

Syn~Clear

Syn~Clear is a market infrastructure system supporting clearing houses and Central Securities Depositories. It provides functionality for clearing and risk management, settlement, depository and registry management for an entire market. It can receive trade flow directly from one or more exchanges or directly from member firms and manage the entire post-trade market infrastructure.

Syn~Clear provides a highly scalable, flexible, rules-based system to enable services for both cash and derivative products. This allows configuration to particular market requirements during implementation. It also enables fast adaptability to future market change. **Syn~Clear** provides a browser-based multi-language front-end for both members and internal clearing house and CSD staff. This front-end can support languages such as French, Arabic, Farsi and English. User in-trays and queries are integrated within this front-end, allowing the configuration of complete operational and member-firm portals.

Product types

- ~ Equities
- ~ Warrants
- ~ Rights
- ~ Fixed income
- ~ Commodities
- ~ Futures

Participants

- ~ Member firms - typically brokers
- ~ Clearing firms - support for indirect clearing through clearing firms
- ~ Investors and clients - support for the direct, indirect and hybrid holding models
- ~ Custodians - support for indirect and hybrid holding models using custodians
- ~ Clearing and central banks
- ~ Issuers and registrars
- ~ Exchanges
- ~ Other CSDs

Transaction capture services

- ~ Automatic on-exchange and OTC Feeds
 - ~ High speed, guaranteed delivery link with AEMS NSC exchange platform
 - ~ XML transaction feeds
- ~ Full validation and enrichments. There are five types of enrichment:
 - ~ Determining DVP status
 - ~ Determining participants
 - ~ Determining settlement date
 - ~ Determining financials
 - ~ Novation
- ~ Message-based confirmations sent to originating member firms

Trade Enrichment

DVP status:

All trades will be assigned a DVP settlement Indicator. This is obtained from the instrument but can be overridden on an individual trade. There are three basic models defined in the market for settlement processing:

- ~ DVP 1 – Settlement of securities and cash happens on a gross basis.
- ~ DVP 2 – Settlement of securities occur on a gross basis, but cash is settled on a net basis.
- ~ DVP 3 – Settlement of securities and cash are on a net basis.

Participants:

Syn~Clear allows the operation of clearing members who can facilitate clearing for institutions that are not themselves member firms. Likewise, settlement and paying agents may be used by brokers as intermediaries in the security and cash settlement process.

These participants can be derived from characteristics of the trade:

- ~ Broker
- ~ Market (normal, OTC, buy-in etc)
- ~ Instrument type (e.g. equity or bond)
- ~ Instrument category

Settlement date:

