

- Bilateral Netting via a Vendor
- OTC Netting via a CCP

Other AFME PTES work streams are generating separate documents covering;

- Client Processing Automation
- Tri-Party Matching from a securities perspective

1.2. Business Process Objectives

The objective of this business process is to ensure that transactions between broker participants achieve a matched status at the earliest opportunity in the trade lifecycle; the aspirational target for matched status is “by end of trade date”.

Achieving this target will generate the following benefits;

- Reduce the market risk posed by un-affirmed transactions, and
- Reduce the effort expended in manual transaction comparison close to settlement date (commonly known as “pre-matching”).

An additional objective of this process is to achieve a golden source of matched transaction data. This data source could then be provided to a CCP to reduce the number of individual settlement movements and reduce transaction settlement costs for market participants.

An interim stage of this process may involve bilateral broker to broker netting.

A further aspiration is for these net transactions to form part of a single net per security per firm across exchange and off exchange flow. It is the accepted view that this utopian state is some way from being accomplished.

1.3. Assumptions & Constraints

The following assumptions have been made:

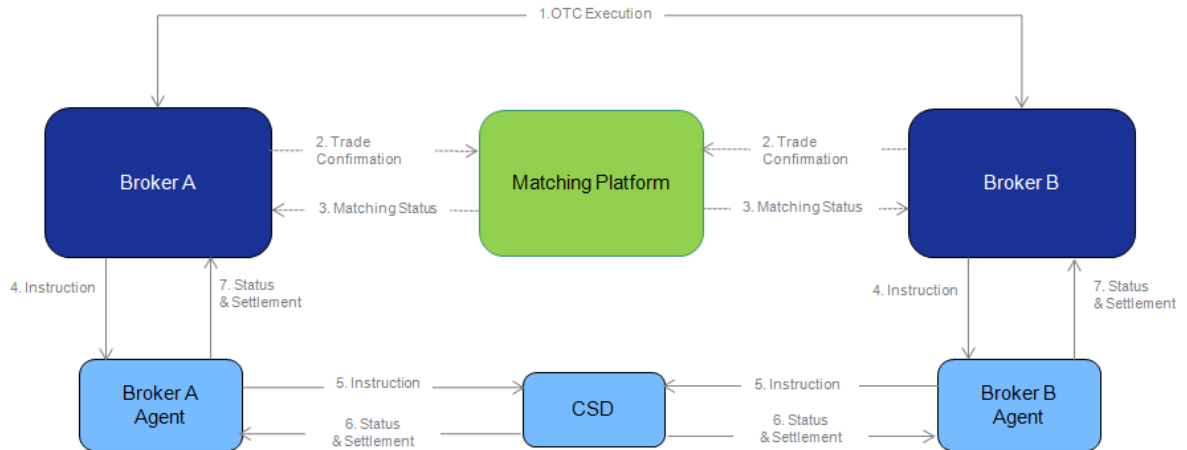
- The vendors within the process are open to work with the industry participants to modify processes as required.
- The vendors will be able to build to multiple message formats, and support participant preference.
- The CCP's will be able to incorporate the off-exchange flow into existing net transactions if processing deadlines can be met.
- The implementation of T+2 settlement will occur as part of European legislation by 2015.

The following items have been identified as constraints to this proposal:

- The broad number of participants will result in a staggered time to adoption, and therefore an extended period to achieve full benefits.

2. Current State Overview

2.1. Current State Overview Diagram

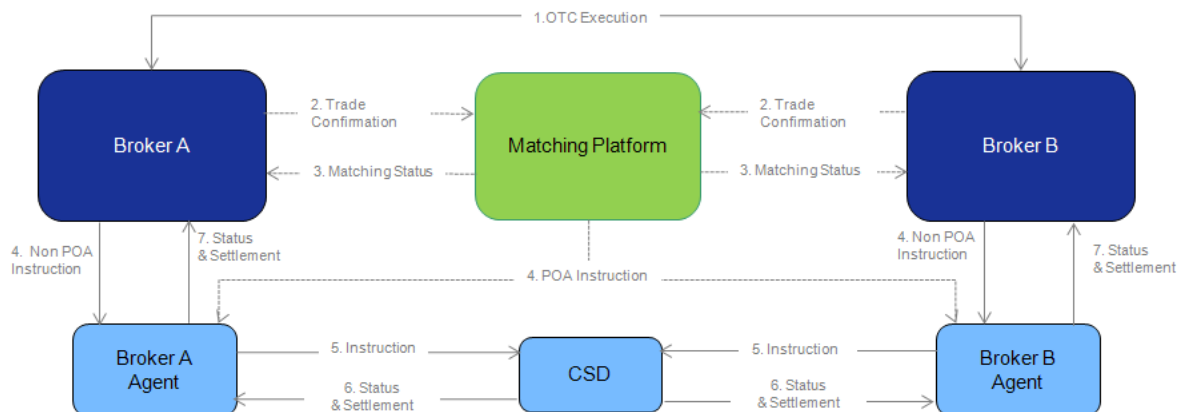


2.1.1. Current State Business Process

At present, there are a number of external matching platforms available to brokers to match OTC transactions. Brokers who are subscribed to these services are able to match OTC transactions real time with other brokers subscribed to the same vendor/service. This approach allows brokers to manage their risk real time.

3. Trade Matching and Affirmation Future State

3.1. Future State Overview Diagram



3.1.1. Future State – High Level Business Process

| Process ref. # | Process | Application /Owner | Notes |
|----------------|--|-----------------------|---|
| 1 | OTC transactions will be executed between brokers. | OTC Broker Execution | As per OTC flow today. |
| 2 | Both brokers of the execution will generate a trade confirmation message to be sent to the matching platform (format of communication to vendor will be broker preference). | OTC Broker Execution | Vendor will be required to support multiple communication methods. See section 4.1.3 |
| 3 | <p>The matching platform will look to match the corresponding executions with one another.</p> <p>Trades will be matched within the platform initially at a primary and secondary level, and then by the percentage calculation of fields successfully matched and will be based on the matching criteria agreed between two brokers.</p> <p>The mandatory matching fields will be: Primary: Originating Broker, Counterparty Broker, Security ID, Trade Date, Direction, Quantity Secondary: Value Date, Settlement Currency, Net Amount (within Tolerance), PSET (this field will be optional unless broker pair is able to populate) and further optional fields*. * Further 'optional' matching fields (i.e. Price and SSI's) will be available for the broker pair to opt to match on – if further fields are selected, the matching platform will look to also find a match for these fields.</p> | Matching Platform | Vendor will be required to allow brokers to select optional fields in addition to key matching fields. See section 4.2.1. |
| 4 | The vendor application GUI will display the status of the trades real time, i.e. matched, unmatched, mismatched, and | Matching Platform GUI | |

afme / Post Trade

| | | | |
|---|--|-----------------------|---|
| | alleged. | | |
| 5 | The matching platform will return a matching status to each broker (the timing of when to return a status message and the type of message to be returned will be configured by broker preference) or the broker can opt not to receive the status updates. | Matching Platform GUI | Vendor GUI will display the current match status real time. Status updates will be returned as per requirements of each broker, i.e. timing and format. |
| 6 | Brokers will release settlement instructions to the market for each execution; brokers will have the choice to release the instruction themselves or allow the vendor to instruct the market on their behalf under a POA agreement, and will also decide when the instruction should be released – upon trades becoming matched, or at a pre-defined deadline. | OTC Broker Execution | Brokers who grant the vendor POA will be agree release time during the on boarding process. Brokers who do not grant the vendor POA may request a flag to be included on their incoming status update which will trigger the release of the instruction in house. |

4. Trade Matching and Affirmation Detailed Future State

4.1. Communication of Trades to Vendor

4.1.1. Trade Types

It should be possible for brokers to send trades which have been executed against another executing broker or a prime broker to the matching platform. These trades will be all types of equity and fixed income executions, and will be all trade execution types; delivery versus payment, free of payment and cross currency.

The matching platform will be required to differentiate trades executed between executing brokers and trades executed between an executing broker and a prime broker, and display these trades in a separate view within the GUI (for the broker viewing the GUI).

The matching platform should be a global platform; allowing trades from any broker entity to be matched.

It is likely that brokers will not require all OTC transactions to be matched. For example trades with a particular product type, such as bonds, could be excluded from matching. Whilst, some brokers will have the ability to prevent trades they do not require to be matched from being sent to the vendor, there will be other brokers who will not have this capability. Therefore, the vendor will be required to identify these trades and prevent them from being passed to the matching engine. To support this, each broker will be required to confirm the trade types to be excluded during the onboarding process. This data should be held within the vendor static data and be configurable to allow for future changes (if necessary). The matching engine will be required to reject any trades received for an excluded trade type.

Note: A broker pair will be required to ensure they have both excluded the same trade types, i.e. to prevent unmatched trades.

4.1.2. Markets

The goal of the PTES group is to match trades in all markets. However, in the short term, it may not be possible for brokers to match trades in all markets due to current infrastructure limitations. Therefore, until brokers are able to match in all markets, it should be possible for the vendor to configure the matching rules to prevent matching for particular markets (i.e. it should be possible to suppress PSETS from matching).

In addition, brokers will require a second level of exclusion for each currency supported by a market. It may be possible that brokers will require one or all currencies to be included for matching in a particular market. Therefore, it should be possible for brokers to opt to exclude an entire market (by PSET), or exclude one or many currencies for a market.

The matching engine will be required to reject any trades received for an excluded market.

4.1.3. Methods of Communication to the Matching Platform

Whilst the long term goal is for all brokers to automate their communication method, this is currently not possible; some brokers do not have the capability/functionality to automate their

trade confirmations. Consequently, some brokers will only be able to communicate with a vendor manually, i.e. via Excel uploads. Vendors will therefore be required to support both automated and manual methods of brokers communicating their trades:

- Automated methods: SWIFT, FIX, sftp Excel and csv files
- Manual methods: E-Mails, Excel uploads, CSV uploads, Single Trade Input (subject to profile permission) via the GUI.

Note: This will lower the entry barriers and allow a wider community to utilise the service, such as smaller broker dealers who are only able to load files manually via the GUI.

