Swiss Exchange
Functional Requirements for ERM

I-ERM-FRQ-100/E, Version 1.0, 24 Aug 98

This document defines the functional requirements for ERM. It describes the solution where the solution is already clear or where it is easier to understand the requirement by describing the solution.

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Revision History

Version, Date	*Change Description*

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Version 1.0, 24 Aug 98	Final Version
Final Draft 1.0B, 24 Aug 98	
Final Draft 1.0B, 11 Jul 98	Review comments integrated
Final Draft 1.0A, 19 Jun 98	Final draft for external and internal review
Draft Version 1.0A, 19 Mar 98	New document

Table of Contents

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1. Introduction

1.1 Purpose & Scope

This document defines the functional requirements for ERM. The solution is described for a requirement where the solution is apparent and also where the understanding of the requirement can be simplified by describing the solution.

This document does not define:

- the requirements for systems outside ERM.
- non functional requirements.
- which functionality is delivered by which date (release plan).

1.2 Changes Since Last Version

This version is updated according to the review comments from the internal and external review. The open issue remaining in the last version is resolved.

1.3 Structure of this Document

Section 2 Contains an overview of ERM. It describes the background of the business and the business objectives.

Section 3 Describes the different users of ERM.

Section 4 Describes the scope of ERM. It explains the main components of the system.

Section 5 Contains the functional requirements of ERM. This is the main part of this document. The functional requirements are grouped in risk management for repos, centralised trading, bilateral trading, market operations and market supervision.

Section 6 Contains the legal requirements.

Section 7 Contains a glossary.

1.4 Relationship to Other Documents

🗎1 provides a high level understanding of the ERM system architecture and concepts.

Non functional requirements will be defined in 🗎3.

1.5 Definitions & Abbreviations

Definition/Abbreviation	Meaning
API	Application Programming Interface
ERM	Electronic Repo Market
GC	General Collateral
GUI	Graphical User Interface
INSE	INTERSETTLE
POA	Participant Own Application
PAPI	Participant Application Programming Interface
Repo	Repurchase Agreement

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Definition/Abbreviation	Meaning
SECOM	SEGA Communication
SEGA	SEGA Schweizerische Effekten-Giro AG
SWX	Swiss Exchange

1.6 References

reference & document title	applicable version and reference
1 ERM Systemkonzept	I-DEV-ERM-100D/D
2 ERM Business Plan	I-ERM-BUS-100/D
3 ERM Technical Requirements	I-ERM-TRQ-100/E

1.7 Outstanding Issues

No outstanding issues

2. Background and Business Objectives

A Repurchase Agreement, also known as a repo, is a money market transaction in which one party, the cash taker, sells his own or borrowed securities to another party, the cash provider. As part of the same transaction, it is also agreed that the cash taker will repurchase equivalent securities (same ISIN) from the cash provider at a later date. In the international repo market it is conventional to call the cash taker the *seller* of the repo, and the cash provider the *buyer* (buy and sell are viewed in regard to the movement of the collateral). This convention is followed in this document.

From an economic point of view the repo is considered to be a secured loan and the cash taker (seller) pays a repo interest to the cash provider (buyer) during the term of the agreement (i.e., up to the repurchase date). It is this interest rate which represents the price of the repo transaction.

A repo differs from a secured loan in the legal aspect. Ownership of the securities is transferred both, at the point of initial sale and at the repurchase. This means that there is a clear legal basis for ownership if one of the parties defaults during the term of the repo.

The repo market in Switzerland is in its early stages of development. The changes to the tax laws which represented a prerequisite to the development of such a market came into effect from the 1st January 1997. Prior to this date the two components of the repo transaction were regarded by the tax authorities as two separate transactions, each liable to tax. This made such transactions prohibitively expensive.

On 20 April 1998 the repo market in Switzerland was launched, based on telephone trading and the *Repo Light* service offered by SEGA/INTERSETTLE. SEGA/INTERSETTLE plans to extend this service to a full triparty repo service in the autumn of 1998. In order to exploit further the advantages of a highly integrated, efficient trading and settlement infrastructure provided by SWX and SEGA/INTERSETTLE for securities trading , it was decided to develop an Electronic Repo Market (ERM) in Switzerland. The ERM System is to be implemented by SWX, building on the technologies employed in the security trading system.

In addition to supporting the repo market in Switzerland, it is a goal for the ERM System to provide the ability to electronically trade in the international repo market. This would include repo products supported by Triparty Providers using non-Swiss instruments and in currencies other than Swiss Francs. The circle of trading participants would be extended to international banks, operating in different time zones.

2.1 Instruments

The ERM is conceived as a trading platform for so-called classic repos, sell/buy-backs and triparty repos.

Classic Repo

A classic repo has a single contract for the sale and repurchase of the securities, and the return on the cash is paid in the form of an interest payment, which is separate from the end proceeds (i.e., the cash flow associated with the repurchase).

Sell/buy-back

A sell/buy-back has the same economic effect as a classic repo, but involves two transactions (one for sale, and a second for the repurchase). Sell/buy-backs can be executed without any legal documentation linking the sale and repurchase transactions. They are also possible under the PSA/ISMA Global Master Repurchase Agreement (GMRA) which covers both classic repos and sell/buy-backs.

In the Swiss repo market a sell/buy-back is subject to the turn-over tax (Umsatzabgabe). The Swiss tax authority excluded only classic repos and triparty repos from the turn-over tax. This is different in other repo markets.

Documented Sell/buy-back

A documented sell/buy-back is regarded as a single contract from a legal viewpoint. This is important, because it provides the legal basis for active management of collateral during the term of the contract, for example, to cover risks related to changes in the market value of the collateral by means of using an “early close-out and re–pricing” mechanism to restore the balance between cash and collateral.

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Triparty Repos

The collateral or risk management aspects of a repo or documented sell/buy-back mean that there is a considerable amount of administration of such contracts. This has led to the introduction of so-called Triparty repos. These are repos in which a third party (in addition to the buyer and seller) acts as an agent for the clearing and settlement aspects of the transaction. The third party provides services to:

- Clear and settle the initial sale of the securities.

  Ideally this should use the Delivery versus Payment (DVP) mechanism, which guarantees that the transfers of money and securities take place simultaneously (or else that neither takes place).

- Clear and settle the repurchase of the securities.

- Provide services to manage the risk that the value of the securities provided as collateral changes during the term and the value of the cash side changes due to the daily accrual of repo interest.

  Such "market" risk can be managed by re–valuing the collateral regularly at market prices (mark to market), and requiring the seller (*or the buyer*) to provide additional margin securities (or cash) should the value of the collateral fall below (*rise above*) the cash value of the loan (margin call).

- Provide services to manage rights of substitution (where granted), coupon payments and, in the case of equity, corporate events.

Documented versus Non-Documented Repos

The ERM is conceived as a trading platform for documented and non-documented repos. The need for documentation may be requested by the market participants or by a regulating authority. This situation may be different in the various markets which ERM may support.

The repos tradable on the ERM may be covered by the PSA/ISMA GMRA, the Swiss Master Agreement or any other standard documentation.

Generally whether a repo contract type tradable on ERM needs to be covered by an agreement or not is not a question for ERM but rather for the market participants or regulating authorities.

2.2 Risk Management for Repos

Repo instruments offer significant advantages to participants in terms of the reduction of risk associated with trading in the money market. Risks, however, remain.

- Settlement Risk

  Settlement Risk can be minimised by means of the Delivery Versus Payment approach, which ensures that the transfer of securities and cash take place either simultaneously, or not at all.

- Market Risk

  During the lifetime of the repo, the value of the collateral changes in accord with market movements (incl. accrued coupon) and the value of the cash side changes due to the daily accrual of repo interest. The risks associated with this can be managed by means of variation margin, with a threshold agreed by the parties. When the divergence between the value of the cash and the collateral exceeds the threshold, the discrepancy is reduced by adjusting either the amount of cash or the collateral.

  For a Triparty repo, the Triparty Service provider minimises this market risk by marking the collateral to market on a daily basis and issuing margin calls as appropriate.

- Counterparty risk

  If one of the parties to a documented repo contract defaults during the term of the contract, the other party has legal rights to early termination of the contract and use of the collateral. This is a significant reduction in the credit risk associated, for example, with an unsecured loan.

  However, it may take some time to identify a default. In the meantime, obligations with other trading partners may rely upon either the cash or the securities involved in the (defaulted) repo contract. This means that counterparty risk must nonetheless be managed. This is achieved by monitoring and controlling the current total exposure to each counterparty.

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Thus, credit risk management, and the imposition of trading limits per counterparty plays a critical role in repo trading.

This translates to a requirement that trading in the ERM takes into account counterparty limits which are maintained by the participants.

- Legal Risk

  In the case of a default it is necessary to have a clear legal basis to define the ownership of securities and the status of outstanding transactions. The repo business generally operates on the basis of the PSA/ISMA Global Master Repurchase Agreement ("GMRA"), with country specific annexes. In an international market with cross-border transactions, the Triparty Service provides a contractual basis for the repo transactions.

  Currently it is a frequent occurrence that banks trade with one another without the necessary agreements having been completed. In such cases, the associated legal risk lies entirely with the banks involved.

Thus, the major requirement for the ERM System originating from consideration of risk management is that counterparty limits are defined and maintained, and that trading is constrained by these limits.

2.3 ERM Trading Forms

In principle, in a repo contract any security can be provided as collateral. The buyer must be willing to accept the quality of the offered security at the repo price agreed. This degree of freedom is possible in an OTC market, with bilateral dealing.

A centralised market provides a means to concentrate the liquidity of repo transactions by defining standard forms of collateral, and standard contract types.

Trading forms

The ERM provides a trading platform in which both centralised trading of highly standardised repo contract types and flexible bilateral trading exist side by side. Both trading forms aim to provide efficient means for cash takers and cash providers to find each other.

Trading constrained by counterparty limits

The trading forms supported by the ERM system result in trades between two participants. In all cases, a check is carried out before a trade is generated that the two parties involved are able to do so within the exposure constraints defined by their trading limits. By setting suitable values for the maximum exposure to another participant, a trading participant can therefore control the credit risk associated with repo trading with that counterparty (see section 2.2).

2.3.1 Centralised Trading for Standardised Repos

Central order book

Centralised trading is based upon a central order book for each instrument containing binding offers from both cash takers and cash providers. Orders are sorted according to *price-time priority*, such that for orders at the same price the oldest order takes priority. This form of trading is also referred to throughout the document as on-market trading. On-market trading is anonymous.

Automatic matching

On-market trading is *order-driven*. During the trading hours new orders are accepted and the system automatically attempts to fulfil the order from other orders within the book on the basis of *matching rules*. Thus, for example, if a seller (i.e., cash taker) enters a new order with a repo price equal or higher than the best (lowest) price demanded by a buyer (cash provider) the orders are matched against each other and a trade is generated. Note that the international convention defining buyer and seller roles leads to a reversal in the usual relationship for bid/offer prices (bid price is higher than the offer price). The price of the trade is solely defined by the matching rules.

Concentration of liquidity

The goal of centralised trading is to concentrate liquidity by funnelling supply and demand together. To achieve this, the instruments traded must both be standardised, and cover the main needs of the market participants. For the repo market this involves a standardisation of the collateral involved and the term of the contract.

Standardised Contract Types

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The standardisation of the collateral is achieved by defining general collateral instruments. general collateral is defined by means of a basket of securities which have a similar quality. The seller can provide any of the securities belonging to the basket as collateral when receiving the cash from the buyer. At the repurchase, the buyer returns securities of the same type (same ISIN, same selected subset of the basket) as originally purchased. An example of a general collateral basket could be "all Swiss federal, cantonal bonds and banks with rating of A or better".

The repo contract types traded on-market also have standardised conditions. In particular, contract types are defined with different term conditions; i.e., different purchase and repurchase date conventions. Two classes of instrument are foreseen, those with fixed term, and those with fixed repurchase date.