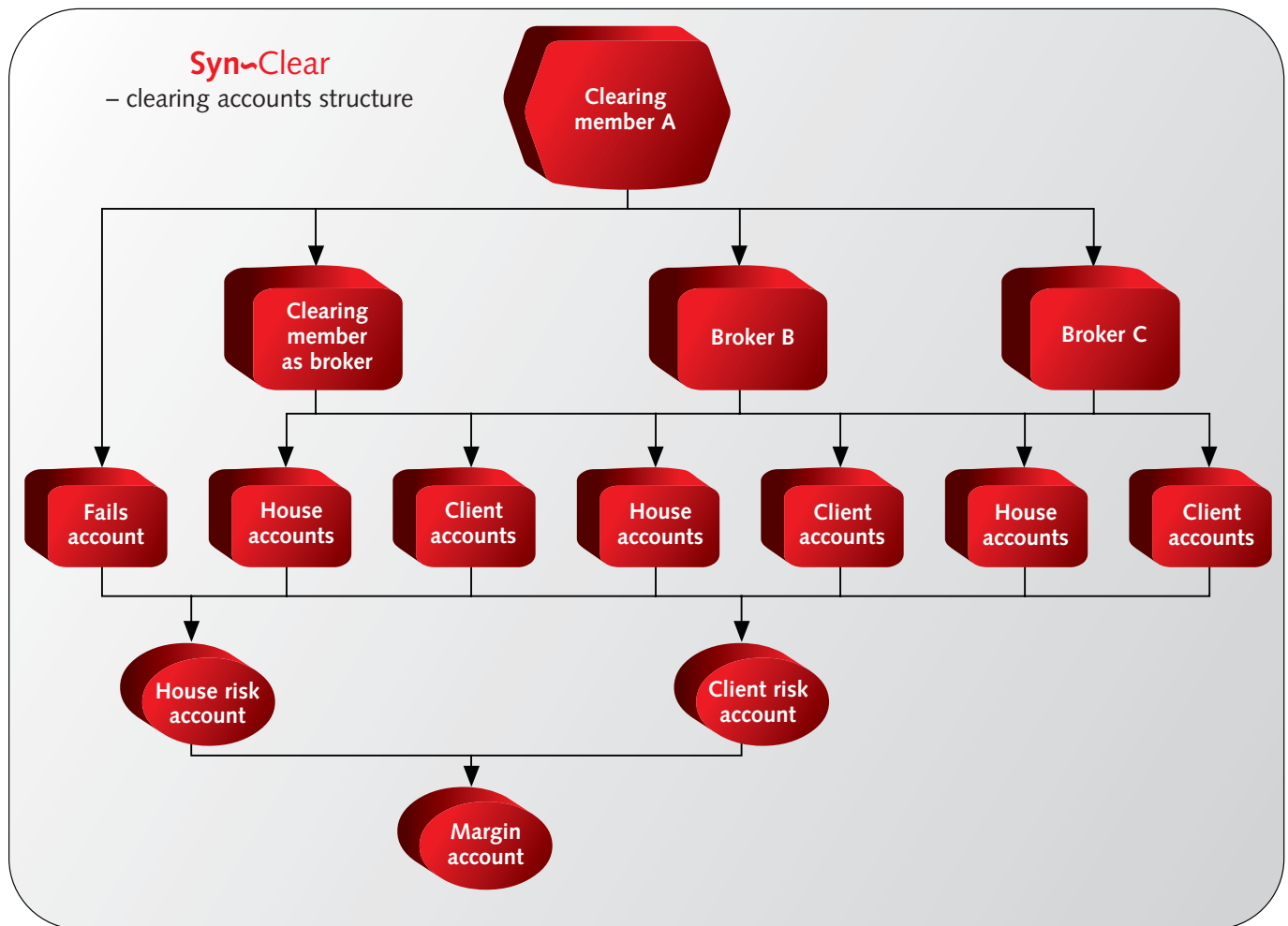
Unless a specific settlement delay has been stated on the trade, the settlement delay defined for the trading instrument will be calculated by **Syn~Clear**. This number of business days (days excluding holidays and weekend according to the appropriate calendar) will be added to the trade date to calculate the settlement date.

Financials:

- ~ Exchange, clearing and CSD fee calculations
- ~ Taxes

Novation:

- ~ Automatic novation of trades to a central counterparty
- ~ Configured by individual instrument and member firm
- ~ Override possible by trade
- ~ Accrued Interest
- ~ Net/Gross Consideration



Clearing and risk management

Clearing is essentially the management of counterparty risk on novated transactions between trade date and settlement date. The clearing house becomes exposed to the risk that the seller will not provide the securities or the buyer will not provide the cash. In either case the clearing house is obliged to fulfil the trade with the other party.

In order to cover the clearing house against this exposure margin calls are made on both the buyer and seller members of DVP2 and DVP3 trades. The calculation of this exposure depends on the whether the trades are DVP2 or DVP3.

The clearing house has two risks to consider:

- The risk that a member who is a net sender of cash fails to pay the clearing house.
- The risk that a member cannot deliver stock.

The clearing service will calculate the margin call for each member. To do so, it will take into account the change in price since the trade was done (variation margin) and the risk of change in price going forward (initial margin).

Collateral Management

To cover their risks **Syn~Clear** calculates margin requirements for the clearing house from each clearing member.

If the margin requirement exceeds the pledged collateral for any member firm then, subject to tolerances, a margin call is made.