4.1.3.1. Data Required

A common set of data will be required to be sent to the matching platform for each communication method:

- Originating Broker – Mandatory
- Counterparty Broker – Mandatory
- Security Identifier – Mandatory
- Trade Date - Mandatory
- Direction – Mandatory
- Quantity – Mandatory
- Value Date – Mandatory
- Settlement Currency – Mandatory
- PSET – Optional (see section 4.2.1.2 for further details)
- Net Amount (within Tolerance) – Mandatory (See section 4.2.1.1 for further details)
- Unique Reference – Mandatory
- Trade Status, i.e. New / Cancel – Mandatory

As per the matching criteria requirements documented in section 4.2.1 it should be possible for brokers to opt to include additional matching criteria, for example SSI's. Therefore, if a broker agrees to include additional data, this will need to be supplied on the incoming communication; making the data mandatory to be sent on their inbound trade.

The matching platform will be configured to accept the required information for each message type and normalise the data into the necessary mappings required for matching.

Brokers communicating via files (excel and csv), will be required to apply a cancellation flag or field to their files, to allow the vendor to identify cancellations and remove the original trade from the matching platform.

4.1.3.2. Timing

As per current flow, brokers communicating trades to the matching platform via automated methods, such as SWIFT, will not be required to have sent their instructions by a particular time.

However, for brokers opting to communicate trades to the matching platform via sftp, some may require the vendor to verify that a file is received each day; even if there has been no trading activity and the file is blank. This will be determined by a deadline cut off time which will be agreed with each broker during the on boarding process. If a file is not received by the expected time, the vendor should alert the broker.

4.1.4. Validation of Incoming Trades

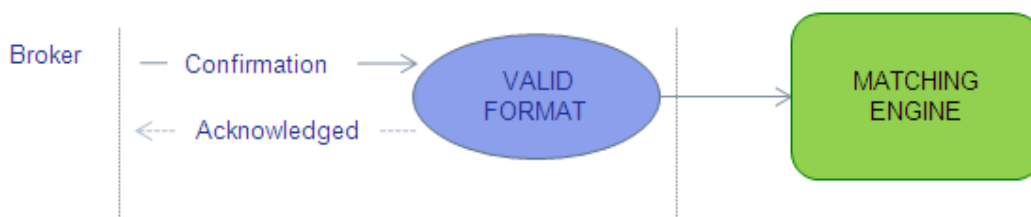
Upon the matching platform receiving trades from a broker, each message/file will be validated against the data requirements (as per the above section 4.1.3.1).

For those brokers utilising the automated messaging flow, some may require a status update to be sent from the platform to confirm successful validation or rejection of a trade due to bad formatting. The matching platform will be required to send the following status updates to brokers:

- Acknowledgement of incoming trade (successful validation)
- Rejection of incoming trade due to bad format

It should be possible for a broker to stipulate whether they require these messages to be sent or not. This information will be configured per broker in the static data set up.

4.1.4.1. Acknowledgement of incoming trade (successful validation)



If a trade is successfully validated by the vendor, the trade will be passed onto the matching platform and an acknowledgement status update will be returned (if required by the broker).

4.1.4.2. Rejection of incoming trade due to bad format



If a trade fails validation, i.e. a field is missing from the trade data, it will not be passed onto the matching platform and an invalid format rejection status update will be returned (if required by the broker). The vendor will need to ensure the relevant rejection reason code is included on the rejection status message (see section 4.6.4.6 for details on standard reason codes to be applied to status updates).

The broker will also need to stipulate in which format they require the message to be received and the time when they would want to receive the messages. Section 4.2.3 covers the requirements for status updates to be returned to brokers in further detail.

Any rejected trade should be displayed in a 'rejected' folder within the GUI. This will allow brokers who opt not to receive rejection status updates or do not have the ability to receive inbound messages to manage their exceptions.

4.2. Trade Matching

4.2.1. Matching Fields

Upon receipt of a broker trade confirmation, the matching platform will look to match this trade with the counterparty's trade confirmation. The matching platform will match trades where two brokers (also known as a 'broker pair') have a bilateral agreement in place to match with one another. The broker pair combinations will be held in the static data tables.

Per broker pair the matching platform will attempt to match their trades together based on a pre-defined set of matching criteria, as agreed by the broker pair;

The broker pair will agree their matching criteria which will contain both mandatory fields and additional fields which will be optional for the broker pair to include.

It should be possible for each broker pair to set the matching criteria at a market (PSET) level. This will ensure specific fields required for a successful match in each market are included in the match criteria, and therefore following Securities Market Practise Group (SMPG) guidelines.

The agreed matching criteria will be held in the static data tables.

The following matching fields will be available for a broker pair to opt to include in their matching criteria:

| Field | Mandatory or Optional? | Notes |
|-------------------------------|------------------------|--|
| Originating Broker | Mandatory | |
| Counterparty Broker | Mandatory | |
| Security ID | Mandatory | See section Error! Reference source not found. |
| Trade Date | Mandatory | |
| Direction | Mandatory | |
| Quantity | Mandatory | |
| Value Date | Mandatory | |
| Settlement Currency | Mandatory | |
| Net Amount (within tolerance) | Mandatory | (see section 4.2.1.1 for detailed requirements) |
| Place of Settlement (PSET) | Optional | (mandatory for those who opt to match on PSET. See section 4.2.1.2 for detailed requirements) |
| SSI's | Optional | (see section 4.2.1.3 for detailed requirements) |
| Price | Optional | |
| CSD Number | Optional | |
| PSA | Optional | |
| Deal Value | Optional | |
| Shifting Details | Optional | |
| Tax Type | Optional | |
| Order Type | Optional | |
| Legal Entity Identifier | Optional | (Note: As LEI is introduced into the securities market, LEI will become part of the matching criteria. Currently awaiting outcome of FSB process) |

Note: The matching platform should reject any trades where a mandatory field has failed to be supplied. However, if a broker fails to supply an agreed optional field, the matching platform should look to find a potential match, i.e. identify a linking trade but report the trades as mismatched.

Note: If trades are received for a broker pair where the bilateral match criterion has not been configured the trade matching engine should process the trades and display them as error'd; thus alleging the trades against the 'counterparty' broker. Upon the broker pair agreeing the match criteria and the counterparty broker sending their executions, the matching platform should re-process the alleged trades and attempt to find a match.

4.2.1.1. Tolerance

Tolerances will need to be set at a broker pair level and will be the same value as used by the broker's agents to settle trades today. Tolerance levels will be provided by each broker and will be stored in static data tables which will be maintained and updated by the vendor.

The tolerance amount should be set at the seller's tolerance level.

4.2.1.2. Place of Settlement (PSET)

It has been agreed by the PTES group that place of settlement (PSET) will be an optional matching field, but will be mandatory if a pair opt to match on PSET; there are currently a number of brokers who may not be able to send PSET due to infrastructure limitations. Therefore, until all brokers are able to send PSET, it should be possible for this field to be a configurable matching field per broker pair.

4.2.1.3. SSI Matching

The following SSI fields should be available for brokers to opt to match against:

| Field | Mandatory or Optional? | Notes |
|---|------------------------|--------------------------------------|
| Place of Settlement | Mandatory | (PSET) |
| Buyer or Receiver | Optional | (BUYR) |
| Buyer or Receiver Safekeeping Account | Optional | |
| Seller or Deliverer | Optional | (SELL) |
| Seller or Deliverer Safekeeping Account | Optional | |
| Delivering Agent | Optional | (DEAG) BIC Code or Participant ID |
| Delivering Agent Safekeeping Account | Optional | (DEAG SAFE A/C) |
| Receiving Agent | Optional | (REAG) BIC Code or Participant ID |
| Receiving Agent | Optional | (REAG SAFE A/C) |

| | | |
|---|----------|-----------------------------------|
| Safekeeping Account | | |
| Deliverer's Custodian | Optional | (DECU) BIC Code or Participant ID |
| Deliverer's Custodian Safekeeping Account | Optional | (DECU SAFE A/C) |
| Receiver's Custodian | Optional | (RECU) BIC Code or Participant ID |
| Receiver's Custodian Safekeeping Account | Optional | (RECU SAFE A/C) |

Broker pairs who opt to match on SSI's will be required to select the SSI fields they will be matching against. PSET will be a mandatory field to match SSI's. All other SSI fields will be optional.

If the broker pair agree to match on SSI's it may not be possible for both brokers to send SSI's with the same identifiers, for example some brokers may only be able to send local codes, but others can only send BIC codes. Therefore, a comparison table for SSI data will be needed within the platform to transform the data and allow the trades to be matched. This should also take into account data containing leading zeros. Where one broker may include leading zeros on an identifier, another may not. Therefore the comparison table should recognise the underlying value as the same and match the data.

See section [4.6.4.4](#) for detailed Static data requirements.

Note: Ideally, the PTES group would look to include SSI fields as standard, mandatory matching criteria. However, as this is currently not possible for all brokers (many are unable to include SSI's on their trade confirm) SSI fields will be optional for a broker pair to opt to match against. It should be noted that this requirement may change in the future and SSI's will become a standard, mandatory matching criteria.

4.2.2. Matching Logic

Based on the agreed matching criteria for a broker pair, the matching engine will look to match the trades received from each broker and identify the correct matching status for each trade.

The matching engine should follow a process whereby trades are initially matched at a primary and secondary level, and then by the percentage calculation of fields successfully matched:

- The matching platform should firstly attempt to identify an exact or potential match based on whether the primary and secondary fields are successfully matched.

The Primary matching fields are;

- Originating Broker
- Counterparty Broker
- Security ID
- Direction

- Quantity
- Trade Date

The Secondary matching fields are;

- Value Date
- Settlement Currency
- PSET
- Net Amount (within Tolerance)
- Any Optional fields selected by the broker pair

If the matching platform identifies a trade pair which match on all of the primary and secondary matching fields (as agreed by the broker pair) the trades will be assigned a 'matched' status.

If the matching engine identifies a trade pair which matches on all of the primary matching fields, but any of the secondary fields are not successfully matched, the trades will be considered 'mismatched'.

- Failing to successfully identify two trades which match on all primary fields, the matching engine should attempt to identify any further potential mismatches.

The matching engine will attempt to link trades based on the following trade details to find the closest possible 'potential match':

- Originating Broker
- Counterparty Broker
- Security ID

Following two trades being linked together (a 'linked pair') the matching engine should then compare the remaining fields and calculate the percentage which do successfully match (the 'matched percentage'):

- If above the acceptable matched percentage, e.g. more than 60% of fields are matched, this should be known as a 'Potential Match' and the trades should be assigned a 'mismatched' status.
- If below the acceptable matched percentage, e.g. less than 60% of fields are matched, this should be known as 'Unmatched' and the trades should be assigned an 'unmatched' status.
- Failing the matching engine identifying a 'linked pair', the trades will be considered unmatched.