- Fixed term repos have a fixed relationship between the purchase and repurchase dates, for example, one week. As time progresses from one date to the next, the repurchase date also moves forward. Typically such repos are for short terms, measured in days or weeks.
- Fixed Date repo contract types are such that the period to the fixed repurchase date decreases until a cut-off is reached, after which trading in the instrument is no longer possible. New fixed date contract types are created as necessary to ensure that market needs are met. For example, it is intended initially to define fixed dates for 12 months in advance, one date per month.

Price Transparency

In addition to providing a means to concentrate liquidity, centralised trading also enhances the transparency of the market. All authorised participants have access to the order book, and the prices are generated based on simple rules. Prices are published to all participants. The contents of the book are visible, such that traders can assess the balance of supply and demand, in addition to the best prices available to them.

Voluntary Market Making

The centralised order book also provides the opportunity for participants to engage in voluntary market making. The ERM trading system includes functions to allow market makers to efficiently place two-sided prices in the market, and to maintain them as the market changes. Market making participants can earn from their voluntary role, while providing additional liquidity.

2.3.2 Bilateral trading for Non-Standardised Repos

Flexible bilateral trading

By its very nature the centralised trading is restricted to highly standardised contract types. The goal of the so-called off-market functionality provided by the ERM is to create an electronic means of finding counterparties which is more efficient than telephone trading for non-standardised contract types.

Finding potential counterparties

The ERM off-market functions facilitate finding potential counterparties by means of non-binding offers (known as indications of interest) which can be directed to some well-defined list of ERM participants. The trader specifies the recipients, and indicates the nature of the business he wishes to conduct, with the intention that the recipients respond with binding offers. The trader can then subsequently take one or more of the binding offers to generate the corresponding trade(s). Thus, the trader can carry out a form of tendering to satisfy his trading requirements.

In general the identity of the originator of a non-binding or binding offer is disclosed to the recipients, but it is also possible for the originator to specify that he remains anonymous.

It is also conceivable that trades are done by telephone, but entered into ERM as a straightforward means to transmit the trade details to SECOM for clearing and settlement.

Non-Standardised Contract Types and Standardised Contract Types

The standardised instruments of the centralised trading can be traded using the off-market functions, but the bilateral nature of the trading means that there can be much more flexibility in the contract conditions for the repo. Thus, in addition to the standardised contract types, it is possible to trade

- non-standardised general collateral repos

  These contract types use the same general collateral as that used in the instruments traded centrally, but the remaining conditions can be fixed by the traders involved as they wish. For example, the purchase and repurchase dates can be individually chosen, and conditions such as early termination can be agreed.

- special repos

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A special repo uses a specific security as collateral and the remaining conditions can be fixed by the traders involved as they wish. This means that specified bonds or shares can be used as collateral. In the trading of special repos, it is typically the collateral which plays the important role in determining the price rather than the cash. The repos are being used as a mechanism to borrow particular securities to meet delivery obligations from other business.

2.4 Markets

Markets as a framework

In order to provide a framework within which the expansion of trading can be structured, the ERM System will partition the repo contract types into *markets*. Thus, a particular repo contract type belongs to one market, and a market consists of a group of repo contract types.

Markets will typically be defined based upon their settlement behaviour, the type of the collateral and the availability of electronic interfaces for the transmission of settlement instructions.

Trading participants need not be active in all markets in the ERM. In order to be able to settle the repo contracts, the trading participants need to be members of the appropriate clearing and settlement organisations.

Initially ERM focuses on two repo markets:

Swiss Repo Market

The ERM project plans to deliver an electronic trading platform for the Swiss banks, including the Swiss National Bank, capable of trading Triparty repos provided by SEGA/INTERSETTLE. It is thought that foreign banks will also participate in the Swiss repo market. The currency for the cash transfers generally will be Swiss Francs. The electronic infrastructure based upon, the ERM, the SECOM and SIC systems will provide a very high degree of efficiency and automation in the administration of repo business in Switzerland. The development of SECOM for “Repo International”, which is a part of the SEGA/INTERSETTLE Project, enables also the trading and settlement of non-CHF repos with non-CHF denominated collateral in the Swiss repo market.

International Repo Market

The ERM project plans to deliver an electronic trading platform for international banks and investment banks, capable of trading classic repos. The currencies for the cash transfers will be the major currencies (EURO, GBP, USD and JPY). The collateral generally will be European government bonds. Today’s international repo business typically is settled via EUROCLEAR/CEDEL. The ERM international repo market will be a trading only market. This means in the beginning there will not be an interface to a specific settlement system. Participants decide where and how to settle the repos traded in this market.

2.5 Critical Success Factors for ERM

The ERM project has as a major goal the delivery of an electronic marketplace for trading in repo instruments.

The ERM trading platform, based upon technology which has been proved in the securities market with SWX’s EBS system, will have a real-time interface to SECOM. This will provide an integrated electronic infrastructure for repo business in Switzerland.

The ERM project is aimed at capturing part of the international repo business. Many of the critical success factors noted below in regard to the Swiss market apply equally in the international context. While the international market is already a mature market, it is growing rapidly, and there is an increasing awareness of the advantages electronic trading can bring.

The critical success factors are:

- Concentration of liquidity

  This is achieved by means of a centralised order book, with automatic matching for highly standardised general collateral repos.

- Efficient bilateral trading

  The off-market functions provide effective mechanisms to find counterparties for bilateral trading, with the possibility of flexible definition of the repo contract conditions (“specials”).

- Transparency in prices

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Prices are published to the trading participants in a market as they happen.

- Integrated trading constraints

  Trading in repo instruments exposes the participants to credit risks, which must be managed by means of trading limits.

- Time to Market

  The repo market in Switzerland is in its infancy. An early introduction of electronic trading can both boost the development of the market itself, and avoid migration costs for trading participants by allowing them to tailor their systems and procedures to efficient electronic processing from the beginning.

3. Users of the ERM

The ERM is conceived as an interbank marketplace.It is expected that the participants will be banks operating in Switzerland, and the Swiss National Bank, constituting a Swiss market and international banks and investment banks constituting a international market.

In order that the ERM marketplace works efficiently and in an orderly manner, it is necessary to have people to operate the market, and to regulate trading activity.

The roles which each of the ERM participants can play within the marketplace are described in more detail in the subsequent sections.

3.1 Trading Participants

The initial circle of trading participants is expected to consist of Swiss banks, foreign banks and the Swiss National Bank. (All trading participants have equal access to the Swiss market, and can trade with each other. Nonetheless, the SNB has a special role, which is described in further detail in section 3.2). These banks are members of SEGA/INTERSETTLE, and have access to the services offered via SEGA/INTERSETTLE's SECOM system.

It is not planned that non-banking organisations (e.g. large companies, cantons, money market funds) will participate directly in the market. ERM trading participants can act as agents on their behalf.

It is a clear goal of the ERM to attract international institutions and business. These banks and investment banks are likely to be globally or internationally active in the money market, the fixed income and the derivatives business. This reflects the close ties between trading in the money market including repos, fixed income instruments and options and futures.

Within any institution, there are two main types of user of the ERM.

- Traders are responsible for executing the repo transactions with other market participants.
- Risk managers have the legal responsibility to measure and control the risks associated with the institution's business.

3.1.1 Traders

Repos can be used for a wide range of purposes. These include

- a cheap means of general finance to meet cash flow obligations
- as a means to finance fixed income positions (buy in bonds, and repo them out to obtain the cash to pay for them)
- as a means of borrowing securities in order to take short positions
- as a means to obtain particular securities (as collateral in a repo), in order to meet settlement obligations
- as hedging instruments in relation to other interest rate curves (e.g. swap curve, money market curve)

The diverse uses of the instruments often result in two separate trading desks:

1. One (firm financing desk) focused on the financing aspects, making use of general collateral repos to obtain cash.
2. One (matched book desk) focused on making use of particular collateral and arbitrage trading.

As can be seen from the sample list of possible uses for repos, such trading desks are closely related to trading desks in other markets.

As in any market, and especially in one closely related to markets in other instruments, traders will operate not only to satisfy the needs of the institution and its customers, but also on their own account, taking positions and seeking to exploit arbitrage possibilities.

Some institutions will also act as market makers, quoting prices as both buyer and seller of general collateral.

3.1.2 Risk Managers

Risk managers themselves do not require direct access to the ERM marketplace. It is necessary, however, that

- transaction data is made available in electronic form for use in an institution's internal risk management systems
- mechanisms are provided to allow risk managers to restrict or control the risks which traders can undertake in the market.

3.2 Central Banks

Repo instruments represent an important tool of central banks to intervene in the money market. In the ERM, the Swiss National Bank (SNB) will be an active participant.

The SNB intends to use repo as a Monetary Policy Instrument, i.e., to influence Swiss Franc liquidity over particular time scales. The general collateral repo is ideally suited to this purpose. This means that the SNB will have very large sizes to place in the market. In doing so, the SNB has the need both to be able to disclose its activity ("send a signal to the market") and also to operate discretely.

Currently the SNB achieves this by means of tenders carried out by telephone. These tenders can take two forms:

1. In a Volume Tender, the SNB may indicate the price (repo rate) it is willing to offer. Participants bid for their desired size at the price set by the SNB.
2. In a Price Tender, the SNB wishes to inject or remove from the economy a particular cash amount. Participants bid for their desired size at the price they are prepared to offer. The SNB may distribute the cash amount or general collateral according to the best prices offered.

The circle of participants in such tenders is currently limited to a small number of large institutions. The SNB wishes to use the ERM as a means to extend this circle of participants to smaller institutions throughout Switzerland.

The SNB has a special use for counterparty limits (see also section 2.2). By using repos as an instrument of monetary control, i.e., to provide additional liquidity or to absorb liquidity from the market, SNB will typically use large order sizes. The ERM must allow SNB to ensure that this liquidity is spread sensibly within the market; i.e., the SNB can define limits (risk management functionality) on how much each potential counterparty can take.

3.3 Settlement Organisations

Repo instruments by their very nature require considerable administration in regard to settlement, clearing and margining. While currently this administration is frequently managed by trading participants' back offices, there is a growing trend towards the use of Triparty repos. These involve a service offered by a settlement organisation, in which, after the initial instructions regarding the contract conditions, the settlement and clearing of the purchase and repurchase transactions are automatically carried out, and variation margin is managed.

Triparty repos supported by SEGA/INTERSETTLE with its SECOM system are traded in the ERM. There is an electronic interface between the ERM and SECOM to transmit the settlement instructions in real time. After making the trade in the ERM, the repo contract is managed via the SECOM system.

The integrated technical infrastructure available to the Swiss market through the ERM and SECOM (including the connection to SIC) is a major contribution to cost efficiencies for the trading participants.

In subsequent phases of the ERM project, it is planned to expand the range of instruments which can be traded. In some cases this expansion will simply provide trading participants with

an effective means to find counterparties and to trade; the administration of settlement etc. will remain with their back offices. However, it is a goal of the ERM to provide participants with as efficient an infrastructure as possible for their repo business. Thus, where possible and appropriate, electronic interfaces for automatically sending instructions to settlement organisations will be developed.

This may involve the initial instructions for a full Triparty service (such as offered by SEGA/INTERSETTLE, Cedel, Euroclear), or simply the instructions for the initial purchase in a Sell/Buy-back, with responsibility for the remaining instructions retained by the counterparties.

3.4 Market Operation

The ERM is an electronic marketplace. The market operations staff are responsible for the orderly operation of the market. This involves a wide range of activities, which include:

- registration of new trading participants and their introduction to the market
- central registration of traders
- maintenance of reference data for the instruments, and management of the trading schedule
- monitoring the technical operation of all system components to ensure complete and accurate processing of transactions
- intervening in exceptional circumstances, such as an emergency due to a technical failure, or the suspension of a trader or participant for breaking market rules
- management of the billing of participants on the basis of their trading activities

3.5 Market Supervision

It is currently foreseen that the ERM will be a self-regulating market. This means that there will be an ERM market supervision body, with responsibility for the formulation of rules and regulations together with the participants, and for monitoring the adherence of the trading participants to them.