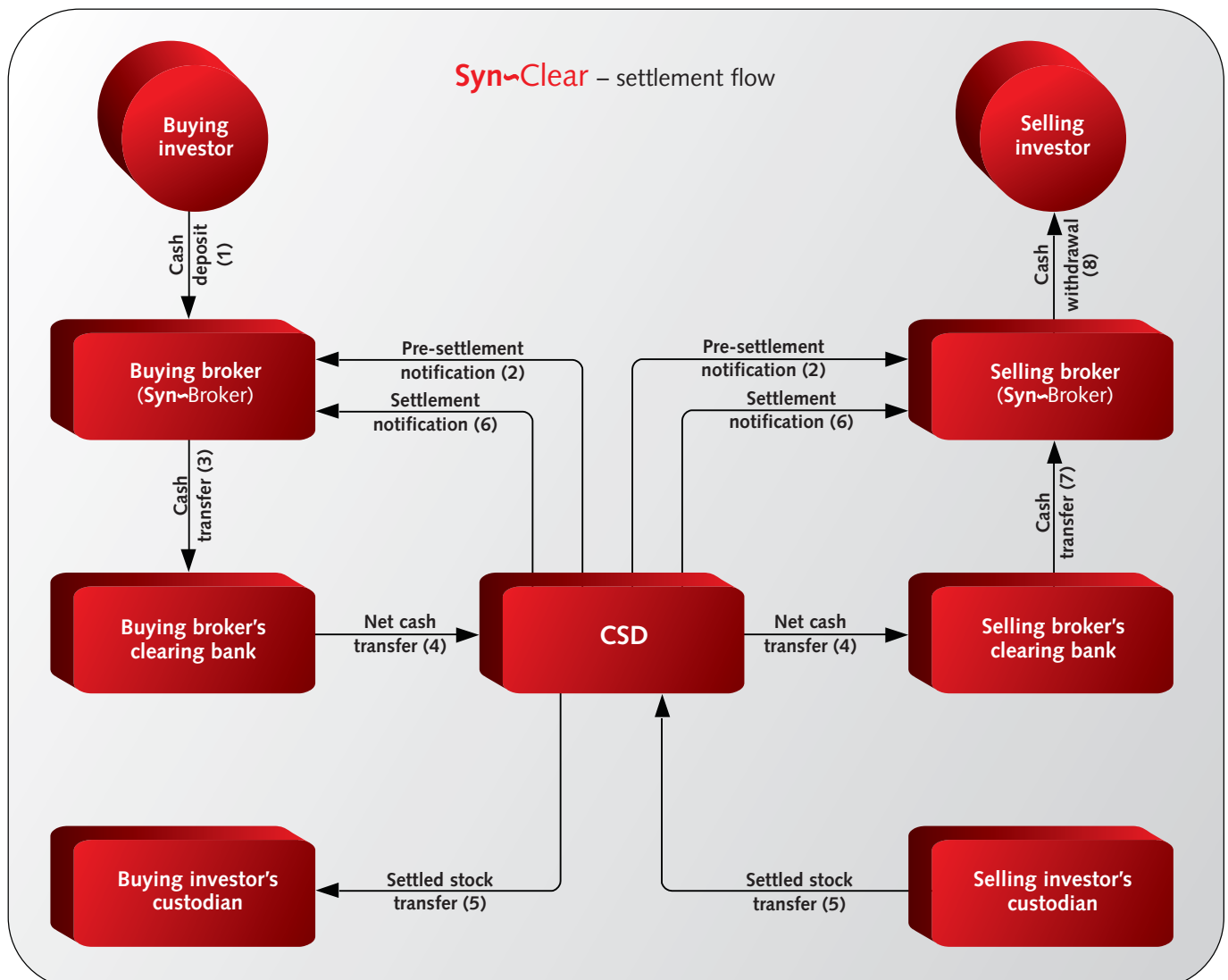
- ↪ Stock collateral
 - ↪ Low-risk securities such as government bonds
 - ↪ Periodically valued
 - ↪ Haircuts applied
- ↪ Cash

Settlement

Syn-Clear facilitates the automatic settlement of securities on a delivery versus payment basis.