Note: It may be possible that the platform will identify multiple potential matches during check 2 above. Therefore the vendor will be required to display all potential matches for a particular trade within the GUI. However, as some brokers will be require the vendor to return a mismatch status update, i.e. via an automated SWIFT, the matching engine should return the details of the mismatched trade which has the highest match percentage.

4.2.3. Matching Status Updates

Upon the matching platform identifying whether the corresponding trades match or not, the trades will be applied a matching 'status' immediately and displayed within the GUI real time under the appropriate view / folder corresponding to the status:

- Matched

- Unmatched
- Mismatched
- Alleged

Upon the vendor assigning the appropriate matching status, the corresponding reason code(s) for that status should also be applied to the trade. This will be displayed within the GUI and also returned on the corresponding status update to the broker. See section 4.6.4.6 for standard reason code requirements.

4.2.4. Communication of Matching Status Updates to the Broker

The matching platform will need to identify whether an automated status update should be returned to the broker, at which time (if it should need to be returned) and in which format. All of this information will be held within the static data and will be configured for each broker by their individual preferences.

Note: The GUI will display the current status of the trade real time therefore any changes to the trade status will also be updated in real time. The broker will only determine requirements around the status update returned to their in house system.

4.2.4.1. Status Updates to be sent to the Broker

The matching platform will be required to return status updates to brokers (Matched, Unmatched, Mismatched or Alleged).

The broker will determine which of these status updates they require to receive from the matching platform. Some brokers may not want to receive all matching status updates. Therefore, the vendor should allow each broker to determine which status updates they would like to receive and configure this in the broker's static data set up.

4.2.4.2. Methods of Communication to the Broker

Whilst the long term goal is for all brokers to use the same method for each platform, this is currently not possible; each broker has different capabilities as to what they are able to receive/take into their systems.

The PTES group therefore will require the vendor to provide status updates in multiple formats, e.g. SWIFT MT517 or MT998. Each message type will have a standard format but it should be possible for the vendor to allow each broker to have variations of the format to allow for their individual requirements. Each broker will provide the vendor with their message specifications.

The vendor will be required to include the original broker reference for the trade on all status updates returned to a broker; allowing each broker to link all inbound status updates to the original execution within their in house system.

Whilst the method/format of communication required by each broker may vary, the messages will need to convey the same standard matching status and reason code for all.

If a broker is unable to receive automated status updates from the vendor, or does not require the status updates, it should be possible for the broker to view the status and any audit history of status changes within the GUI. This should not be configurable by broker, but a standard solution available to all.

4.2.4.2.1. Timing of Status Updates to be sent to the Broker

It should also be possible for each broker to determine 'when' they wish to receive each status update. This should be configurable per broker.

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- **Real Time:**
 - Some brokers may require a status update to be sent real time when the trade status is changed (updates should only be sent if there has been a change to the status of the trade).
 - Real time status updates may result in multiple messages being sent throughout the day and within a short space of time, therefore the vendor will need to ensure the messages are released in the correct order.
- **End of Day:**
 - Some brokers may require status updates to be sent at end of day. However the timing of when to send the status updates should be configurable by broker.
 - Only the latest status of the trade (at the point of the messages being generated) should be sent to the broker. Brokers will be able to see any change to status for the trade during the day in the audit history within the GUI.

4.3. Trade Matching Workflows

4.3.1. Successfully Matched Trades

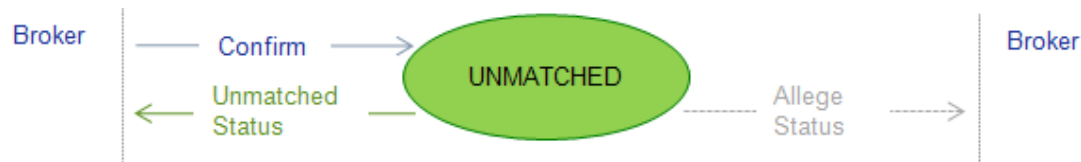


Upon two broker trades successfully matching against all of the primary and secondary matching fields (including any selected optional fields), the matching platform should reflect the trades as 'matched' within the GUI for both brokers.

If the net amount of the trades are different, but within the tolerance level for the market (of the seller), the matching platform should set the status to 'matched'.

Depending on the configuration of each broker, the matching platform should return the match status update real time or at the specified time at the end of day to both brokers.

4.3.2. Unmatched Trades



If the matching platform is unable to find a corresponding trade to link with, i.e. cannot identify a 'linked pair', this will be considered an 'unmatched' trade against the 'Originating Broker'. If a 'linked pair' is identified but the match percentage of remaining fields which do successfully match is less than the acceptable percentage, e.g. less than 60%, the trades will be considered 'unmatched' against each broker. (See section 4.2.2 for details of the matching logic calculation).

The unmatched trades will be visible in the GUI under the 'Unmatched' folder (the unmatched folder will only contain trades which have been sent in by the broker).

Depending on the configuration of the broker, the matching platform will either return the unmatched status update real time, wait until end of day or not send the status update at all.

If an unmatched status is sent for a trade, and the trade remains unmatched throughout the day, no further status updates should be sent to the broker to indicate that the trade is still unmatched.

If the matching platform received a trade which matched the unmatched trade on all agreed matching fields, the trade would be removed from the unmatched folder, the status would be updated to 'matched' and follow the same process as documented in section 4.3.1.

If the unmatched trade were to be cancelled and replaced, or a corresponding trade were amended to match the unmatched trade (on all matching fields), the trade would be removed from the unmatched folder, the status would be updated to 'matched' and follow the same process as documented in section 4.3.1.

If the unmatched trade were to be cancelled and replaced, or a corresponding trade were to be amended, and the matching engine successfully identifies a trade which either 1. Matched on all primary fields, but not on all secondary or 2. Matched against all linking fields (i.e. creates a 'linked pair') and the additional matching fields have a match percentage greater than the acceptable percentage, e.g. 60%, the trades would be considered 'mismatched'. See section 4.3.3 for further details.

4.3.3. Mismatched Trades



If the matching platform identifies two trades which match on all primary matching fields, but not on secondary matching fields (this can be a mismatch on one or many secondary matching fields) both trades will be considered as 'mismatched' trades.

If a 'linked pair' is identified and the match percentage of remaining fields which do successfully match is greater than the acceptable percentage, e.g. less than 60%, the trades will be considered 'mismatched'.

Mismatched trades will be reflected within the mismatched folder for both brokers in the GUI. The GUI should highlight the mismatched fields of the trades to allow brokers to identify the reason(s) for the mismatch and also manage their exceptions. Where the matching engine identifies more than one potential match for a particular trade, all possibilities should be displayed within the GUI.

The matching platform will consider two trades which have a net amount outside of the agreed tolerance as mismatched.

Depending on the configuration of both brokers, the matching platform will determine whether a mismatch status update is required to be returned to each broker. Where the platform has identified more than one potential match, the status update should return the trade details of the trade which has the highest match percentage. The mismatch status message will be returned either real time or at the specified time at the end of the day (again depending on broker configuration). The mismatch status message will contain the reason(s) for the mismatch as per the standard reason code table held by the platform (and will correspond to the highlighted mismatches displayed on the GUI screen).

Upon a mismatch being resolved, the platform will remove the trades from the mismatched folders and update the trades to matched, following the same process as documented in section 4.3.1.

If an update to a mismatched trade is received, but the trades no longer match on all linking fields, both trades will be set to unmatched (following the unmatched status flow) and an allege will be sent to the counterparty broker (following the alleged status flow).

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It may also be possible, that a new trade is received into the system which matches one of the mismatched trades. The mismatch will be broken and the two matching trades set to matched, with the remaining corresponding trade set to unmatched.

4.3.4. Alleged Trades



If the matching platform is unable to find a corresponding trade to link with, i.e. cannot identify a 'linked pair', this will be considered an 'alleged' trade against the 'Counterparty Broker' and will be displayed within the allege folder of the GUI for this broker. (An allegation will not be generated for a mismatched trade.

Depending on the configuration of the counterparty broker, the matching platform will generate an allege status message to this broker. The allegation message should contain the details of the alleged trade from the counterparty broker.

Upon the matching platform receiving a corresponding trade which links and matches on all fields, the alleged trade will be removed from the allege folder, a removal status update will be sent to counterparty broker and both trades will be displayed as matched within the GUI. Matched statuses will be returned to both brokers as per the process as documented in section 4.3.1.

If the alleged trade is cancelled by the originating broker, the allegation will be removed from the allege folder of the counterparty broker. The allegation will be visible in the cancellation folder of the originating broker.

It should be possible for brokers to add notes in the GUI to a trade which is alleged against them, for example to say they do not recognise the trade. These notes should also be visible for the counterparty broker to see. See section 4.6.3 for detailed requirements for notations on trades.

4.4. Cancel and Correct Processing

The vendor will need to be able to consume and process cancellations of trades and process any new replacement trades.

The broker will communicate cancellation messages in the same way as they communicate any new trade to the matching platform.

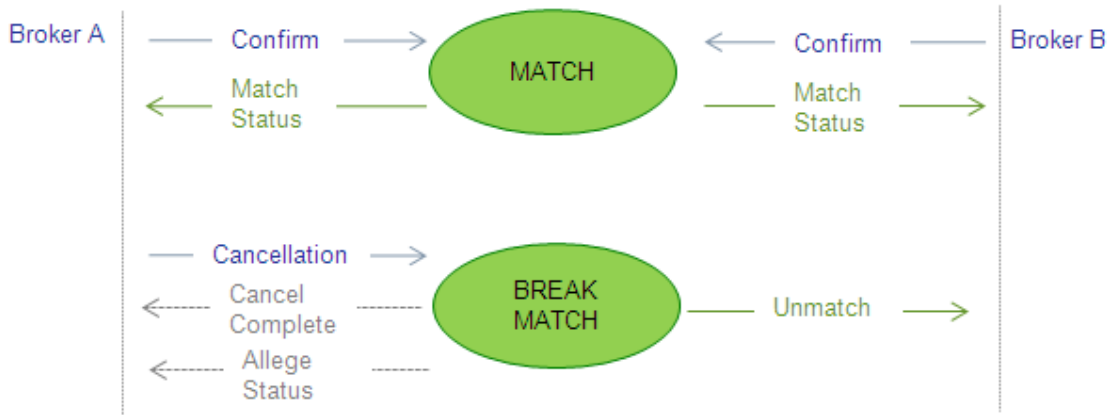
The matching platform will need to recognise that the incoming data is a cancellation, whether an automated message flow or manual upload process. The broker will ensure that the message/file contains the original trade reference and states that the trade type is a cancellation. However, the matching platform will need to ensure they process the message/file as a cancellation.