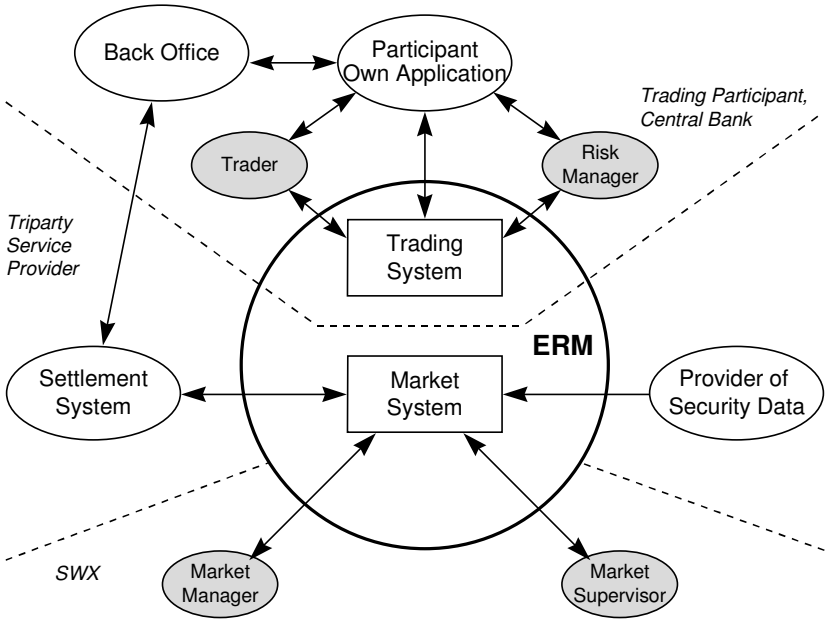
The ERM rules and regulations specify, for example,

- the requirements, obligations and responsibilities of the participants in regard to trading, settlement, risk management and legal documentation
- the organisation of the ERM in terms of its trading functions, the instruments which may be traded via ERM and their grouping into “markets”
- the procedures to be implemented in emergency situations
- the relationships between the ERM and Triparty providers.

The precise form of the market supervision has still to be decided, and is an integral part of the ERM development project.

4. Scope of ERM

The diagram below shows ERM, its users and its interfaces in a *schematic* form (The proposed technical architecture of ERM is described in 1.). Trading system in the diagram is understood as an abstract concept. The dotted lines show the boundaries between different organisations.



ERM Trading System

The ERM trading system provides trading participants (traders and risk managers) with electronic access to the ERM. It supports all activities necessary to trade via the central ERM order books, and bilaterally via the off-market functions.

There are two profiles available in ERM. The 'Trader' is allowed to use all trading functions. The 'Risk Manager' is allowed to use all counterparty limit functions. Display functions can be used by both profiles. A head trader, who has responsibility for the limits for his traders, can at the discretion of the participant be given a combined profile.

An interface (the Participant API or PAPI) is provided by the ERM trading system to allow participants to integrate with their own internal systems. In particular, this interface will provide participants with the possibility to transport trades to back office and risk management systems and to maintain their trading limits.

The ERM trading system is designed as a trading application. It does not support access to Triparty Service Providers or settlement system functionality.

Some repo functionality will be handled by the 'Participant Own Applications':

- order routing
- position keeping (middle office systems)
- portfolio and risk management (middle office systems)
- settlement and the interface between the participant and the Triparty service provider (back office).

ERM Market System

The ERM market system (which includes the "Web Gateway") is the hub which brings together the participants' orders and offers and generates the corresponding trades. It supports an on-market in which order books with continuous trading provide a central marketplace to concentrate liquidity and ensure price transparency. In addition it provides the off-market

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functions to help participants to find counterparties and to trade bilaterally, with a high degree of flexibility regarding the conditions of the repo.

Trades generated within the market system are automatically transmitted to the appropriate Triparty Provider or settlement system for a repo contract type. All subsequent operations regarding a transaction, excluding the closing of an open repo and termination of a repo which is terminable on demand, must be carried out directly between the participant and the settlement organisation.

The operation of the ERM is carried out by market operations staff, and functions are provided, for example, to maintain instrument data or set the trading schedules.

Market supervision staff represent the self-regulation of the market. They monitor market activity and carry out analyses of historical trading data in order to ensure that the rules and regulations of the market have been correctly applied by the trading participants.

Provider of Security static Data

The trading of special repos focuses typically on the delivery of a specific security. The ERM requires reference data for these securities in order to be able to calculate dirty prices (i.e., including accrued interest). The ERM itself will not maintain a database of all possible securities that could be traded via the special repo contract type. The intention is to create links to a suitable provider (or providers) of security reference data & prices, such that data can be obtained as required. The precise form of such links is currently under investigation.

Settlement System

The post-trading administration of repo contracts is considerable. Where appropriate the ERM will provide electronic links to settlement organisations, so that the settlement instructions for the repo contract are automatically transmitted after the trade has been generated. For Triparty repo instruments, the settlement organisation is the Triparty Service Provider. Thus, for example, for the Swiss market, settlement instructions for SEGA/INTERSETTLE's Triparty repos will be automatically sent from ERM to the SECOM system. All settlement operations and risk management functions (margining etc.) during the term of the repo contract are carried out by the SECOM system, without any further interaction with the ERM.

In some markets, it may be appropriate that the ERM simply provides an electronic trading platform, and that all settlement instructions are managed by the participants themselves.

In bilateral trading using the off-market functions the two participants can explicitly agree that they wish to send settlement instructions themselves, even if the default for such a repo contract type is to have instructions generated automatically from the ERM.

5. Functional Requirements

5.1 Risk Management for Repos

The documented nature of the repo instruments traded via the ERM means that many of the risks involved have been minimised (see section 2.2 for further details). The major risk involved, in common with other money market instruments, is counterparty (or credit) risk, i.e., that the counterparty defaults during the term of the transaction because of bankruptcy.

This means that it is important that each trading participant is able to control its exposure to other participants. This is achieved by means of trading limits, set and maintained by the trading participants. Before any trade is generated within the ERM, the system automatically checks whether at all the trade is possible within the constraints imposed by the counterparties limits.

5.1.1 Counterparty Limits

Each trading participant can define a trading limit for each of its potential counterparties. By means of this limit and related features described below, the participant can control the trading risk with this counterparty.

The trading limits apply to all transactions within the ERM system (both in the centralised and bilateral trading).

Terminology:

- **Trading Limit** is the absolute volume restriction calculated on the cash side (purchase price) on outstanding transactions with the defined counterparty.
- **Available Limit** is that cash value that has not yet been used in open transactions.
- **Used Limit** is that cash value that has been used in open transactions.

Before a trade can be done between two counterparties, a check is done that there is sufficient available limit for the transaction. If there is not, the transaction may be partially executed up to the available limit or is rejected if there is no available limit at all. If the transaction is allowed, then the available limit is reduced by the cash value of the transaction (i.e., the limit is a simple *volume limit*). Note that the available limit is always reduced by the cash value, both when the participant acts as buyer and as seller (i.e., the trading limit is a *gross* limit).

Freeing used limit on Repurchase Date

Available limits are therefore reduced at the trade time and remain used for the term of the repo. On the repurchase date, the transaction is closed (i.e., the repurchase takes place and the exposure is removed). Therefore, at the end of each business day, the repurchases from that day are added to the available limit.

Trade Cancellation

In order to be able to correctly account for mistrades, a trade cancellation function is available as one of the bilateral functions. Cancellation of the trade requires both parties to agree to the cancellation, before the settlement of the purchase transaction has been carried out. Once this has been achieved and the original settlement instructions have been cancelled, the volume of the original trade is added to the available limit.

5.1.2 Maintenance of Counterparty Limits

The trading participant has a number of possibilities to manage its exposure to a particular counterparty (this role and functionality is assigned to the profile 'Risk Manager'). The functions which are available are:

- Enter Counterparty Trading Limit

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A trading limit can be set for an identified counterparty. The limit can be entered in one of a number of currencies for which the ERM system maintains an exchange rate, the so-called *change fix*.

In addition to setting an overall trading limit, the participant can specify that it is not possible to trade with that counterparty in the centralised trading (e.g. because of a low rating). That means that the automatic matching in the centralised order book will treat the counterparty as if there was no available limit. Bilateral trading via addressed offers with that counterparty is, however, possible.

- Specify Limit Alert

  The risk manager can specify an alert threshold as a percentage of the trading limit, either for a specific counterparty or common for all counterparties. If the available limit of a counterparty falls below this threshold, an alert is given to the trader and risk manager.

- Specify Market Weightings

  As discussed in section 2.4, the instruments which can be traded in the ERM will be organised into markets. These will typically be based upon the currency of the collateral, and any settlement service provider for the repo.

  The trading participant can be active in one or more of these markets. For each of the markets, the participant can define a weighting factor. When a trade is done in an instrument belonging to a particular market, the available limit is decreased according to the cash value of the trade multiplied by the participant's weighting factor for that market. The weighting is also used when the cash value of the trade is returned to the available limit after the repurchase date.

- Specify Term Structure Restrictions for a Counterparty

  For an identified counterparty and a specified market, the participant can specify a time-window within which both the purchase and the repurchase transactions must fall. This is to be understood as a rolling time-window, defined relative to the trade date. Thus, for example, it is possible to specify that the earliest purchase date is T+2 business days and the latest repurchase date is the purchase date + 90 calendar days. This means that it is not possible to trade intraday, overnight, Tom Next and terms longer than three months.

- Specify Market Restrictions for a Counterparty

  For an identified counterparty, the participant can exclude trading in a particular market with this counterparty. This allows the existence or otherwise of settlement relationships in different markets to be taken into account.

- Modify Counterparty Trading Limit

  Participants can modify the trading limit during the trading day. Any changes to the trading limit are immediately reflected in the available limit. Changes may be to increase the trading limit, allowing further transactions. The trading limit may also be decreased below the prior available limit, meaning that no further transactions are allowed with that counterparty, until repurchases increase the available limit again.

- Cancel Counterparty Trading Limit

  This is a function which sets the trading limit to zero, and which ensures that no further trades can be done with that counterparty, even when repurchases take place. Cancel counterparty trading limit can also be used as an emergency function if a participant or counterparty is in default situation.

5.1.3 Limit Management Displays

The detailed structure of the GUI (graphical user interface) has not yet been designed, and will be the subject of prototyping and review. Thus, in this section, the description of the displays is at a high level, indicating the overall scope of information available.

Basically the information display will reflect above mentioned structure of the functionality. The displays of limit management are available to traders and risk managers. The following information will be available for display:

- Trading, available and used limits

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Trading, available, used limits and the alert thresholds per counterparty can be viewed on a list.

- Detailed limits and specific settings for a counterparty

  There is a detailed view for a specific counterparty. It also shows the trading, available, used limit and additionally all the specific settings for this counterparty. The specific settings include centralised trading (yes or no), term structure restrictions, market restrictions and the alert threshold.

- Market Weightings

  The market weightings set by the risk manager can be viewed.

- Limit Alert

  A limit alert is automatically displayed if the available limit of a participant falls below the specified percentage.

5.2 Centralised Trading

5.2.1 Instruments

The repos traded centrally are standardised general collateral repos or standardised specific collateral repos.

Standard Contracts based on General Collateral

The general collateral is defined by a basket of acceptable securities which may be put up as collateral by the seller. The basket is defined in SECOM, which uses the list of securities to transfer securities from the seller to the buyer (cash provider) on the purchase date. On the repurchase date in the reverse direction equivalent securities (same ISIN) are returned to the seller (cash taker). An example of a basket could be “SNB Basket” which could be defined to be all Swiss federal, cantonal bonds and banks with a rating higher than A.

There are two categories of standardised contract types:

1. General Collateral Repo with Fixed Term

   These contract types are based on a general collateral basket, with a fixed time duration between the purchase and repurchase dates.