Settlement models

- ✓ DVP1, DVP2 and DVP3 settlement is supported
 - ✓ Configured by instrument
 - ✓ Overridden by trade
- ✓ Net Settlements are calculated per custodian account as appropriate
- ✓ Upload of clearing cash balances from central bank is supported. This is used to validate settling cash before the settlement cycle.
- ✓ Securities are blocked until the cash is settled
 - ✓ Cash is settled via RTGS instruction + return status
 - ✓ ISO15022 standard messaging
- ✓ Upon clearance of the cash, the securities are credited to the buyer's tradeable account



Fails management

- ↪ Full tracking of pending and possible failing trades
- ↪ Configured lifecycle of fail events
 - ↪ Lending pools and automatic borrows
 - ↪ Buy-ins - attempt to cover the short position with a specially priced buy-in order
 - ↪ Compensation - cash compensation calculation if trade cannot be completed
- ↪ Automatic interface to AEMS NSC market for buy-in orders
- ↪ These events can be configured to take place:
 - ↪ Between trade date and settle date – no real fails allowed
 - ↪ On or after settlement date - real trade fails allowed

Depository Management

The amount of the trade is immediately deducted from both the seller's tradable and trade-dated position. The amount of the trade is also immediately added to the buyer's trade dated (but not tradeable) position. Further updates to these positions occur when the securities are actually settled, resulting in a final add to the buyer's tradable position.

Position-keeping models:

- ↪ Direct holding – final investor is directly known to the issuer and the CSD
- ↪ Indirect holding – final investor known only to broker (European and US model)
- ↪ Hybrid model - final investor position with broker known to the issuer and the CSD:
 - ↪ Full disclosure of final investor known at CSD
 - ↪ Corporate action processing well defined

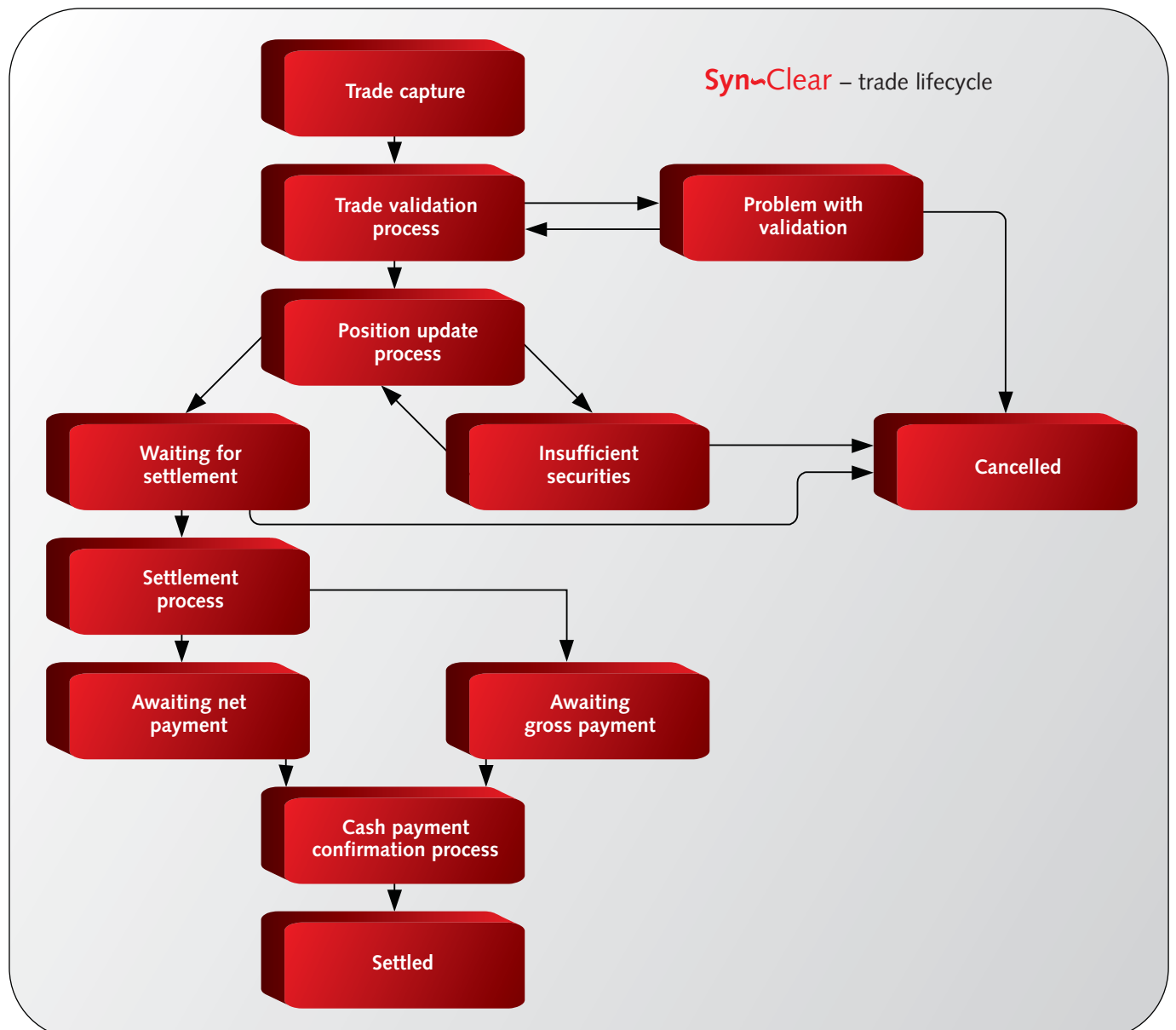
- ↪ Allows efficient netting at broker level for DVP3 settlement