Some brokers may require a cancellation accepted or cancellation complete status upon the matching platform receiving and processing the cancel message. This will be determined by the

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broker and configured within the static data tables (as per similar requirements documented in section 4.2.4 for status updates being returned to brokers).

4.4.1. Cancellation by One Party



Upon a cancellation for a matched trade being received from one broker (Broker A) into the matching platform, the matched pair will be broken. The matched pair will be removed from the matched folder within the GUI.

Broker A (who cancelled their trade) will see their original trade within the cancellation folder of the GUI, and an allegation will be displayed within the allege folder. The audit history of the trade will show that that the trade was matched and which trade it was matched with, that it was cancelled (requested and complete), and is now awaiting to match again. The relevant status updates will be sent to the broker as per their static data configuration.

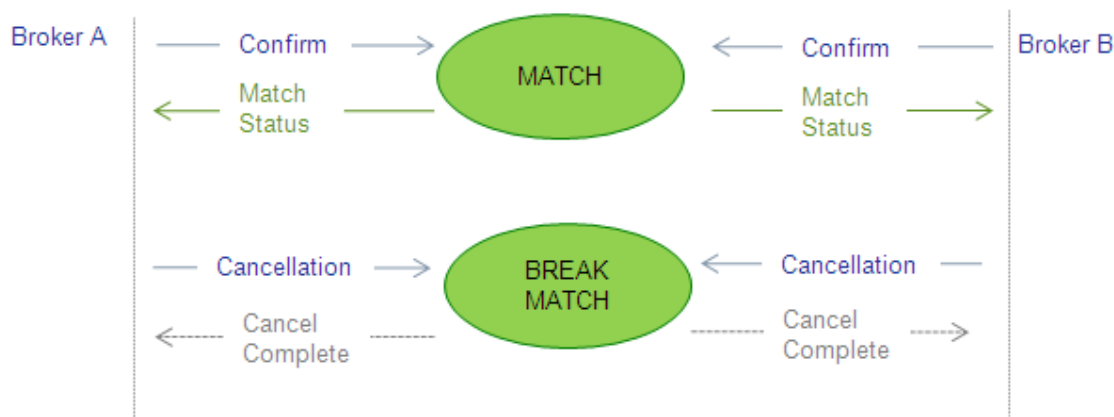
Broker B will see their trade now in the unmatched folder of the GUI. The audit history of the trade will show that that the trade was matched and which trade it was matched with, and that it is now unmatched. The relevant status updates will be sent to the broker as per their static data configuration.

The 'unmatched' status update returned to Broker B should contain a reason code stating that the trade is now unmatched due to the match being broken by the counterparty.

Note: As with any status update being returned to brokers; the timing of when to return the messages and in which format will be determined by the broker configuration requirements.

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4.4.2. Cancellation by Both Parties

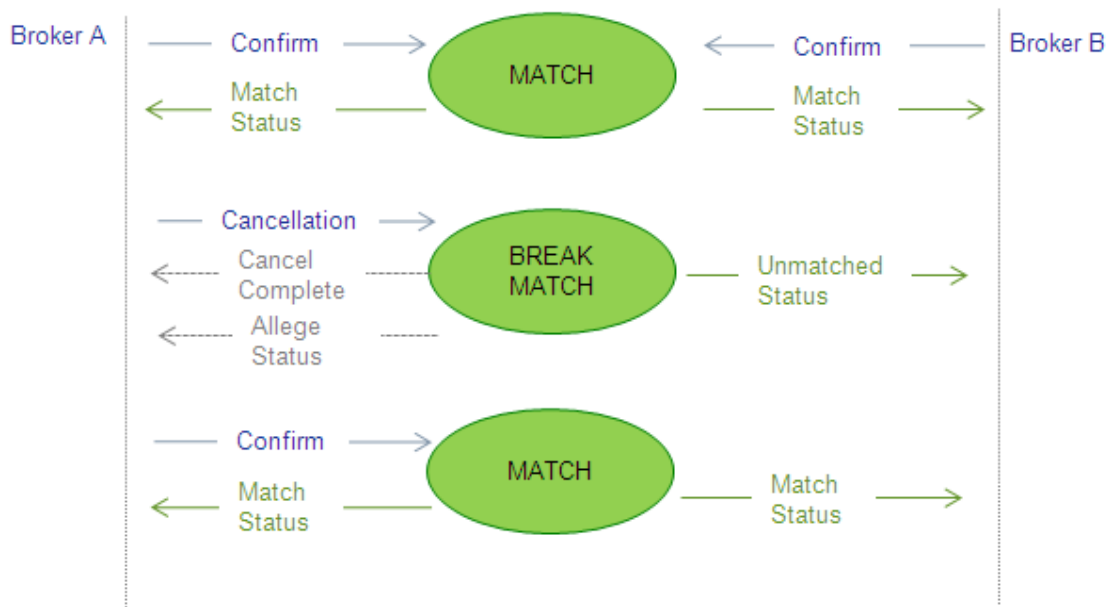


If both brokers agree to cancel a matched pair, each broker will send the matching platform a cancellation. Upon the first cancellation being received, the matching platform will break the match and cancel both trades.

Both brokers will see their trade within the cancellation view of the GUI. Both brokers will also be able to view the audit history of the trades which will show that the trades were previously matched and are now cancelled (requested and complete).

Both brokers will receive the relevant status as per their static data configuration.

4.4.3. Cancellation and Replace by One Party



Upon a cancellation for a matched trade being received from one broker (Broker A) into the matching platform, the matched pair will be broken. The matched pair will be removed from the matched folder within the GUI. Upon Broker A sending the platform a new replacement trade, the platform will match this trade with original counterparty brokers (Broker B) trade.

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Note: If, for any reason, any fields on the new trade from Broker A do not match Broker B's, the trades will be set mismatched or unmatched/alleged.

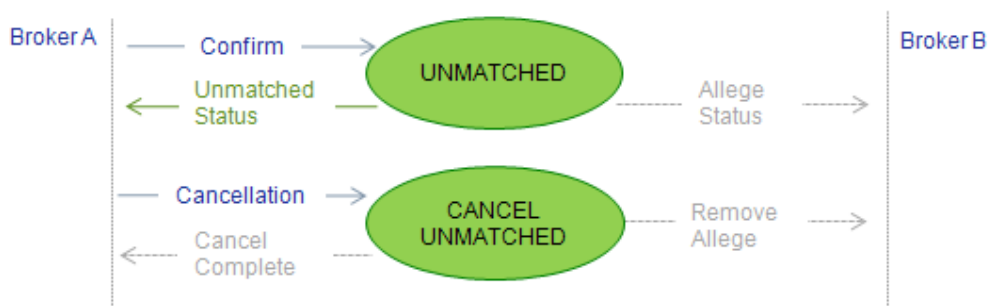
Broker A (who cancelled their trade) will see their original trade within the cancellation folder of the GUI, and the new trade will be displayed within the matched folder. The audit history of the trade will show that that the original trade was matched and which trade it was matched with, that it was cancelled, and the new trade will show that it has been matched with the same trade as the original.

The relevant status updates will be sent to the broker as per their static data configuration.

Broker B will see their trade in the matched folder of the GUI. The audit history of the trade will show that that the trade was matched and the trade it was matched with, unmatched and then matched again with the new matching trade.

The relevant status updates will be sent to the broker as per their static data configuration.

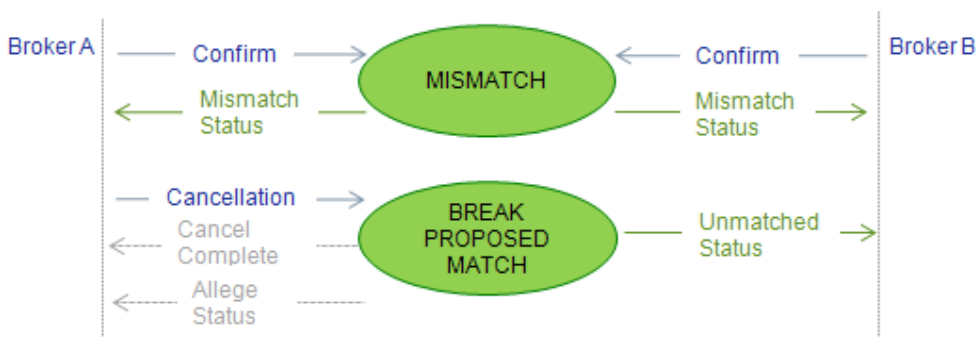
4.4.4. Cancellation of Unmatched Trade



Upon a cancellation for unmatched trade being received from the originating broker (Broker A) into the matching platform, the trade will be cancelled immediately, removed from the unmatched folder in the GUI and placed into the cancellation folder.

The alleged trade will also be removed from the counterparty broker (Broker B) view.

4.4.5. Cancellation of Mismatched Trade



Upon a cancellation for mismatched trade being received from the originating broker (Broker A) into the matching platform, Broker A's trade will be cancelled, removed from the mismatch folder in the GUI and placed into the cancelled folder. Broker B's trade will now be unmatched, with the

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broker receiving an unmatched status update for their trade. The trade will also be removed from the mismatch folder and placed in the unmatched folder view.

In the scenario where both brokers cancel their 'mismatched' trades, both trades will be successfully cancelled, removed from the mismatched folder and placed into the cancellation folder within the GUI.