2. General Collateral Repo with Fixed Repurchase Date.

   These contract types are based on a general collateral basket, with a fixed repurchase date. This allows the definition of contract types which “mature” on the same date as other forward trading activities in the international money market (e.g., the third Wednesday in the month)

Standard Contract Types with Fixed Term

The ERM supports contract types of the category **General Collateral Repo with Fixed Term.** The following table contains, as an example, the initial set for GC repos fixed term based on the SNB basket. Other terms or contract types with other baskets can be added**:**

Contract Type Name	*Purchase Date*	*Repurchase Date*
Intraday GC	Trade Date	Purchase Date
Overnight GC	Trade Date	Purchase Date + 1 Business Day
Tom Next GC	Trade Date + 1 Business Day	Purchase Date + 1 Business Day
Spot Next GC	Trade Date + 2 Business Days	Purchase Date + 1 Business Day
1 Week GC	Trade Date + 2 Business Days	Purchase Date + 7 Calendar Days
2 Week GC	Trade Date + 2 Business Days	Purchase Date + 14 Calendar Days

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Standard Contract Types with fixed Repurchase Date

Contract types of the category general collateral repo with fixed repurchase date will be defined such that there are fixed repurchase dates for some number of months (e.g., up to one year) in advance of the current date. In each case, the purchase date is defined to be the trade date + 2 business days. The repurchase date is fixed.

As time advances, the duration between the purchase and repurchase dates of fixed date contract types shrinks, and will eventually overlap with that defined in the fixed term instruments. In order not to split the liquidity of the market in the standardised instruments unnecessarily, a last trading date is defined for each fixed date contract type. The last trading date can be set to 4 Business Days before the Repurchase Date, avoiding an overlap of contract conditions with those of the fixed-term Spot Next GC.

ISIN as identifier for each Standard Contract Type

Each Contract Type traded centrally in the ERM is uniquely identified by an ISIN. Thus, for example, the fixed term contract types for a general collateral "SNB Basket" each have an ISIN, and these ISIN's are different to those identifying the fixed term contract types for a general collateral "Euro Basket".

Centralised Order Book for each Standard Contract Type

Each Contract Type traded centrally in the ERM has its own Order Book in which cash takers (sellers) and cash providers (buyers) can place their orders, and trades are automatically generated as appropriate (within the constraints imposed by counterparty trading limits). For each contract type there is a single currency, which defines the currency of the cash transfers involved in the repo.

The following list is an example for one standardised contract type. It specifies the initial set of standard specifications generally applicable for GC repos based on the SNB basket. Other sets of standard conditions can be used for other standardised contract types:

Contract Type Name	*Overnight SNB*
Contract Type ISIN	*CH0001000011*
Business Type	*General Collateral Repo*
Basis amount	*1 Million*
Contractual Currency	*CHF*
Cash Size/Purchase Price	*Trade Size * Basis Amount*
Accepted Securities	*SNB Basket*
Purchased Securities Quantity	*Calculated by SEGA*
Purchase Date	*Trade Date*
Repurchase Date	*Purchase Date + 1 Business Day*
Pricing Rate Type	*Fix*
Pricing Rate Index	*None*
Price Differential Payable Periodicity	*Once*
Price Differential Payable First Date	*Repurchase Date*
Margin Ratio	*100%*
Right for Substitution	*No*
Terminable on Demand	*No*
Administration Type	*Triparty Repo*
Triparty Repo Service Provider	*SEGA/INSE*

In the trading a repurchase agreement is completed by the following variable contents:

- Buyer
- Seller
- Trade Size
- Price (pricing rate)

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Standardised Special Contract Types

In existing repo markets, some particular bonds "go special" for short periods of time; i.e., they become particularly sought after as collateral and the repo prices move away from the general repo price level. This reflects the use of the bond in a related market. For example, it becomes the "cheapest to deliver" for a bond future, or is a benchmark required in hedging a new bond issue.

If there is demand from trading participants to trade such contract types centrally, standardised contract types based upon the particular bond as collateral will be created in the ERM. Both fixed term and fixed repurchase date contract types are possible, and can be created as appropriate.

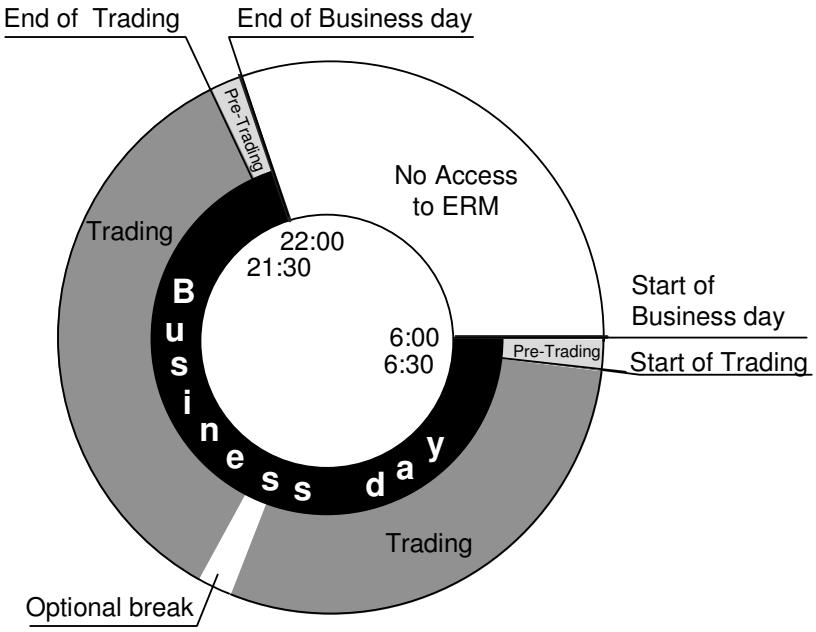
5.2.2 Trading Phases

The centralised trading of the ERM allows continuous access to the order book during the ERM business day. During trading, prices are generated according to the matching rules on the basis of supply, demand and the counterparty trading limits.

The following section describes the normal operation of the centralised trading in a single instrument. In order to simplify the description, the way in which exceptional conditions (e.g. emergencies) are handled is described separately.

5.2.2.1 Normal Operation

The diagram below displays in overview the initial trading phases for an order book planned for the ERM:



The particular times for the different phases (phase changes) can be set as required. The times in the diagram represent examples. The flexibility to set the trading schedule means that near-24-hour trading is possible.

- Pre-Trading

  During the pre-trading period, participants may enter, modify and delete orders from the central order book. Orders are not automatically matched against each other, and no trades are generated.

- Start of Continuous Trading

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At a scheduled time continuous trading is started for the order book. This means that orders entered into the book after this time will be automatically matched against those orders which are present in the book.

It is possible that there are orders already in the book which could match against each other (for example, as a result of the order maintenance by participants during the pre-trading period). Thus, before new incoming orders are processed, the existing orders are taken out of the book and automatically re-inserted in their *time sequence*, with the oldest orders first. The automatic matching is activated before the reinsertion.

Thus, orders remaining from the pre-trading period undergo automatic matching first, using the same rules as applied during continuous trading.

- Continuous Trading

  During continuous trading participants may enter, modify and delete orders from the central order book. Incoming orders are matched against orders in the book according to the matching rules, and appropriate trades generated.

- (Optional) break

  During the trading day, it is possible to schedule one or more interruptions to trading. During the period of the break, participants can maintain their orders, in the same manner as the pre-trading period. At the end of the break, continuous trading is resumed. This resumption functions exactly like the start of continuous trading described above.

- Close of Trading

  At the end of the trading period, the automatic matching is deactivated, and the pre-trading period for the next business day commences. At the close of trading all orders with expiry of the current business date are deleted. Orders with longer validity remain in the order book and will participate in trading on the next business day, unless they are explicitly deleted by the participant in the (pre-trading) interval.

  The close of trading time is scheduled (by the market operations staff) such that any settlement instructions will be sent automatically to a settlement organisation before their cut-off time. For example, for overnight repos in CHF, this cut-off time is currently 16:00 (SIC stop 2), and the close of trading for this instrument will be scheduled to happen some minutes before this time.

5.2.2.2 Emergency Procedures for On-Market

No computer system is 100% safe against failure. Suitable technical solutions (e.g. duplication of hardware) can significantly reduce the risks of system unavailability or loss of data. Nonetheless, it is necessary to foresee possible failure situations, and to specify fall-back solutions and the procedures to return to normal operation.

The technical design for the market system will minimise the risk of a failure of the market system. Duplication of hardware and software elements mean that failures of individual elements should not affect the market operation. It is nonetheless possible, that the market operation is interrupted, for example because of a major power failure.

It is a priority for ERM that the disruption to trading due to a failure of the market system is minimised. This is achieved by a rapid recovery procedure. This restores the market system to a self-consistent state (consistent order book and database), and allows participant's trading systems to re-synchronise with the market system.

Recovery of the Market System

A failure of the market system affects all participants of ERM. The procedures for restoring normal operation after a failure thus involves the participant's trading systems. The following describes the functional aspects of the framework in which recovery takes place:

Recover to a stable technical state

- The market system recovers and allows re-connection by the trading systems.
- A period of time is defined for trading systems to re-synchronise with the market system. Requests from trading systems, other than those for re-synchronisation are rejected.
- At the end of the re-synchronisation period, normal operations are resumed with the order books in a state called *break*. In this state, participants may maintain their orders, but continuous trading is deactivated. This is similar to the behaviour during the pre-trading period.

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Resume trading operation as appropriate

Market operations staff have functions available to manually control the resumption of continuous trading, if that is appropriate. The procedure to restart continuous trading is the same as that applied automatically at the start of normal trading operation.

If the interruption has been such that it is no longer correct to resume trading for the current business day, it is possible to manually close the trading day and start the pre-trading period for the next value date.

See also section 5.4.8 regarding emergency procedures to be invoked when trading participants suffer system failures.

5.2.3 Order Entry and Trading On Market

This chapter describes the order types for trading against the central order book:

- Normal order
- Accept order
- Fill-or-Kill order

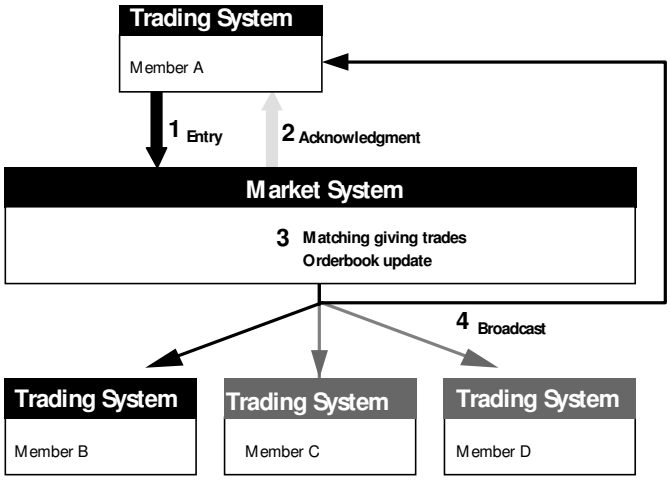
These orders are only used for centralised trading of the standardised repo contract types. Therefore, they do not allow the trader to specify exceptions to the standardised repo conditions.

In order to avoid repetition, the functionality of all order types is described in terms of variations from the basic form represented by the normal order. A summary is included to facilitate comparisons between the order types.

5.2.3.1 Overview of Order Processing

The normal order represents the basic order type in ERM and is a binding offer to take or provide cash (sell or buy a repo), with the repo conditions defined by the standardised contract type, in the centralised market.

The following diagram shows the input of a normal order within ERM schematically. The figures in the text refer to the individual flows in the diagram.



For each order entry from a trading system (1), the market system sends to that trading system an acknowledgement of receipt of the order together with the result of validation (2). The acknowledgement contains a time stamp and an identification for the order and a code which defines the status of the order (e.g. specifying the reason in the case of rejection of the order).