Ledger postings

- ↪ Full multi-ledger accounts posting
 - ↪ Support for separate clearing house and CSD ledgers
- ↪ Real-time or batch generation
- ↪ Balanced debit/credit journals
- ↪ Flexible chart of accounts
- ↪ Flexible period open/close for back-dated adjustments and reworks
- ↪ File download to corporate general ledger

Member firm billing

- ↪ Charges to member firms can be posted to the ledger for periodic billing
- ↪ Journals are periodically created to facilitate billing and payment
- ↪ Payment are tracked against these journals



Registry management

A central registry of securities can be managed from within **Syn-Clear**. These registry positions are updated at the same time as the depository positions without any possible discrepancy between them, thus removing a possible failure and reconciliation point.

Central registry

- ↪ Real-time investor positions
 - ↪ Tradeable
 - ↪ Blocked
 - ↪ Borrowed and lent
 - ↪ Encumbered
 - ↪ Pledged
 - ↪ Held for inheritance

Transfer transactions

- ↪ Support for transfer transactions
 - ↪ Available for lending
 - ↪ Blocking
 - ↪ Pledging

- ↪ Encumbering
- ↪ Inheritance
- ↪ Feed of transfer transaction to the control module within the exchange platform

Corporate actions

- ↪ Benefits, re-orgs, advices and IPOs
 - ↪ General assembly
 - ↪ Cash dividend
 - ↪ Bonus issue
 - ↪ Premium offer
 - ↪ Rights issue
 - ↪ Bond redemption
 - ↪ Bond conversion
 - ↪ Coupon payment
 - ↪ Split
 - ↪ Reverse split
- ↪ Calculation of entitlements on positions
- ↪ Calculation of claims on pending/failed trades

- ↪ Transformation of pending trades
- ↪ Election tracking
- ↪ Fractional share management
- ↪ Calculation of withholding tax
- ↪ Feed of changes in investor positions to control module
- ↪ Tracking of cash dispersal to end investors
 - ↪ By cheque
 - ↪ By bank transfer
 - ↪ By cash delivery

Issuer support

- ↪ Data downloads to issuers of corporate action entitled holders
- ↪ Receipt from issuers of investor elections
- ↪ Issuer movements download - an end-of-day extract that provides issuers with details of movements that have occurred in their securities

NSC Integration

NSC is an exchange platform provided by AEMS. There are several points of integration between **Syn-Clear** and NSC. These integrations fall into three main categories:

- ↪ Transaction feeds
- ↪ Reference data sharing
- ↪ Compliance support

Inbound feeds from NSC to **Syn-Clear**

- ↪ Trades (using the M1 message format and the MMTP protocol)
- ↪ Securities
- ↪ Brokers
- ↪ Closing market prices
- ↪ Corporate action events

Outgoing feed from **Syn-Clear** to NSC

- ↪ Securities positions - for use in the control module
- ↪ Cash positions - for use in the control module
- ↪ Buy-in orders
- ↪ Depository and registry transfers
- ↪ Ownership definitions
- ↪ Client definitions
- ↪ Client account information

Reporting

Syn-Clear has built in report writing facilities allowing the intuitive and graphical definition of new reports. These can be delivered via a web portal using any standard browser and can be downloaded in various formats (PDF, comma-delimited file, etc.)

There are a number of pre-built reports. These are provided for three main categories of users:

Broker and custodian reports

- ↪ Open trades
- ↪ Problem trades
- ↪ Unallocated trades
- ↪ Settled trades
- ↪ Depository positions
- ↪ Broker event diary
- ↪ Lending report
- ↪ Open borrows
- ↪ Margin fulfilment report
- ↪ New client list
- ↪ Exception of broker task and messages

CSD staff reports

Trade capture

- ↪ Open trade
- ↪ Trade enquiry
- ↪ Invalid trades list

Clearing

- ↪ Risk margin report

- ↪ Collateral report
- ↪ Margin fulfilment report

Settlement

- ↪ Uncleared trades list
- ↪ Lending report
- ↪ Open borrows
- ↪ Open buy-in orders list
- ↪ Failed trades report

Depository

- ↪ Depository position
- ↪ Transfers list
- ↪ Pledge list
- ↪ Encumber list
- ↪ Blocks list
- ↪ Inheritance list

Trading Ledger

- ↪ Trial balance
- ↪ Balance sheet
- ↪ Broker statements
- ↪ Transaction list
- ↪ Journal list
- ↪ Corporate actions
- ↪ Corporate action diary

General

- ↪ Exceptions of CSD tasks and messages

Issuer reports

- ↪ Registry report
- ↪ Issuer movement list

Syn~Clear provides flexibility

User management and real-time workflow

- ↪ Users can be assigned to organisations and departments with defined:
 - ↪ Locations
 - ↪ Languages
 - ↪ Calendars
- ↪ Multiple roles can be assigned to users
- ↪ Roles are used to configure access and security
 - ↪ Privileges for data read and update (instruments, parties, accounts etc.)
 - ↪ Access to functions and menus
 - ↪ Routing of workflow items (e.g. authorisations, exceptions)

Settlement intervals

User control over the number of days between trade date and settlement date.

Ownership transfer date

User control over date on which ownership of stock and cash changes (typically this is set to either trade date or settlement date).

Multi-asset processing

Syn~Clear supports clearing and settlement of cash and derivative instruments.

Borrow/lend support

Support for automatic borrowing and lending pools to cover potential short positions. This automatic borrowing can be configured to occur at various points in the settlement timeline.

Short-selling controls

Support for restrictions on short-selling. These restrictions are passed to the exchange system

for validations before an order can be executed. Relaxation of these controls can be configured on an individual instrument basis giving users control to allow short-selling on only the most liquid securities. An example sequence of short-selling control levels might be:

- ↪ No short-selling allowed
- ↪ Same day buy followed by sell
- ↪ Same day sell followed by buy
- ↪ Trade date short allowed but settlement date position must be covered – with penalty fees
- ↪ Trade date short allowed but settlement date position must be covered – no penalty fees
- ↪ Full short-selling allowed on both trade date and settlement date - this implies failed trades are allowed

The users have complete control on these control levels.

Central counterparty operation

Support for novation of trades to a CCP and the management of the risk of the clearing house using margin calculations. This can be configured per instrument, giving users control to allow novation on only the most liquid securities.

Integration with exchange systems

Tightly-coupled integration with the exchange allows sharing of reference data between the exchange and CSD platforms. It also allows the monitoring of the depository and registry positions directly by the control module within the exchange platform, providing greatly enhanced regulatory control and compliance monitoring.

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