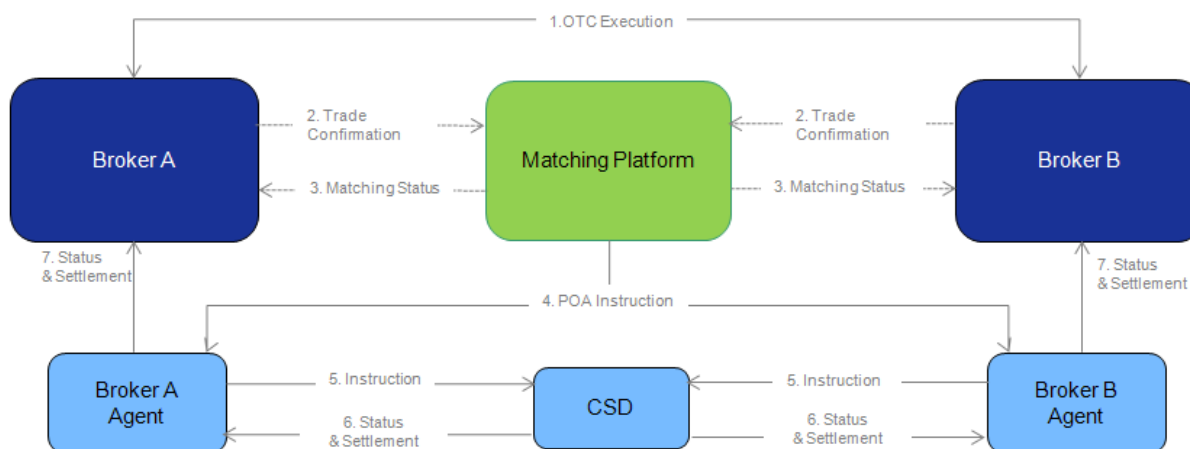
4.5. Settlement Instructions

As per the current process today, every gross execution will be instructed to the market.

Brokers will have the option to release settlement instructions to the market in one of two ways:

- Allow the vendor POA to release settlement instructions to the market on behalf of the broker
- Release settlement instructions from the broker in house system.

4.5.1. Vendor POA Release of Settlement Instruction



For those brokers who grant the vendor POA to instruct the market on their behalf, they will have the option to request the settlement instruction be released either;

- Upon the trade becoming successfully matched
- Upon a market cut off deadline being reached
- The broker will determine a cut off deadline for each market at which time the vendor should release the settlement instruction to the market.
- This data will be confirmed by the broker during the on boarding process and will be held in the static data tables. These timings should be configurable by broker and it should be possible for the broker to update these details at any time.

4.5.1.1. Format of Settlement Instruction

The vendor will generate the relevant settlement instruction based on the economics of the execution and in the format of the required market, i.e. SWIFT.

4.5.1.1.1. SSI's

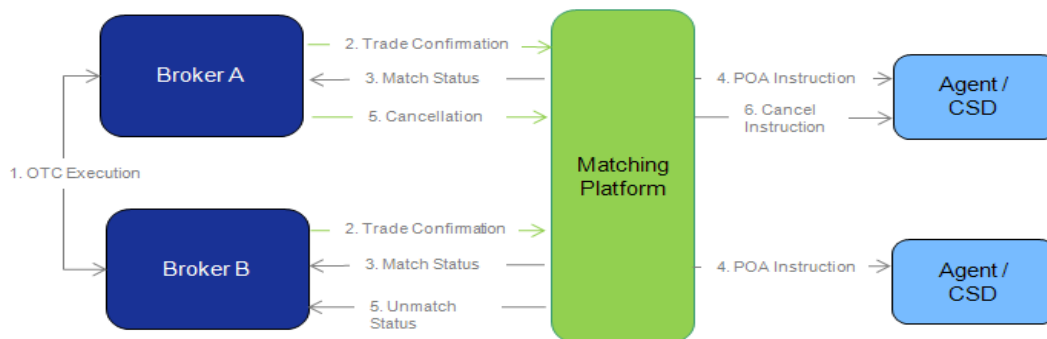
The vendor will be required to generate the settlement instruction with the broker's SSI's. These details will either be:

- Taken from the gross execution: The broker will be required to supply SSI's on their execution each time
- Taken from the broker's static data: The broker will be required to supply SSI's for each market during the on boarding process.

4.5.1.2. Removal of Market Instruction due to Cancellation

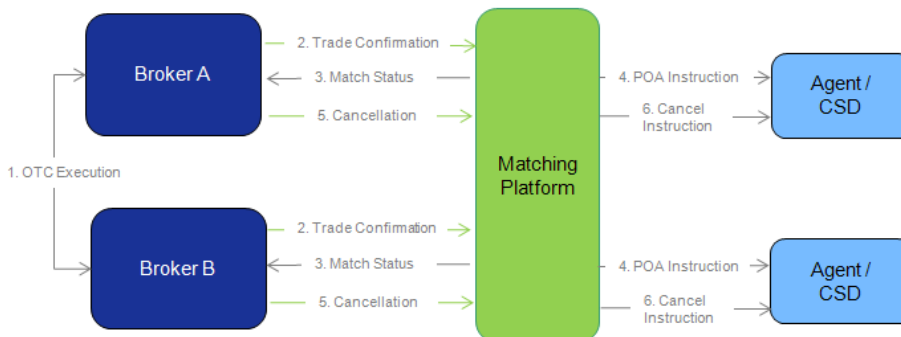
Where brokers have opted to allow the vendor POA, the matching engine should take the following actions upon a cancellation being received:

- **Cancellation by One Broker**



- Remove the market instruction for the cancelling broker (a cancellation instruction will be generated to the market from the vendor on behalf of the broker).
- Do not remove the counterparty broker's instruction.
 - The vendor should ensure the counterparty broker's instruction remains instructed to the market and not withdrawn due to Broker A cancelling their trade.

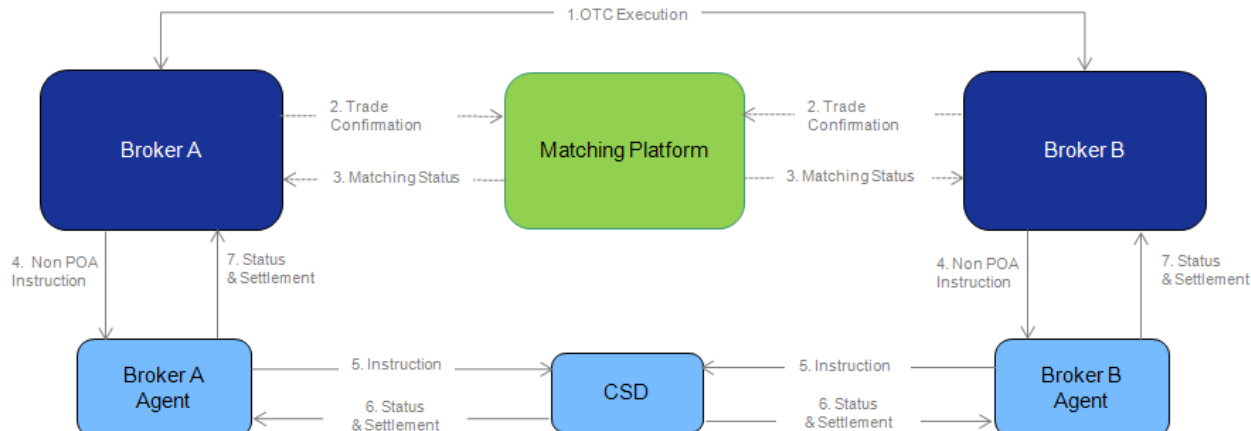
- **Cancellation Agreed by Both Brokers**



- Remove the market instruction for both brokers (a cancellation instruction will be generated to the market from the vendor on behalf of both brokers).

In the scenario where a broker (or both) cancel and replace a trade, the vendor should ensure that the original market instruction is removed upon the cancellation being received, and a new instruction is created and passed to the market for the replacement.

4.5.2. Broker Release of Settlement Instruction



For those brokers who do not require the vendor to instruct the market on their behalf, the settlement instruction will be released either:

- Upon the trade being executed
- Upon the receipt of a matched status from the vendor
 - The broker may request a flag to be included on their match status from the platform to enable their system to recognise that an instruction should be released. The broker will request this as part of their requirements for receiving status updates.

Brokers who opt to instruct the market will not be required to make any changes to the way in which they generate market instructions today; this includes the way in which they communicate a cancellation to the market.

4.6. GUI Requirements

4.6.1. Manual Actions

The vendor should allow all brokers the ability to manually input a single trade into the GUI via a manual Excel upload or by manually entering a trade into an input screen.

For those brokers who require the GUI to manually enter trades via an input screen, the GUI should also allow these brokers the ability to manually enter a cancellation. However, for the non manual input brokers, i.e. those following an STP communication method, it should not be possible for a broker to break or cancel a matched pair manually within the GUI. The GUI should only allow an STP broker to manually cancel a trade which is unmatched or mismatched.

Note: The vendor should allow each broker the option to dictate whether they should be able to execute manual actions within the GUI.

All manual actions will require a four eyes verification process.

Note: It is assumed that brokers will require a four eye verification process for manual actions. However, in the instance where four eyes verification is not possible, the vendor should allow a broker a two eyes verification process. However this will need to be authorised at a broker signatory level.

Only users with the profile capability to execute a manual action will be authorised to do so. See section 4.6.2 for detailed requirements for profiles and access to the GUI.

Note: User profile capability will govern the four eyes verification process. Authorisation will be required for each new user to be set up and assigned a profile with capability to complete a step in the four eyes process, ie Input only or verification only.

4.6.2. Profiles

Brokers will require the following profiles for accessing the GUI:

- Read/View Only
- Input Only
- Verification Only
- Static Data Update ability.
- Administrator

As mentioned, new user set up will need to be governed by an authorisation process to ensure users are assigned the correct profile level.

Upon a new user being created, the user name and contact details should be stored in static data. This data will be displayed on the trade view each time a user actions a trade.

Note: Brokers will be required to maintain the user name and contact details static data via the GUI.

4.6.3. Notation on Trades

It should be possible for all brokers to add notation to trades. The GUI should allow notes to be added by either;

- Selecting a reason code from a standard drop down list
- Entering additional commentary in text format

It should be possible to select a reason code and enter text when adding notation to a trade. The same reason codes as used by the vendor to apply a status reason code should be used to add notes to trades, i.e. ISO 15022 reason codes.

The GUI should allow the broker to select whether the note is 'internal'; and therefore should not be seen by the corresponding broker, or 'external'; and should be seen by the corresponding broker.

Upon a note being added to a trade, the audit history should update to include the notation and should state who has entered the note; user name and contact details as stored in the user profile static data.

For allegations and unmatched trades, if a broker adds a notation of 'DK' to a trade, the trade should not be removed from the current work set view. The trade should remain in the current view unless cancelled. The vendor will be required to return a status update to the originating broker confirming that the trade is not known by the corresponding broker.

It should be possible for a broker to consume any note added to a trade, for example a free text message should be returned with the details of the note.

4.6.4. Static Data

The matching platform will hold a number of static data tables. However the below are key to enabling successful broker matching.