The order entry results in changes to the order book and possibly some trades (3). These are broadcast (4). The market system ensures that order information confidential to a particular participant is only received by that participant, while all other participants receive only public

information. In the case of the broadcast of a trade, only the two parties involved receive confidential information.

5.2.3.2 Normal Orders

The normal order represents the basic order type for ERM centralised trading. It is a binding offer to buy or sell (provide or take cash) a standardised repo contract type.

Attributes

The following are the attributes of a normal order which may be entered or chosen by a trader.

- Buy or Sell

  This defines whether the trader is acting as Cash Taker (Sell) or Cash Provider (Buy).

- Contract Type Identification

  This defines the contract type to be traded (ISIN)

- Size

  The size must be an integer *n* (greater than 0). This means that the order is for *n* times the basis amount of the contract type (e.g., taking or providing CHF *n* Million).

- Price

  The price is entered as an interest rate (pricing rate, repo rate). The price is checked against the valid price steps for the instrument.

- Expiry

  The trader can define maximum life of the order by defining an expiry type. The possible expiry types which can be defined are:

  - **"Good 'til day".** The order is automatically deleted at the next official close of trading in the instrument. This is the default.
  - **"Good 'til date".** The order is automatically deleted at the official close of trading on a date specified, which may be up to maximally one year in the future.

- Participant Internal Reference

  The participant internal reference is an optional text field. The reference is included in trade data. It may be used by the participant to facilitate subsequent tracking of the order and any trades arising from it.

- Market Making Indicator

  The market making indicator defines the order as a market making order.

In addition to these attributes, the identity of the trader and his participant are sent automatically by the trading system to the market system.

Basic Maintenance Functions for Normal Orders

Functions

The following functions are available for the entry and maintenance of normal orders:

- **Enter normal order** supports the input of the attributes of a new normal order.

  The trading system transmits the normal order to the market system as the type normal order. As acknowledgement from the ERM it receives a time stamp, an identifier for the order and a code defining the status of the order.

- **Delete normal order** removes an order from the central order book.

  The order is specified by the order identifier and a delete request is sent to the market system. Continuous matching means that an order may undergo partial or complete matching before the delete request is carried out. The result of the deletion sent from the market system indicates if the order had been changed in the interval between the entry and the execution of the request.

- **Modify normal order** changes the attributes of an order previously entered into the market.

  It is possible to modify the value of all the attributes originally entered. In order to ensure that modifications of price and/or size do not gain an unfair advantage in the price-time

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sequence of the order book, modification of an order results in a new order which has a new identification and new time stamp.

Double Order Entry for Market Making

Entry of two market making orders

A double order represents support for voluntary market making by facilitating the entry of two market making normal orders. It permits the entry of both a buy and a sell price limited order with a price spread for a single instrument at one time.

The trading system enters the double order into the ERM as two separate normal orders (sell and then buy), and they appear subsequently as separate orders in the central order book.

The entry of a double order involves all the attributes of a normal order, except that there are two different prices and two sizes which may be different. The double order simply represents a means of avoiding double input of the common attributes.

Mass Functions for Market Making

Mass functions support voluntary market making by allowing the trader to work with a selected set of orders as a group (market making indicator, trader identification), rather than accessing each one individually. They apply only to a participant's normal orders which are defined as market making, and permit a participant to rapidly adjust market making positions in response to market conditions. This is envisaged as follows:

- **Modify** a selected set of orders in the market system order book**.**

  The orders can be selected upon the basis of a number of criteria, for example, by market or by instrument. Then, for example, the price of these orders may then be incremented or decreased by a number of basis points.

- **Delete** a selected set of orders in the market system order book**.**

5.2.3.3 Accept Orders

The accept order type supports the possibility of rapidly responding to available orders in the order book. An accept is entered with price and size limits, and matches against all available orders on the opposite side of the order book within those limits. After matching has been completed, no order with any remaining size is added to the order book. The accept thus represents a means of taking a currently available volume, without a partial fulfilment resulting in an order added to the order book.

Attributes

The accept differs from a normal order in the following aspects:

- An accept can only be entered during continuous trading.
- The accept has no lifetime beyond the first attempt to match against the order book; therefore no expiry attribute is necessary.

Functions

An accept order may only be entered. There are no functions to modify or delete an accept, because it has no life beyond the first matching transaction.

5.2.3.4 Fill or Kill Orders

The Fill-or-Kill order is one which is executed in its entirety or cancelled. Thus, either the complete size requested is available in the order book at the required price when the order is matched, or no trades at all result and no new order is added to the order book.

Attributes

The Fill-or-Kill order differs from a normal order in the following respects:

- A Fill-or-Kill order may only be entered during continuous trading.
- The Fill-or-Kill has no lifetime beyond the first attempt to match against the order book; therefore no expiry attribute is necessary.

Functions

A Fill-or-Kill order can only be entered. There are no functions to modify or delete a Fill-or-Kill order, because it has no life beyond the first matching transaction.

5.2.3.5 Summary of On-Market Order Types

The trading system supports three order types for the On-market:

- Normal order
- Accept order
- Fill-or-Kill order

The following tables are a summary of the attributes and the available functions for the different On-market order types.

Table 1 lists the attributes of each of the three order types supported by the trading system. Some attributes are not applicable (**N/A**) for a particular order type. If an attribute is applicable, a value may be either **required** or **optional**.

Attribute	Normal	Accept	Fill-or-Kill
Buy or Sell	required	required	required
Contract Type Identification	required	required	required
Size	required	required	required
Price	required	required	required
Expiry	required	N/A	N/A
Market Making Indicator	required	N/A	N/A
Participant Internal Reference	optional	optional	optional

Table 1: Attributes for On-market Order Types

Table 2 specifies which functions are available for the entry and maintenance of the three order types. In some cases the nature of the order type means that functions are not applicable (**N/A**). For example, an accept order does not get written into the order book; therefore a delete function does not make sense. Otherwise, functions are either available (**yes**), or not (**no**).

Function	Normal	Accept	Fill-or-Kill
Enter	yes	yes	yes
Modify	yes	N/A	N/A
Delete	yes	N/A	N/A
Double entry	yes, but only market making	N/A	N/A
Mass modify	yes, but only market making	N/A	N/A
Mass delete	yes, but only market making	N/A	N/A

Table 2: Functions for On-market Order Types

5.2.4 Price Types and Price Steps

All orders which can remain in the order book have to have limited prices.

Note, that it is possible in exceptional circumstances that a price becomes negative; i.e., that the cash taker *receives* rather than pays interest. Thus, all prices in the ERM include a sign.

The smallest unit for a price (tick) is defined as a Price Step. This price step is defined in a table, which allows flexibility in the smallest unit. A maximum of 6 decimal places will be supported.

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5.2.5 Trading Safeguards

Automatic matching of orders means that errors in entering the price and size of an order can have unintentional, but serious consequences. While it is possible to reverse mistrades when the counterparty agrees (see section 5.3.4.3), it is desirable to avoid such trades happening.

Thus, the order entry functions in the trading system include plausibility checks on price and size.

Price

In his trading profile the trader can specify a deviation in percent to the last paid price in a standardised contract type. If the entered price differs more than this percentage from the last paid price a warning is shown.

Size

In his trading profile the trader can specify a maximum size for standardised contract types. If the entered size is greater than the maximum a warning is shown.

5.2.6 Information Display to Traders

The detailed structure of the trader GUI has not yet been designed, and will be the subject of prototyping and review. Thus, in these sections, the description of the displays is at a high level, indicating the overall scope of information available.

5.2.6.1 Centralised Market

Traders are informed about activity in the centralised trading by means of:

- an overview of the market in a number of instruments

  The “Market Overview” displays for a number of repo instruments on the “inside market”, i.e., the best offers, together with information regarding the last price paid.

  Traders can define the set of instruments to be displayed together.

  The inside market displays two sets of information. It displays the overall inside market without taking into account any constraints imposed by counterparty limit and it displays the best buy and sell prices and sizes *available to that particular trading participant.* This can differ from the overall inside market because of the consequences of the constraints imposed by trading limits.

- views of the central order books

  The trader can view the central order book for a single repo instrument in greater detail than that available in the market overview. The full contents of the order book are displayed in the form of cumulated sizes at each price. Note, however, that *the cumulated sizes take no account of the constraints of trading limits*, so that the displayed size may not actually be available to the trading participant.

  This display provides the trader with an indication of the overall supply and demand in the market.

- information regarding paid prices (“Ticker”)

  As trades are generated in the continuous trading, the price and size are published to all participants. The identity of the two parties involved is not disclosed. This provides traders with an indication of current trading activity and price.

  Note that the ticker displays paid prices of on- and off-market trades

5.2.6.2 Own Activities

The trader can request details concerning trading activity by his trading participant or by his trader ID:

- own orders open in the central order book
- history of all own orders over a specified period
- history of own trades, with details of prices, sizes and counterparty

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Note that history of own trades displays on- and off-market trades

5.3 Bilateral Trading

Bilateral trading provides a framework within which participants can trade with a high degree of flexibility regarding specification of the conditions of the repo contract. This contrasts with the centralised ERM on-market, which supports trading in standardised repo contract types, in which all the repo conditions are pre-defined, and traders only need to specify in their orders their role as buyer or seller, the number of contracts and the price limitation.

Note: There will be no centralised order book for non-standardised types.

5.3.1 Instruments

The bilateral trading functions support trading in non-standardised repo contract types, in addition to the standard contract types traded on-market. This means that it is possible to trade a repo with all the conditions specified and agreed by the two traders involved. This gives participants the flexibility to tailor the repo instrument to precisely their particular needs.

In order to be able to identify non-standardised repos across different IT systems (e.g. bank internal, SECOM, ERM), these instruments are identified via two ISIN's. These two ISIN's represent two *classes* of repo contract type, rather than clearly defined contract types. In particular, it is possible to trade

1. "General Collateral Repo – Non-Standardised"

   This contract type specifies that the underlying collateral is general, to be identified in the trade by a reference to a standardised basket (e.g., "SNB Basket"), but does not fix the remaining conditions of the repo contract.

2. "Special Repo" contract type

   This contract type specifies that the underlying collateral is a particular security, to be identified in the trade, and also does not fix the remaining conditions of the repo contract.

The non-standardised nature of the contract types being traded means that the trader must specify the details of the repo contract when entering the indication of interest or addressed offer. In order to avoid having to specify each attribute of a contract manually each time an off-market function is used, default values are used as much as possible. These defaults are default values by trader for the non-standardised contract types, but they can be overwritten by the trader as required.

General Collateral Repo – Non-Standardised

The "General Collateral Repo – Non-Standardised" contract type, with SEGA/INTERSETTLE as Triparty provider, is held in the ERM as a single instrument, identified using an ISIN. It acts as a container for all non-standardised GC business. The following is an example for a non-standardised contract type. It specifies its fixed contents.

Contract Type Name	*General Collateral Repo – Non standardised*
Contract Type ISIN	*CH000'100'601'1*
Business Type	*General Collateral Repo*
Purchased Securities Quantity	*Calculated by SEGA/INSE*
Administration Type	*Triparty Repo*
Triparty Repo Service Provider	*SEGA/INSE*

In the process of the bilateral trading a repurchase agreement is completed by the following variable contents. In order to facilitate the trader entry of offer and trade details, a trader can define for a subset of the variable contents default values to be used in the bilateral trading in a GC non-standardised contract type. However, the trader can override any of the default attributes, customising the contract type to whatever specific needs are involved.

Buyer	

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Seller	
Price (pricing rate)	
Contractual Currency	*trader default available (e.g. CHF)*
Cash Size/Purchase Price	
Accepted Securities	*trader default available (e.g. SNB Basket)*
Purchase Date	
Repurchase Date	
Pricing Rate Type	*trader default available (e.g. fix)*
Pricing Rate Index	*trader default available (e.g. None)*
Price Differential Payable Periodicity	*trader default available (e.g. Once)*
Price Differential Payable First Date	*trader default available (e.g. repurchase date)*
Margin Ratio	*trader default available (e.g. 100%)*
Right for Substitution	*trader default available (e.g. No)*
Terminable on Demand	*trader default available (e.g. No)*

Special Repo – Non-Standardised

The "Special Repo – Non-Standardised" contract type, with SEGA/INTERSETTLE as Triparty provider, is held in the ERM as a single instrument, identified using an ISIN. It acts as a container for all non-standardised special business (specific collateral). The following is an example for a non-standardised contract type. It specifies its fixed contents.

Contract Type Name	*Special Repo – Non standardised*
Contract Type ISIN	*CH000'100'701'1*
Business Type	*Special Repo*
Administration Type	*Triparty Repo*
Triparty Repo Service Provider	*SEGA/INSE*

In the process of the bilateral trading a repurchase agreement is completed by the following variable contents. In order to facilitate the trader entry of offer and trade details, a trader can define for a subset of the variable contents default values to be used in the bilateral trading in a special repo non-standardised contract type. However, the trader can overwrite any of the default attributes, customising the contract type to whatever specific needs are involved.

Buyer	
Seller	
Price (pricing rate)	
Contractual Currency	*trader default available (e.g. CHF)*
Cash Size/Purchase Price	
Purchased Securities	*trader default available (e.g. ISIN)*
Purchased Securities Quantity	
Purchase Date	
Repurchase Date	
Pricing Rate Type	*trader default available (e.g. fix)*
Pricing Rate Index	*trader default available (e.g. None)*
Price Differential Payable Periodicity	*trader default available (e.g. Once)*

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Price Differential Payable First Date	*trader default available (e.g. repurchase date)*
Margin Ratio	*trader default available (e.g. 100%)*
Right for Substitution	*trader default available (e.g. No)*
Terminable on Demand	*trader default available (e.g. No)*

5.3.2 Trading Periods

The off-market functions are available from start of business day until the end of business day. During one business day the same value date is traded. Therefore, T+X always means trade date equals the current business date, and value date is the trade date plus X business days.

There will not be a switch of the value date during the current business day. It is not, however, appropriate to trade all contract types during the complete business day. For example, in the Swiss market, the cut-off for clearing and settling overnight repos is 16:00.

Therefore, the ERM off-market functions enforce a cut-off in trading based upon time parameters which can be maintained by the ERM Operations staff. These time cut-offs apply to the combinations of purchase date, currency and settlement system, with the intention of ensuring that the trades can indeed be settled on that date. Thus, for example, the cut-off in SECOM for CHF with the purchase date equal to the current business date might be 15:50.

5.3.3 Overview of Off-market Functions

The ERM provides the following off-market functionality:

- Indication of Interest

  This enables a participant to notify one, several or all ERM-participants of an interest in trading in a particular instrument. The intention is to stimulate reaction from other interested participants in the form of addressed offers.

- Addressed Offer

  An addressed offer is directed by a participant to another particular ERM-participant. The recipient of the offer can take it to generate a trade or explicitly reject it. Trades from addressed offers are forwarded to SEGA/INTERSETTLE.

- Trade Cancellation

  In the case of a mistrade, the two participants involved can agree to reverse the original trade. The volume of the original trade is returned to the available limit of each party.

- Close Repo

  ERM supports closing of outstanding open repos and repos which have been agreed to be terminable on demand.

The off-market activities are not bound to the periods of the centralised trading in the on-market, but are available throughout the ERM business hours (within the constraints noted in section 5.3.2).

5.3.4 Entering, Modifying and Deleting Off-Market Offers

5.3.4.1 Indication of Interest

The indication of interest is a means of expressing interest to one, several or all participants in trading off-market in a particular repo. It can be understood as a request for quotation, with the potential counterparties being asked to provide offers in the role of cash taker, cash provider or in both roles. It is of a non-binding nature, and it is optional to give a price, a size, a term or to identify the wish to act as cash taker or cash provider. The participant's identity is broadcast with the indication of interest.

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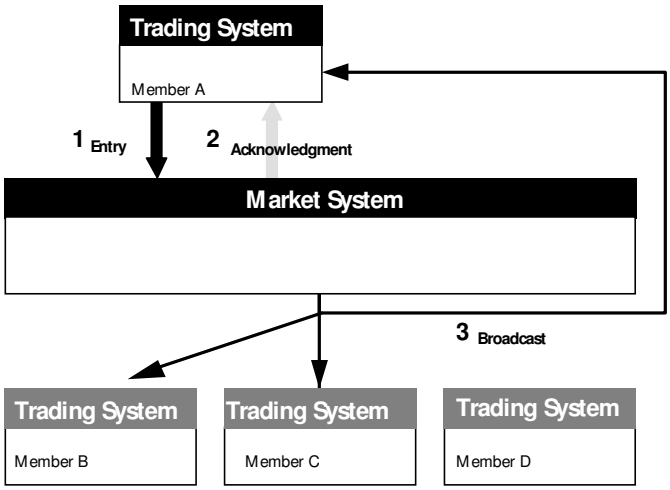

The attributes which can be entered by the trader can be separated into two groups,

General Attributes

Following are the general attributes of an indication of interest.

- Buy, Sell or Quote

  Quote means that the participant wishes to receive binding offers from both cash takers and providers.

- Contract Type Identification

  Identifies the Contract Type by means of its ISIN. This can be the ISIN of one of the standardised general collateral contract types, the ISIN for a non-standardised GC repo, or the ISIN used to identify the contract type as a special repo.

- Collateral Identification

  For the non-standardised general collateral repo it identifies the basket used as collateral. For special repos it identifies the particular security to be used as collateral by its ISIN. No value can be entered for the standardised general collateral contract types, because the collateral in such instruments is identified via the contract type itself.

- Cash Size *(i.e., Purchase Price)* (optional)

  The Cash Size is optional in an indication of interest because the originating participant need not to disclose the total value for which he wishes to receive offers (e.g., in a tender).

- Securities Size *(i.e., Purchased Securities Quantity)* (optional)

  This attribute only applies to special repo contracts. It specifies the number of securities to be used as collateral. Thus, the Securities Size represents either the nominal value of the collateral (bonds) or the number of securities (shares).

- Securities Price

  If the trader enters the Securities Size he must provide a clean reference price for that security. This reference price is used by ERM to define the appropriate Cash Size. In an addressed offer, this derived cash value is that used in the check concerning available limit.

  It is foreseen that the ERM system will provide electronically reference prices for a number of securities.

- Price (optional)

  Pricing rate, repo rate in % if the pricing rate type is fixed. If the pricing rate type is floating the price is the interest rate to be added/subtracted from the index.

- Purchase Date (optional)

- Repurchase Date (optional)

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The repurchase date can be open (open repo).

- Manual Clearing Flag

  Indicates whether or not the participants wish to organise the settlement themselves. Set to yes, means that the ERM system will not automatically send a settlement request to SECOM if a trade is generated from the offer.

- Participant Identification

  This identifies a distribution list which contains one, several or all participants. The indication of interest is delivered to each participant in the list.

- Expiry (optional)

  The maximum lifetime of the indication of interest is until the end of the ERM business day. The expiry is flexible, e.g. it can be set to 30 minutes (default by trader) or can be an absolute central system time.

- Disclosure Flag

  Indicates whether or not the participant's ID is disclosed to the addressed participants. Set to yes (default), means that participant's ID is disclosed to the addressed participants.

- Free Text Field

Special Attributes

Following are the special attributes of an indication of interest.

- Contractual currency
- Pricing rate type
- Pricing rate index
- Price differential payable periodicity
- Price differential payable 1st date
- Margin ratio
- Right for substitution (Yes/No)
- Terminable on demand (Yes/No)

Functions

The following functions are available to the *originator* of an indication of interest for entry and maintenance:

- Enter Indication of Interest

  This function permits the originator to send an indication of interest to one, several or all participants. The trading system sends this to the market system for broadcast to the specified participants. The acknowledgement from the market system contains an identification for the indication of interest.

- Delete Indication of Interest

  The originator may inform the participants that an existing indication of interest is no longer relevant. The trading system sends a delete request to the market system.

- Modify Indication of Interest

  An existing indication of interest may be modified. The trading system automatically enters the modification as a deletion of the existing Indication, and an entry of a new one.

- Create, modify, delete Distribution List

  These functions allow the originator to specify predefined address lists for use with Indications of interest. Lists can consist of any number of participants.

The following functions are available to the *recipient* of an indication of interest. They support the recipient in responding to the indication of interest:

- Create addressed offer

  The recipient may respond to the indication of interest by creating an addressed offer to the originator of the indication of interest.

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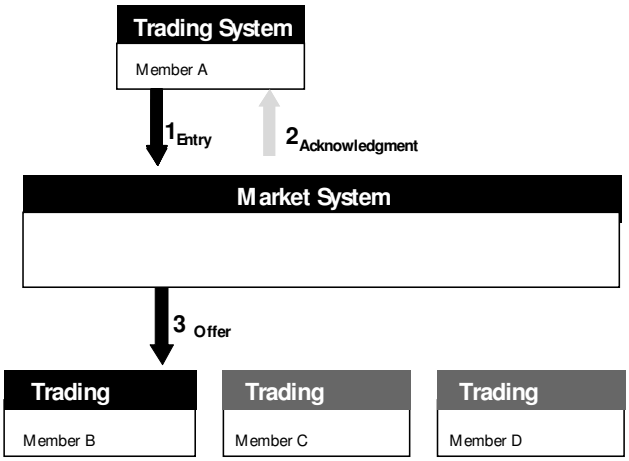
5.3.4.2 Addressed Offer

Addressed offers support trading off-market between two participants via ERM. An addressed offer is of a binding nature.

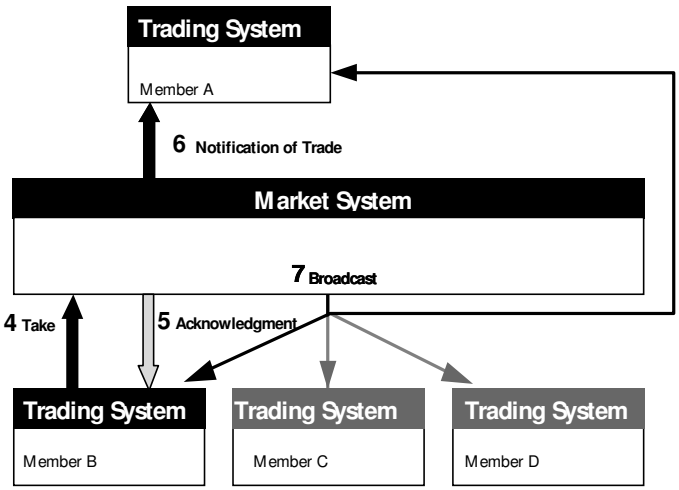
One participant may direct an addressed offer to another participant. The addressed participant has the opportunity to take the offer, reject or ignore it.

Offer



An offer which is taken generates the corresponding trade.

Take



The receiving participant can reject an offer, which cancels the offer; it is no longer available. If the receiving participant ignores the offer, it expires.

Reject

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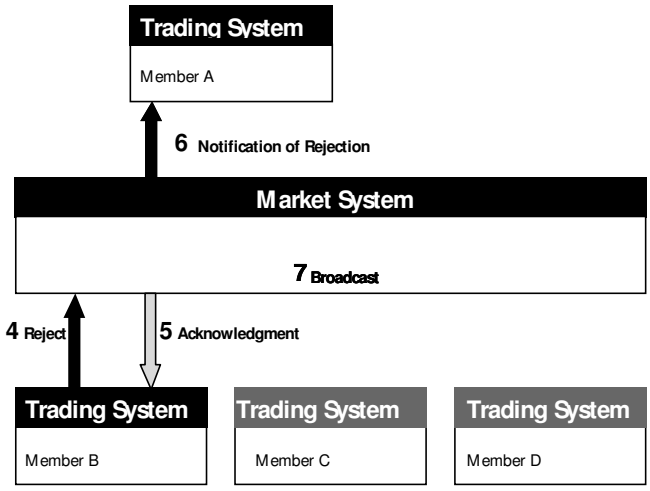

The attributes which can be entered by the trader can be separated into two groups,

General Attributes

Following are the general attributes of an addressed offer.