4.6.4.1. Broker Static Data

- Broker BIC Code or Broker Acronym
- Broker Legal Name and Legal Entities to be included
- Market Tolerance
- Messaging Preferences:
 - Inbound Message Type and Format
 - Outbound Message Type and Format
 - Which outbound status messages the broker want to receive
It should be possible for the broker to change which messages they wish to receive.
 - Timings for outbound messages to be sent
It should be possible for the broker to select different timings for each message type they wish to receive.
It should be possible for the broker to change the time they wish to receive status messages from the static data tables.

Any changes required to each broker's static data will be updated and maintained by the broker within the GUI static data screens.

4.6.4.2. Broker Pair Static Data

- Broker pair combinations
- Standard information required for broker pairs to be able to match
- PSETS the pair are able to match against
It should be possible for the broker pair to change the PSETS to match against.
- Agreed matching fields (key and optional).
It should be possible for the broker pair to change the fields they wish to match against.

Any changes to the broker pair matching information will need to be agreed by both parties. One party should be able to update/make the required changes and the corresponding party should be able to accept these changes. Therefore, these updates/changes will be maintained by the broker pair via the GUI static data screens.

4.6.4.3. Matching Fields

| Field | Mandatory or Optional? |
|---------------------|------------------------|
| Originating Broker | Mandatory |
| Counterparty Broker | Mandatory |
| Security ID | Mandatory |
| Trade Date | Mandatory |
| Direction | Mandatory |
| Quantity | Mandatory |

| Field | Mandatory or Optional? |
|---|------------------------|
| Value Date | Mandatory |
| Settlement Currency | Mandatory |
| Net Amount (within tolerance) | Mandatory |
| Place of Settlement (PSET) | Optional |
| SSI's | |
| • Place of Settlement (PSET) | Mandatory |
| • Buyer or Receiver | Optional |
| • Buyer or Receiver Safekeeping Account | Optional |
| • Seller or Deliverer | Optional |
| • Seller or Deliverer Safekeeping Account | Optional |
| • Delivering Agent (<i>BIC Code or Participant ID</i>) | Optional |
| • Delivering Agent Safekeeping Account | Optional |
| • Receiving Agent (<i>BIC Code or Participant ID</i>) | Optional |
| • Receiving Agent Safekeeping Account | Optional |
| • Deliverer's Custodian (<i>BIC Code or Participant ID</i>) | Optional |
| • Deliverer's Custodian Safekeeping Account | Optional |
| • Receiver's Custodian (<i>BIC Code or Participant ID</i>) | Optional |
| • Receiver's Custodian Safekeeping Account | Optional |
| Price | Optional |
| CSD Number | Optional |
| PSA | Optional |
| Deal Value | Optional |
| Shifting Details | Optional |
| Tax Type | Optional |
| Order Type | Optional |
| Legal Entity Identifier | Optional |

Brokers will be required to include all mandatory matching fields in their matching criteria. PSET will be mandatory for those brokers who are able to send this value. The remaining matching fields will be optional for a broker pair to include in their matching criteria.

The optional matching fields should be available for each broker pair to select and agree to match against.

As previously mentioned it should be possible for brokers to update and maintain their static data via the GUI. Therefore, if a broker pair agrees to update/change their matching criteria, they will need to state when the changes should take effect and both brokers will be required to agree to the change.

If the PTES group require a new field to be made available as a matching criteria, only the vendor will be able to create this within the static data tables. The vendor SLA agreement should determine the turnaround time of making a new matching field available to brokers within static data.

4.6.4.4. Securities Mapping

It has been agreed by the PTES group that all brokers utilising the matching platform will be required to send ISIN (and PSET) on their trades. However it is understood that some brokers may not have the ability to send ISIN but an alternate ID i.e. SEDOL, CUSIP, WKN etc, due to in-house

infrastructure restrictions. Therefore, the matching platform will be required to hold a mapping table of securities and the possible alternate ID's to ensure a true match. The matching platform should also enrich the trade with the same identifier on the screens to ensure the broker sees that the field is successfully matched.

Brokers who supply an alternate id will be required to identify the security type (i.e. CUSIP) on the incoming data to allow the vendor to map the identifier accordingly. It is expected that the vendor security table will be maintained to be kept up to date and in line with the market.

It is also expected that if a trade is received into the matching platform for a security which isn't recognised by the vendor, i.e. a new issue, the vendor should not reject the trade. The trade should be processed and held for matching until the static data has been updated to include the new security. Upon the new security being added to the static data tables, the vendor will be required to re-process the trade for matching. The broker should not be required to replay the trade into the platform.

4.6.4.5. SSI Comparison Table

- Table mapping local codes and BIC codes

The matching platform should hold logic to match local codes to BIC codes if brokers do not send the same identifier and will map identifiers if one broker precedes an identifier with leading zeros but another does not.

4.6.4.6. Standard Reason Codes

- Matching Status Reason Codes
- Rejection Reason Codes
- Notation Codes

The vendor should follow the ISO 15022 guidelines for standard reason codes.

4.6.4.7. Settlement Tolerances

- Broker Tolerances by PSET

4.6.5. GUI Views

The vendor GUI should display all trades in folders by their current status. Upon a trade changing status, the trade should be moved into the relevant folder/view;

- Broker A
 - Executing Broker
 - Prime Broker
- Matched
- Unmatched
- Mismatched
- Alleged
- Rejected
- Cancel Requested
- Cancelled
- Archived

The folder structure should be split between current trades and archived trades.

Brokers should only be able to see trades which relate to them.

The matching platform will be required to determine trades executed between executing brokers and an execution between an executing broker and a prime broker, and display these trades in a separate view within the GUI.

4.6.6. Audit

All actions, whether automated or manual should be recorded and displayed within the GUI by an 'audit trail' for each trade.

The audit trail of each trade should also display the time and date at which the update was made / received, whether the update was manual or automated, and if automated the user id and contact details of the user.

4.6.7. Archiving

The matching platform should archive all matched trades (where value date has passed) and cancelled trades after three months. The archived trades should be displayed within an archived folder in the GUI. Any trades which are not matched (unmatched, alleged or mismatched) should not be archived and should remain in their current view.

If a broker requires a trade which is not matched to be archived, they will need to send a request to the vendor to archive the trade manually. A manual archive request will need to be signed off and agreed by a supervisor by both brokers.

4.6.8. Other Requirements

4.6.8.1. Installation

Brokers would prefer the vendor to provide a hosted application (i.e. web based) which would allow brokers ease of access. This would also allow new users to be set up quickly, and also ensure brokers are still able to access the system in a BCP situation.

4.6.8.2. Screen Configuration

Brokers should be able to use pre-determined screen configuration or have the ability to save the screen configuration for future use.

4.6.8.3. Change Implementation

Vendor application should be configurable quickly to meet challenging market conditions and changes

The application should allow broker pair configuration rather than community configuration. For example, a change to matching criteria should be a change that could be requested and re-run overnight.

4.7. MIS Requirements

The vendor will be required to provide brokers MIS either via the GUI or in a report format which will be sent to the brokers at an agreed time, for example daily, weekly or monthly.

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Whether via the GUI or within a report, the vendor should provide the following:

- Number of trades sent (Total and # per broker)
- Number and % of trades, matched, mismatched, unmatched on TD, T+1, T+2 etc across lifecycle (analysed against each broker and against overall volume)
- Time at which trades are matched
- Time difference between trade entry from broker 1 and action by broker 2
- Root cause analysis data of mismatched, unmatched trades to assist in increasing match rates (Price, TD, Consideration differences etc)
- Cancel rate / cancel rebook rate pre and post match
- Metrics of late booked trades by counterparty
- Trend Analysis
- Blind Surveys
- Ability to query raw data (live and archived) and build ad-hoc reports
- Ability to export raw data (live and archived) with no restrictions on the amount of data which can be exported
- Ability to save report criteria

5. High Level Business Requirements

5.1. Business Requirements

| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|--|---|--|----------------|-----------|
| Matching and Affirmation | | | | |
| Communication of Trades to Vendor | | | 4.1 | |
| MA-CV-01 | Brokers will send all required OTC transactions to the vendor to be included in matching and will prevent any trades they do not wish to be matched from being passed to the vendor. | This will require the vendor to accept all OTC transaction types; - Equity and Fixed Income - EB vs EB and EB vs PB - DVP, FOP and XCCY and process them accordingly. The vendor should also allow for brokers who are unable to prevent 'excluded' trades from being passed to the vendor - excluded trade types will be defined in static data tables, including any markets and sub ccy's where matching is not required. | 4.1.1 4.1.2 | Must Have |
| MA-CV-02 | Brokers will send transactions to the vendor manually or via an automated method. | The vendor will be required to support multiple communication methods, to ensure all brokers have a way to communicate their executions to the platform. - Automated methods: SWIFT, FIX message, sftp Excel and csv files - Manual methods: E-Mails, Excel uploads, CSV uploads, Single Trade Input (subject to profile permission) via the GUI. | 4.1.3 | Must Have |
| MA-CV-03 | Brokers will need to send a standard set of data when communicating their trades, despite the method: Originating Broker Counterparty Broker Security Identifier Trade Date Direction Quantity Value Date Settlement Ccy PSET* Net Amount (within Tolerance) Unique Reference Trade Status Additional fields may also be included if a broker pair agrees further fields are required to be matched against. *PSET will be mandatory if a broker pair agree to include in match criteria. | The vendor will be required to process and normalise / map the data to allow matching. | 4.1.3.1 | Must Have |
| MA-CV-04 | Where a broker needs to notify the vendor of a cancellation via a file, this should be flagged on the file. | Brokers will be required to ensure all cancellations are highlighted correctly on a file in order for the vendor to process the cancel accordingly. The vendor should identify the cancellation and process accordingly. | 4.1.3.1 | Must Have |

| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
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| MA-CV-05 | Brokers communicating trades via sftp will need to ensure files are delivered to the vendor by a pre-defined deadline. | It should be possible for the vendor to notify or alert the broker if a file has not been received by the deadline. | 4.1.3.2 | Could Have |
| MA-CV-06 | The vendor will validate all incoming trades and confirm whether the trade has been accepted or rejected - if requested by the broker. | The vendor should return an 'acknowledgement' or 'rejection' status update to brokers who have requested to receive these updates. Only brokers subscribed to an automated service will be able to receive these updates. It should be possible for the vendor to return these updates in the required format as requested by the broker. | 4.1.4 | Must Have |
| Trade Matching | | | 4.2 | |
| MA-TM-01 | Broker pairs will have a bilateral agreement in place to match with one another. | The matching platform will match all trades between the two brokers. All possible broker pairs will be defined in the static data tables. | 4.2.1 | Must Have |
| MA-TM-02 | Broker pairs will have the ability to agree which fields should be included in their match criteria. | A number of fields will be mandatory for the pair to match against. Optional fields will also be available for the pair to opt to include in their match criteria. Originating Broker - Mandatory Counterparty Broker - Mandatory Security ID* - Mandatory Trade Date - Mandatory Direction - Mandatory Quantity - Mandatory Value Date - Mandatory Settlement Currency - Mandatory Net Amount (within tolerance) - Mandatory Place of Settlement (PSET)** - Optional SSI's - Optional Price - Optional CSD Number - Optional PAs - Optional Deal Value - Optional Shifting Details - Optional Tax Type - Optional Order Type – Optional Legal Entity Identifier – Optional *Security ID - Some brokers may be unable to send ISIN, therefore the vendor should accept any alternate ID and then verify the id against a security mapping table. **PSET should be an optional field until all brokers are able to supply. | 4.2.1 | Must Have |
| MA-TM-03 | The matching platform will reject any trades where a mandatory field has failed to be supplied, but will look to process trades if an optional field has failed to be supplied. | | 4.2.1 | Must Have |