- Buy, Sell
- Contract Type identification

  Identifies the Contract Type by means of its ISIN. This can be the ISIN of one of the standardised general collateral contract types, the ISIN for a non-standardised GC repo, or the ISIN used to identify the contract type as a special repo.
- Collateral Identification

  For the non-standardised general collateral repo it identifies the basket used as collateral. For special repos it identifies the particular security to be used as collateral by its ISIN. No value can be entered for the standardised general collateral contract types, because the collateral in such instruments is identified via the contract type itself.
- Cash Size *(i.e., Purchase Price)*

  The cash size must be entered when trading a general collateral repo (standardised or non-standardised).

  When trading a special repo the trader either enters the Cash Size or the Securities Size & Securities Price.
- Securities Size *(i.e., Purchased Securities Quantity)* (optional)

  This attribute only applies to special repo contracts. It specifies the number of securities to be used as collateral, if the cash value (Cash Size) has not been specified. Thus, the Securities Size represents either the nominal value of the collateral (bonds) or the number of securities (shares).
- Securities Price

  If the trader enters the Securities Size he must provide a clean reference price for that security. This reference price is used by ERM to define the appropriate Cash Size. This derived cash value is that used in the check concerning available limit.

  It is foreseen that the ERM systems will provide electronically reference prices for a number of securities.
- Price

  Pricing rate, repo rate in % if the pricing rate type is fixed. If the pricing rate type is floating the price is the interest rate to be added/subtracted from the index.
- Purchase Date
- Repurchase Date

  The repurchase date can be open (open repo).

Error! AutoText entry not defined.

- Participant internal reference

  An internal reference which can be added to support subsequent tracking by the back office or bank internal systems

- Manual Clearing Flag

  Indicates whether or not the participants wish to organise the settlement themselves. Set to yes, this means that the ERM system will not automatically send a settlement request to, for example, SECOM if a trade is generated from the offer.

- Participant identification

  Identification of addressee. This is a specific trading participant. If the addressed offer is created upon a received indication of interest or addressed offer the participant identification is equal to the sender of this indication of interest or addressed offer.

- Expiry

  The maximum lifetime of the addressed offer is until the end of the ERM business day. The expiry is flexible, e.g. it can be set to 30 minutes (default by trader) or can be an absolute central system time.

- Disclosure Flag

  Indicates whether or not the participant's ID is disclosed to the addressed participant. Set to yes (default), means that participant's ID is disclosed to the addressed participant.

- Partial Take / Minimum Take Size

  The minimum take size indicates whether or not a partial take of this addressed offer is allowed. The offering participant specifies in this attribute, the smallest size that the addressee must take. Setting the minimum take size to the offer size, which is default, means that the offer is an "all-or-nothing". Setting it to zero means the addressee is free how much he wants to take. Size in this case always refers to the size entered by the trader, i.e., either the Cash Size or the Securities Size (itself expressed either in nominal or units).

- Free Text Field

Special Attributes

Following are the special attributes of an addressed offer.

- Contractual currency
- Pricing rate type
- Pricing rate index
- Price differential payable periodicity
- Price differential payable 1st date
- Margin ratio
- Right for substitution (Yes/No)
- Terminable on demand (Yes/No)

Functions

The trading system supports by means of addressed offers through two sets of functions. One set supports the participant in the role of originator of the offer, with functions to enter and maintain open offers. The second set are the functions to take and reject offers, which have been addressed to the participant.

The following functions are available to the *originator* of an offer for entry and maintenance:

- **Enter addressed offer**

  This function supports the input of an offer. The trading system validates the input and sends it to the market system. The market system checks that the counterparty available limits are such that the offer can be taken by the addressee without violating the limits. As acknowledgement, it returns either an identification and a time stamp or an error response.

- **Enter double addressed offer**

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This function supports the input of two offers to the same addressee, with one offer a buy, the second a sell. The two prices can be entered in a number of ways, such as a mid-price and a spread, or as two separate prices. The trading system validates the input and sends the two offers separately to the market system.

- **Delete addressed offer**

  This function permits the originator to delete an open offer, which has not yet been taken or rejected by the recipient. The request is sent to the market system.

- **Modify addressed offer**

  This function permits the originator to modify the attributes of an open offer. The modification request is entered by the trading system as a delete of the existing offer and an entry of new one.

The following functions are available to the *recipient* of an offer. They support the recipient in responding to the offer:

- **Take addressed offer**

  This function permits the recipient to accept the offer and generate a trade. The trade has the same price as the offer. The recipient can accept only part of the size offered, with the constraint that the accepted size is greater than the minimum specified by the originator of the offer. In addition, the recipient can enter a value for the participant internal reference which is added to the trade to support subsequent tracking by the participant.

  The trading system sends the take to the market system. The market system checks that the counterparty available limits are such that the trade can be generated without violating the limits. As acknowledgement, it returns either a confirmation or an error response.

- **Reject addressed offer**

  This function permits the recipient to close the offer without generating a trade. The rejection is sent by the trading system to the market system. The rejection is the equivalent to a deletion of the offer.

- **Send counter offer**

  This function permits the recipient off an addressed offer to send a counter offer (e.g. counter offer on different price or term). Counter offer results in a reject of the received addressed offer and a new addressed offer which has a new identification and new time stamp.

5.3.4.3 Trade Cancellation

Trade Cancellation allows two trading participants, who wish to cancel a trade, for example because of a mistrade, to do so. *Cancellation requires the agreement of both participants*. One participant may direct a request to cancel a specified trade to the counterparty in the trade. The addressed participant has the opportunity to confirm the cancellation, reject or ignore it.

If the trade cancellation request and the confirmation is carried out after the purchase transaction took place the trade cancellation is not a true cancellation, but rather an early termination.

If the trade was such that the ERM had sent settlement instructions to the appropriate settlement organisation, then the ERM also sends instructions to modify those instructions. Thus, ERM sends a deletion of the settlement instruction if the trade cancellation request and the confirmation is carried out before any automated settlement instructions have led to the execution of the purchase settlement transaction. If the trade cancellation request and the confirmation is carried out after the purchase transaction took place ERM sends an early termination instruction to the settlement system.

Cancellation Request

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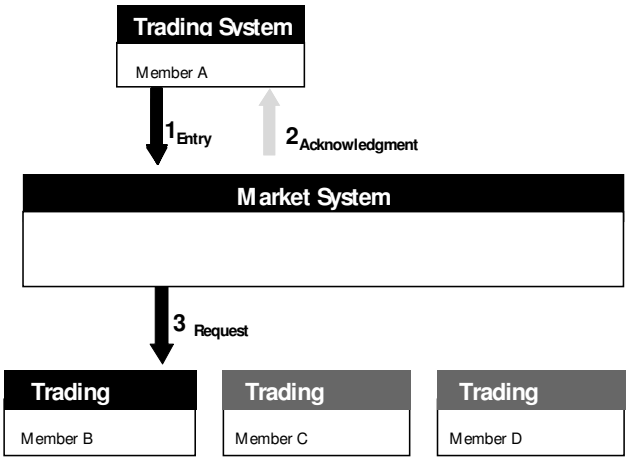
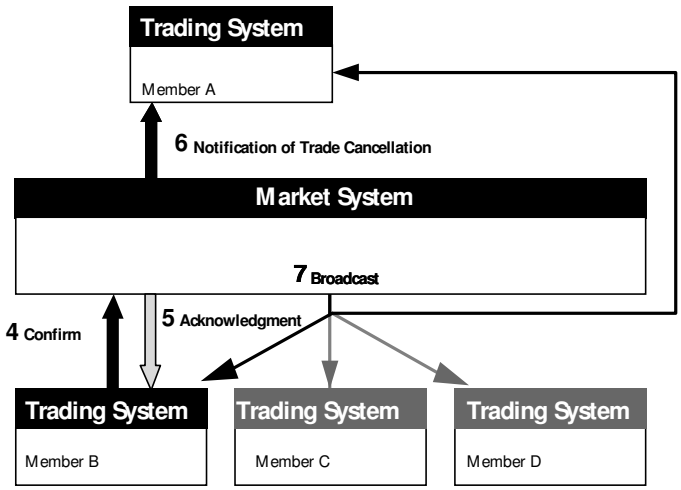


A trade cancellation request which is confirmed by the counterparty cancels the corresponding trade.

Confirm



The receiving participant can reject the request for trade cancellation, which cancels the request; it is no longer available. If the receiving participant ignores the request, it expires.

Reject

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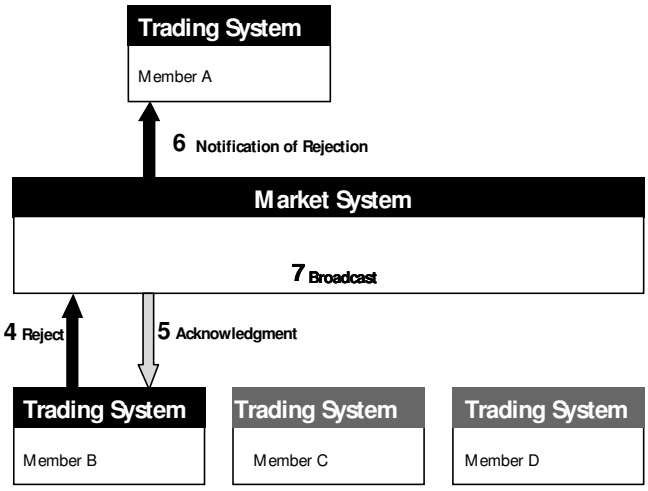

Attributes

The trade cancellation has the following attributes.

- Trade Reference

  The trade reference refers to an outstanding on- or off market trade. All outstanding repo trades are available for selection.

- Participant Internal Reference

  An internal reference which can be added to support subsequent tracking by the back office or bank internal systems.

- Free Text Field

Functions

The following functions are available to the *originator* of a trade cancellation:

- **Enter trade cancellation**
- **Modify trade cancellation**
- **Delete trade cancellation**

The following functions are available to the *recipient* of a trade cancellation:

- **Confirm trade cancellation**
- **Reject trade cancellation**

Trade cancellations which have not been confirmed or rejected by the end of the business day will automatically be deleted.

5.3.4.4 Close Repo

ERM supports closing of outstanding open repos and repos which have been agreed to be terminable on demand. This function is one sided, this means it does not need confirmation by the counterparty.

Open Repos (no Repurchase Date agreed)

An outstanding open repo can be selected and closed by the buyer or the seller. This means a trader requests the closing of the repo.

Terminable on Demand (Repurchase Date agreed)

An outstanding repo which is terminable on demand can be selected and closed by the buyer or the seller. This means a trader requests the early closing of the repo.

The definition of the repurchase date in the close repo function is defined by market convention. For example it could be T + 2 business days.

When requesting the closing transaction, the counterparty is informed with an alert that early termination of an open repo took place and the settlement instruction is sent to the settlement system.

Attributes

Error! AutoText entry not defined.

The close repo has the following attributes:

- Trade Reference

  The trade reference refers to an outstanding on- or off-market trade. All outstanding open repos and outstanding repos which are terminable on demand are available for selection.

- Participant Internal Reference

  An internal reference which can be added to support subsequent tracking by the back office or bank internal systems.

- Manual Clearing Flag

  Indicates whether or not the participants wish to organise the settlement themselves. Set to yes, this means that the ERM system will not automatically send a settlement instructions, for example, to SECOM. The manual clearing flag can only be yes, if the manual clearing flag of the original trade also was set to yes.