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| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|----------|---|--|------------------|-----------|
| MA-TM-04 | Brokers who agree to match on SSI's should not have to send the same identifiers. | A comparison table should exist in the matching platform to map identifiers and allow a true match. | 4.2.1.3 | Must Have |
| MA-TM-05 | The matching engine will match trades initially at a primary and secondary level, and then by the % calculation of fields successfully matched | <ol style="list-style-type: none"> Trades will be matched by primary fields and secondary fields: Primary: Originating Broker, Counterparty Broker, Security ID, Direction, Quantity, Trade Date Secondary: Value Date, Settlement Ccy, PSET, Net Amount, optional fields selected by pair. Trades will be matched by % match: Trades will be paired by Originating Broker, Counterparty Broker & Security ID % will be calculated by number of remaining fields which are matched. If no trade pair can be found the trades will be unmatched. | 4.2.2 | Must Have |
| MA-TM-06 | The matching platform will perform matching real time as soon as trades are received. | | 4.2.4 | Must Have |
| MA-TM-07 | Upon the matching platform assigning a status to a trade, the broker should be informed. | The matching platform will assign one of the following statuses: Matched Unmatched Mismatched Alleged Cancelled Accepted Rejected | 4.2.4.1 | Must Have |
| MA-TM-08 | Brokers will be able to view the current trade status within the GUI screens. | The GUI should display the current status of all trades. | 4.2.3 4.2.4.1 | Must Have |
| MA-TM-09 | Each broker will have confirmed their requirements for consuming status updates, and the broker should allow for each broker to have individual requirements. | Each broker will be required to confirm the following: - If they require status updates to be returned or not - If status are required - Which - statuses should be returned. - Which format the status should be returned in - Both manual and automated methods should be supported. - Which time the status should be returned - a choice of real time of at end of day should be available. | 4.3.1 | Must Have |
| MA-TM-10 | It should be possible for a broker to make changes to their message consumption requirements. | Data changes should be flexible. | 4.3.1 | Must Have |
| MA-TM-11 | Where the system returns a status update the relevant reason code should be applied. | Status reason codes will be aligned to ISO 15022 guidelines. | 4.2.4.2 | Must Have |

| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|---------------------------------|---|---|------------|-----------|
| MA-TM-12 | Where the system returns a status update to a broker, the update should contain the broker's original trade reference. | This will allow brokers to link the incoming status to their execution within their in house system. | 4.2.4 | Must Have |
| Trade Matching Workflows | | | 4.3 | |
| MA-TM-13 | Where an exact match is found (against all agreed match criteria) the vendor will update the trades to 'matched' within the GUI and return a matching status update to each broker (if required). | Trades will be matched on all fields agreed by the broker pair (primary and secondary) Trades which match within tolerance will be considered a perfect match. Status updates will be sent according to broker messaging requirements. | 4.3.1 | Must Have |
| MA-TM-14 | If the vendor has received a trade from a broker, but is unable to find a corresponding trade which matches on all linking fields and the number of matching fields falls below the acceptable match %, the trade will be set to 'unmatched' and an unmatched status message will be returned to the broker. The alleged broker will also see the trade in their 'alleged' folder and receive a status update (if requested). | The corresponding broker will be alerted of the allegation against them. Status updates will be sent according to broker messaging requirements. | 4.3.2 | Must Have |
| MA-TM-15 | Where an unmatched trade has been identified, and remains unmatched, the broker should only receive one status update (if requested). | | 4.3.2 | Must Have |
| MA-TM-16 | <ol style="list-style-type: none"> Where the vendor identifies two trades which match on all primary fields but not on all secondary matching fields the trades will be mismatched. Where the vendor identifies trades which match all linking fields and the number of remaining fields which do match is above the acceptable % match level the trades will be set to 'mismatched' in the GUI. A mismatch status update will be returned to each broker stating the reason for a mismatch (if requested). | <ol style="list-style-type: none"> The GUI will display all potential matches if more than one is found and also display reasons for the mismatch in trades. The same reasons should be returned on the status update to the broker(s) – Where more than one potential match is highlighted the vendor should return the trade with the highest possible % match on the status update Status updates will be sent according to broker messaging requirements. | 4.3.3 | Must Have |
| MA-TM-17 | Where the vendor identifies an execution alleged to a broker, the trade will be displayed in the GUI as alleged to the broker and an 'alleged' status update will be sent to the broker (if required). | The allege status update will include the details of the alleged trade. Status updates will be sent according to broker messaging requirements. | 4.3.4 | Must Have |
| MA-TM-18 | Where an allegation has been identified, the alleged broker should have the ability to add a note to the alleged trade to confirm they do not recognise it, i.e. DK the trade. | | 4.3.4 | Must Have |

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| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|--------------------------------------|---|---|------------|-----------|
| MA-TM-19 | The matching platform will update the status of a change each time the status is changed, i.e. matched to unmatched, unmatched to cancelled, mismatched to matched etc. | The audit history of the trade will display each status change of the trade. The trade should be visible in the relevant GUI view following each status change. | 4.2.3 | Must Have |
| Cancel and Correct Processing | | | 4.4 | |
| MA-XC-01 | The vendor will be required to take in and process cancellation and replacement trades. | The matching platform will be required to identify the incoming data as a cancellation. | 4.4 | Must Have |
| MA-XC-02 | When communicating a cancellation, the broker will include the original trade reference and flag the trade with a cancellation identifier. | | 4.4 | Must Have |
| MA-XC-03 | Upon the cancellation being accepted and processed, some brokers may require a 'cancel accepted' status update. | The vendor will return a 'cancel accepted' status update for those brokers who have opted to receive this status. | 4.4 | Must Have |
| MA-XC-04 | Where a cancellation is received for a matched trade from one broker, the match will be broken and the corresponding broker will receive a status update confirming the trade is now unmatched. | The audit history will be updated accordingly to display the previous and current status of the trades. | 4.4.1 | Must Have |
| MA-XC-05 | Where both brokers agree to cancel a matched pair, a cancellation should be received to break the match. Both trades will be set to cancelled within the GUI. | The audit history will be updated accordingly to display the previous and current status of the trades. | 4.4.2 | Must Have |
| MA-XC-06 | Where a cancellation and replacement trade is received from one broker for a matched pair, the match should be broken upon the cancel being received, and re-matched upon the replacement being received. | The corresponding broker may be unaware of the match being broken/re-matched if they chose to receive status updates EOD. Brokers who opt to receive status updates real time will receive an update when the match is broken and their trade becomes unmatched, and a second update to confirm the trade has been matched again. | 4.4.3 | Must Have |
| MA-XC-07 | Where a cancellation is received for an unmatched trade, the trade will be updated to cancelled and the allegation removed from the corresponding broker. | | 4.4.4 | Must Have |
| MA-XC-08 | Where a cancellation is received for a mismatched trade, the proposed match will be broken and the corresponding broker will receive a status update confirming their trade is now unmatched. | | 4.4.5 | Must Have |
| Settlement Instructions | | | 4.5 | |
| MA-SI-01 | Each gross execution will be instructed to the market. | | 4.5 | Must Have |
| MA-SI-02 | Brokers will instruct the market in one of the following ways: 1. Allow the vendor POA 2. Release the instruction from the in house system | Each broker will confirm whether the vendor will have POA to release instructions. This data will be set at a PSET level and will be held in the static data tables. | 4.5 | Must Have |

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| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|------------|---|---|----------------------|-----------|
| MA-SI-03 | The vendor will be required to release market instructions on behalf of those brokers who grant them POA. | The broker will be required to confirm if the vendor should instruct the market upon the trades becoming matched, or at a deadline cut off. | 4.5.1 | Must Have |
| MA-SI-04 | Where POA has been granted, the vendor should generate settlement instructions based on the SSI's taken from the gross execution or if no SSI's are supplied, from the static data table which holds the broker's SSI's for each market. | The broker will be required to confirm where SSI's should be taken from; the trade or static data tables. If the vendor is required to hold SSI's for each market, the broker will need to supply this data during the on boarding process. | 4.5.1.1 4.5.1.1.1 | Must Have |
| MA-SI-05 | Where POA has been granted: 1. If one broker cancels their trade only their instruction should be removed from the market. 2. If both brokers cancel their trades both instructions should be removed from the market for both brokers. | The vendor should only remove/cancel an instruction where a broker has cancelled a trade. If a broker does not agree to a cancellation their instruction should not be removed/cancelled. | 4.5.1.2 | Must Have |
| MA-SI-06 | Those brokers who opt to instruct the trades themselves will determine when to release the instruction: upon the trade being executed or upon receipt of the matched status for the vendor. | Some brokers may require a flag to be included on the match status which will trigger the release of the settlement instruction upon the match being received into the broker system. | 4.5.2 | Must Have |
| GUI | | | 4.6 | |
| MA-GU-01 | It should be possible for a broker to manually input a single trade into the GUI. | The GUI should allow the broker to manually key in a trade or upload a file. | 4.6.1 | Must Have |
| MA-GU-02 | It should be possible for a broker to manually cancel an unmatched or mismatched trade. | User profile capability will determine if user is approved to manually cancel a trade or approve the cancellation. User profiles should be governed by an authorisation process when a new user is set up. | 4.6.1 | Must Have |
| MA-GU-03 | It should not be possible for a broker to manually cancel a matched trade. | No user profile should have authorisation to manually cancel a matched trade. User profiles should be governed by an authorisation process when a new user is set up. | 4.6.1 | Must Have |
| MA-GU-04 | All manual actions will be restricted by profile allowances and will require 4 eyes verification. | For those brokers where 4 eyes verification is not possible, the vendor should allow a 2 eyes verification process. User profile capability will determine the action a user can take, i.e. input or verify. User profiles should be governed by an authorisation process when a new user is set up. | 4.6.1 4.6.2 | Must Have |
| MA-GU-05 | Brokers will require the following profiles for accessing the GUI: Read/View Only Input Only Verification Only Static Data Update Ability Administrator | User profile capability will determine the action a user can take, i.e. input or verify. User profiles should be governed by an authorisation process when a new user is set up. | 4.6.2 | Must Have |

| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|----------|---|---|-----------|------------|
| MA-GU-06 | A broker should be able to add a note to a trade. Commentary in free text should be allowed, or a pre-defined reason from a drop down. It should also be possible to decide whether the note is internal or external. | Status reason codes will be aligned to ISO 15022 guidelines. | 4.6.3 | Must Have |
| MA-GU-07 | Broker notes added to trades should be returned to the broker and or corresponding broker as a status update. | Each broker will be required to confirm if they wish to receive status updates for notes added to trades. | 4.6.3 | Would Like |
| MA-GU-08 | If a trade has a notation of 'DK' applied, the trade should not be removed from the current work set view. A status update should be returned to the corresponding broker confirming the trade is unknown. | | 4.6.3 | Must Have |
| MA-GU-09 | Upon a note being added to a trade, the GUI should recognise the user and apply the user name and contact details to the note | User name and contact details to be taken from the user profile set up in static data. | 4.6.3 | Would Like |
| MA-GU-10 | The GUI should hold a static data table which contains the following broker data: Broker BIC Code or Broker Acronym Broker Legal Name and Legal Entities to be included Market Tolerance Messaging Preferences: - Inbound Message Type and Format - Outbound Message Type and Format - Which outbound status messages the broker want to receive It should be possible for the broker to change which messages they wish to receive. - Timings for outbound messages to be sent It should be possible for the broker to select different timings for each message type they wish to receive. It should be possible for the broker to change the time they wish to receive status messages from the static data tables. | A broker should have the ability to update and maintain this static data within the GUI static data screens | 4.6.4.1 | Must Have |
| MA-GU-11 | The GUI should hold a static data table which contains the following broker pair data: Broker pair combinations Standard information required for broker pairs to be able to match PSETS the pair are able to match against It should be possible for the broker pair to change the PSETS to match against. Agreed matching fields (key and optional). It should be possible for the broker pair to change the fields they wish to | Any changes made to a broker pair static must be agreed by both parties. | 4.6.4.2 | Must Have |

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| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|------------|--|--|---|-------------|
| | match against. | | | |
| MA-GU-12 | The GUI should hold a static data table which holds a list of all matching fields available for a broker pair to select upon agreeing their matching criteria (refer to MA-TM-02 for list of fields) | The table should state whether a field is optional or mandatory. If the PTES group require an additional field to be added to the list, or a current field removed, this will need to be agreed by all brokers signed up to the service. | 4.6.4.3 | Must Have |
| MA-GU-13 | The GUI should hold a table of all securities and the possible alternate id's. | For those brokers unable to send ISIN, the vendor should accept any valid alternate ID, and then compare and map the ID to ensure a true match with the corresponding trade. | Error! Reference source not found. | Must Have |
| MA-GU-14 | The vendor should align update and maintain this static data table with the market. | If a trade is received for a security which is not held by the vendor, the trade should not be rejected, but held until the data can be enriched and retried by the vendor without broker intervention. | Error! Reference source not found. | Must Have |
| MA-GU-15 | The GUI should hold an SSI comparison table. | This will ensure the platform can match trades if brokers are unable to send the same identifiers. | 4.6.4.4 | Must Have |
| MA-GU-16 | The GUI should hold a Standard Reason Codes table based on the ISO 15022 guidelines. | | 4.6.4.6 | Must Have |
| MA-GU-17 | The GUI should hold a table of the settlement tolerances per market (PSET) and per broker. | Brokers will be required to supply this data during the on boarding process. | 4.6.4.7 | Must Have |
| MA-GU-18 | The GUI should display all trades by trade status in the relevant folder. The following folders should be available: Broker - Executing Broker / Prime Broker Matched Unmatched Mismatched Alleged Rejected Cancel Requested Cancelled Archived | The folder structure should be split between current trades and archived trades. | 4.6.5 | Must Have |
| MA-GU-19 | Brokers should be able to use pre-determined screen configuration or have the ability to save the screen configuration for future use. | | 4.6.8.2 | Should Have |
| MIS | | | 4.7 | |
| MA-MI-01 | The vendor should provide MIS via the GUI screens and in a report format. | The frequency of MIS will be determined in the SLA. | 4.7 | Must Have |
| MA-MI-02 | The GUI should allow a broker to generate ad-hoc MIS reports | | 4.7 | Must Have |
| MA-MI-03 | The vendor should supply the following: • Number of trades sent (Total and # per broker) • Number and % of trades, matched, mismatched, unmatched on TD, T+1, T+2 etc across lifecycle (analysed | | 4.7 | Must Have |

| Ref # | Requirement Name | Notes | Doc Ref # | Required? |
|-------|---|-------|-----------|-----------|
| | against each broker and against overall volume) <ul style="list-style-type: none"> • Time at which trades are matched • Root cause analysis data of mismatched, unmatched trades to assist in increasing match rates (Price, TD, Consideration differences etc) • Cancel rate / cancel rebook rate pre and post match • Metrics of late booked trades by counterparty • Trend Analysis • Blind Surveys • Ability to query raw data (live and archived) and build ad-hoc reports • Ability to export raw data (live and archived) • Ability to save report criteria | | | |

5.2. Service Level Agreements (SLA) Requirements

| Ref # | Function / Operation | Requirement | Required? |
|-------------------------|---|---|-----------|
| SLA Requirements | | | |
| 1 | Trade matching statuses should be identified and displayed in the related GUI folder. | All status updates should be displayed real time. All changes to trade statuses should be reflected real time. The trade should be reflected in the correct GUI view upon a status change taking place. | Must Have |
| 2 | The matching platform should continuously perform matching real time, i.e. the matching platform should be available at all times. | There should be no batch completed in the matching platform. | Must Have |
| 3 | If a security is required to be added, the vendor should re-process the trade upon the static being added. | The trade should not be rejected if the static is not updated accordingly; it should be held until the data is updated accordingly. | Must Have |
| 4 | All actions, whether automated or manual should be recorded and displayed within the GUI by an 'audit trail' for each trade | The audit trail must be updated real time, and should display the user name and contact and time and date of update. | Must Have |
| 5 | The matching platform should archive all matched and cancelled trades after three months. Any trades which are not matched (unmatched, alleged or mismatched) should not be archived and should remain in their current view. | If a broker requires a trade which is not matched to be archived, they will need to send a request to the vendor to archive the trade manually. A manual archive request will need to be signed off and agreed by a supervisor at the broker. | Must Have |
| 6 | The vendor should supply a hosted application to allow ease of access | This would also allow new users to be set up quickly, and also ensure brokers are still able to access the system in a BCP situation. | Must Have |
| 7 | New user set up. | New users will need to be granted access at a supervisor authorisation level. The SLA should outline response times to new user requests. | Must Have |

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| Ref # | Function / Operation | Requirement | Required? |
|-------|---------------------------------------|---|-----------|
| 8 | MIS should be available at all times. | MIS should be updated real time and the GUI should display the real time status for all/each broker. | Must Have |
| 9 | Response times to issues. | The SLA should outline vendor response times to issues based on criticality. | Must Have |
| 10 | On boarding and testing support | Brokers will require vendor support during the on boarding process and should facilitate testing requirements, i.e. on test or live environments. | Must Have |

6. Open Issues

| # | Doc Section | Issue | Comment | Status |
|--------------------------|-------------|-------|---------|--------|
| Matching and Affirmation | | | | |
| | | N/A. | | |

7. Approvals

7.1. Requirements Approval

| Who | Signoff | Signoff Received | Title | Date |
|----------------------------------|------------------------------|-------------------|--|------------|
| Bank of America Merrill Lynch | Richard Mills | James Tone | Snr Ops Manager – Equity Post Trade ServicesSecurities | 01/02/2012 |
| | | Richard Mills | Projects & Industry Initiatives | 01/02/2012 |
| Barclays Capital | Shaun Blake | Shaun Blake | Head of Strategy for Cash Equities | 14/02/2012 |
| Citi Group | Alex Milton | Martin McGrath | Equities Middle Office (SVP) | 03/02/2012 |
| Credit Suisse | Paul Taylor Oliver Wilson | Paul Taylor | CS AG EMEA Domestic Settlement(VP) | 01/02/2012 |
| Deutsche Bank | James Rochford | James Rochford | EMEA Head of Cash Equity Trading Product Ops | 03/02/2012 |
| | Wayne Howard | Wayne Howard | Head of Stock Loan, Prime Brokerage & Synthetic Equity - London | 03/02/2012 |
| Goldman Sachs | Ben Duckworth | Ben Duckworth | Executive Director – Trading Operations Change | 03/02/2012 |
| | Peter Hodgkinson | Peter Hodgkinson | Executive Director – Trading Operations | 03/02/2012 |
| HSBC | Ian Little | Ian Little | Head of Offshore Equities | 07/02/2012 |
| JP Morgan | Julian Alsford | Julian Alsford | Settlements Manager (VP) | 03/02/2012 |
| | | Daniel Smith | Settlements manager (Associate) | 03/02/2012 |
| Morgan Stanley | Martyn Nott | Martyn Nott | Global head of Trade Support for Securities (ED) | 03/02/2012 |
| Nomura | Jonathan May | Jonathan May | Head of Cash Equities Middle Office | 09/02/2012 |
| RBS | Christopher Ralph | Christopher Ralph | Cash Trade Support Manager. | 06/02/2012 |
| | Robert Mason | Robert Mason | Head of EMEA Fixed Income Middle Office | 06/03/2012 |
| UBS | David Grace | David Grace | EMEA Head of Market Initiatives, Securities Operations | 01/02/2012 |