Functions

The following functions are available to the *originator* of a close repo:

- **Enter modification of outstanding repo**

  Because this function is one sided, it can only be entered. After entering it is immediately executed.

5.3.5 Information Display to Traders

To maintain an overview of activity in the off-market the trading system will provide a number of displays, which are updated continuously. In addition, signals are employed to alert the trader to the arrival of new indications of interest or addressed offers.

The following describes the information available for display. It is classified by the type of transaction (indications and offers) and by the direction of the transaction (own activities, activities from other participants). In each case selection criteria (e.g. by instrument) are available so that particular subsets of information may be chosen for display.

Indication of Interest

Indications of Interest can be both sent (i.e., participant is the originator) and received (participant is one of the recipients). Displays are available for both those sent and those received. Filters are available to display all items from the current business day, those that are still open and those that have been deleted. An additional alert is generated for a trader if that particular trader has been explicitly addressed in the indication of interest.

Addressed Offers

Addressed offers are separated into those offered by the participant (sent) to another ERM-participant and those directed to the participant (received).

The display of offers originating from the participant (sent) is a summary display which includes their current status (taken, rejected or ignored).

The display of offers directed to the participant (received) has both signal and summary features. The arrival of a new offer is signalled to the participant, to enable rapid response.

Trade Cancellation

Sent and received trade cancellations are displayed with their status.

Close Repo

Sent and received closed repos are displayed with their status.

Security Selection

As part of the support for trading in special repos, there is a function to search for securities according to a number of criteria. The security selection is available in the indication of interest function, in the addressed offer function and as independent function to view the static data of a security

Contract Type Selection

There is a display which allows a fast contract type selection by different criteria (e.g. for GC repo). The contract type selection is available in the indication of interest function, in the addressed offer function and as independent function to view the contract type specification.

Off-Market trades

As mentioned in section 5.2.6 paid prices in the off-market are displayed in the ticker together with on-market trades. They are flagged as off-market trades. Likewise, in the display of own trades, those done using the off-market functions are flagged as such.

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5.3.6 SNB Auctions using the Off-Market Functions

The off-market functions provide a flexible framework for the participants, and the SNB in particular, to trade outside the centralised on-market order book. For example, the SNB can carry out "SNB repo auctions" as follows:

- the SNB publishes to all or a set of participants an indication of interest, indicating a desire to trade in a particular contract. This can specify either a price constraint, or an available volume.
- participants interested in trading send addressed offers to the SNB, specifying the size and price at which they will trade.
- the SNB can take those offers it wishes to based on its own auction procedure.

Thus, in a Price Tender, the SNB indicates via the indication of interest the cash *size* it would like to inject or remove from the economy. Participants bid for their desired size at the price they are prepared to offer.

In a Volume Tender, the SNB indicates via the indication of interest the *price* it is willing to offer (but no indication of the size). Participants bid for their desired size at the price set by the SNB.

5.4 Market Operations

The market operations staff are responsible for the daily running of the market. The following functions are available:

- Maintain Instrument Data
- Maintain Securities Static Data
- Maintain Participant and Trader Data
- Suspend Participant/Trader
- Maintain Change Fix
- Maintain Market Schedule
- Send Official News Message
- Emergency Functions
- Correct Settlement Functions

5.4.1 Maintain Instrument Data

This function allows the entry and modification of the master details for

- Repo Contract Types
- Baskets defining General Collateral

The high degree of integration of the ERM with the SECOM system means that any changes to master data have to be co-ordinated carefully with SEGA/INTERSETTLE.

5.4.2 Maintain Securities Static Data

This function allows the entry and modification of the details for

- Security Static Data

It is planned that this may be done through an electronic interface with a provider of static data (e.g. Telekurs). Initially the data maintenance may be done manually.

5.4.3 Maintain Participant and Trader Data

These functions support the capture of master data for participants and traders.

For each participant, a unique trading identification is defined. The master data will also contain information regarding contact staff in the participant institution, to facilitate efficient information flow and clarification of issues which may arise during trading or trade processing.

Traders will be registered centrally, and receive a unique trader identification. This identification is used throughout ERM to validate that orders and offers originate from authorised traders.

5.4.4 Suspend Participant/Trader

Suspension of a participant or a trader removes from that participant or trader the right to access the ERM market. The decision to suspend, or to lift a suspension is a subject to the rules & regulations (to be defined).

Suspensions may be imposed or lifted at any time during the business day.

The market system behaves as follows when a suspension is imposed:

- If a trader is suspended it rejects all subsequent entries by this trader.
- If a participant is suspended it deletes all orders in the central order books that belong to this participant and it rejects all subsequent entries by this participant. All outstanding addressed offers from this participant are deleted.

5.4.5 Maintain Change Fix

In order to allow participants flexibility in the currency used to express their trading limits, a daily change fix for a selected list of currencies will be captured. The change fix can be entered throughout the entire business day. This may result in the matching of orders in the central order books, if the change in the exchange rate results in an increase of the available limits for some participants.

Safeguards, for example supervisor checks, will be built in to avoid errors in the entry of the change fix.

5.4.6 Maintain Market Schedule

The start and end of business day, which define the availability of the off-market functions can also be maintained. The cut-off times for particular instruments with purchase date of today or tomorrow are also maintained (see 5.3.2).

The availability of a particular market for trading is controlled by means of market calendars, which specify the market holidays.

For each instrument, or for groups of instruments, the schedule for the trading day, including the start of continuous trading and the close of trading can be maintained (see also 5.2.2).

5.4.7 Send Official News Message

ERM market operation staff may enter news messages with information concerning trading, instruments, exceptions, emergencies etc. These messages are displayed in a newsboard on the trading system.

5.4.8 Emergency Functions

Market operations staff can, in emergency situations, manually intervene to control the on-market trading. This means that they can manually trigger a transition from one period to another (e.g., early close of trading, interruption to continuous trading via a break).

In addition, market operations can execute an emergency deletion of orders on behalf of a trading participant or decrease the trading limit for a counterparty. Thus, if an exceptional situation arises (e.g., loss of network connection), such that a participant cannot access the ERM itself, the participant may telephone market operations and request that all open orders and offers be deleted on its behalf.

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5.4.9 Correct Settlement Functions

The correct settlement functions permit the market operation staff:

- To monitor the current status of settlement instructions sent to the settlement system.
- To cancel pending settlement instructions.
- To resend settlement instructions.

5.5 Market Supervision

Any market supervision activity additional to the necessary market monitoring is a subject of self regulation and has to be agreed by the participants. If market supervision is wished by the participants (e.g. mistrade decisions) it would be subject to the rules & regulations.

Market supervision require functions, not only to monitor current market activity, but also to carry out analyses of historical data. In addition, the identities of the responsible trading participants and traders are available to market supervision (This information is treated as strictly confidential. The degree of confidentiality is subject to legal contract between the participant and ERM (SWX)).

The functions for market supervision include disclosed information on:

- Detailed order book
- Historic trade data
- Indications of interest
- Addressed offers
- Trade Cancellations
- Counterparty Limits

6. Legal Requirements

Swiss Repo Market	The Swiss repo market is based upon the multilateral Swiss agreement. In addition, it is planned that an annex to the multilateral *PSA/ISMA Global Master Repurchase Agreement (PSA/ISMA GMRA)* will be created. Thus, there may be two parallel agreements in place. A prerequisite to participate in the Swiss repo market is an Agreement with the Triparty Service Provider (SEGA/INTERSETTLE).
Other Markets	Other markets may have other prerequisites. These will be defined as required.
General Agreements, Agreements between two or more Participants	The ERM system does not take into account whether there is an agreement in place between two participants.. Participants are responsible for setting trading limits, and therefore all trades are generated at their own risk.

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7. Glossary

A listing of the terms and their definitions, structured in subsections. As much information as the reader needs to understand the concept should be presented.

Addressed Offer — A binding offer from one participant to another participant to enter a repurchase agreement.

Administration Type — This specifies the form in which the repo contract is settled. Three forms are distinguished: Triparty Repo, Hold in Custody Repo, and Delivery Repo.

Available Limit — The available limit represents the current maximum allowed value of the gross volume calculated on the cash side (Purchase Price) of new repo transactions with the identified counterparty.

Basis Amount — SEGA / Intersettle defines the basis amount as the size unit for the cash value of a standardised repo contract type. Repo contracts for standardised contract types have a cash value which is an integer multiple of the basis amount.

Basket — A basket specifies a collection of securities which can be regarded as equivalent in value as collateral in a repo contract; i.e., the basket defines a form of General Collateral. Thus, the securities in a basket are of similar quality (i.e., they or their issuers have similar rating).

The baskets defined by SEGA for use in their Tripartite Repo Service are either specified simply in terms of the type of instrument involved and a rating (descriptive basket), or as an explicit list of securities (listed basket).

Bid Price — The repo rate at which the buyer of the collateral in a repo is prepared to lend cash - it is the bid rate for the collateral, not the bid rate for cash.

Business Day — The ERM system has a number of different calendars, which define business days for various aspects of the complete lifecycle of a repo.

An ERM business day is a date on which the ERM system is open for trading. All trades generated on that day have the Trade Date set to the ERM business date.

A settlement calendar defines the business dates for each Settlement Organisation - these are dates on which the organisation can carry out clearing and settlement transactions.

Currency business days specify the dates on which it is possible to execute payments through the national payment system of the currency concerned.

Business Type — This is an attribute used by SEGA/INTERSETTLE to distinguish between General Collateral repos and Special repos.

Buyer of Repo — The buyer of a repo is the buyer of the collateral in the initial purchase transaction of the repo. Thus, the buyer is also the Cash Provider.

Cash Provider — The cash provider in a repo is the party delivering cash in the purchase transaction of the repo contract. The cash provider receives the collateral.

Cash Taker — The cash taker in a repo is the party receiving cash in the purchase transaction of the repo contract. The cash taker provides the collateral.

Classic Repo — Also known as all-in repo or US-style repo: a repo in which the sale and repurchase are part of a single contract, and return is paid separately from the end proceeds in the form of an interest payment at maturity (repurchase).
(from PSA/ISMA terminology for Repo)

Clean price — The clean price of a bond is its price *excluding* accrued interest.

Close Out and re-pricing — When a sell/buy-back is marked to market and the value of the collateral is found to have changed, the parties may either adjust the nominal amount of the collateral accordingly or terminate the repo early and re-establish it at the original repo rate but reflecting the new market price for the collateral. The latter is “close out and re-pricing”.

Collateral — Something of value, and often good creditworthiness such as a government bond, given temporarily by the seller in a repo to the buyer to protect the buyer in the event of the seller defaulting on the cash loan. See also General Collateral.

Contract Type — A repo contract agreed between two parties involves a large number of attributes specifying the contractual conditions. A contract type is a template for a repo contract, and pre-defines some

	of the conditions. This allows a degree of standardisation, which in turn supports a concentration of liquidity and an efficient market.
Contract Type Id	Unique identifier for a Contract Type (for Contract Types defined by SEGA/INTERSETTLE, it is an ISIN or security identifier).
Contractual Currency	The currency of the cash payment for the purchased securities.
Counterparty	For a given party, the counterparty is the second trading participant identified in a repo contract (a trade). During the term of the repo, the counterparty represents to some measure a credit risk.
Delivery Repo	A settlement form in which the buyer (cash provider) keeps, administers and monitors the purchased securities himself.
Dirty price	The dirty price of a bond is its price *including* accrued interest.
Documentation	The term documentation is used for the legal agreements which underlie the repo contract. Repo contracts involve two transactions, the initial purchase followed some time later by the repurchase. For the two transactions to be linked, and regarded as a single contract, there must be a contractual agreement between the parties involved. Thus, there must be agreements between the two trading participants, and for Triparty Repos, also agreements between each of the trading participants and the Tripartite Service Provider. The primary aim of documentation is to provide a legal basis for handling the default of one of the parties involved. For example, rights of Close Out and Set Off are defined. Documentation also has consequences for the administration of a repo during its term, for example, defining the basis for variation margining.
Documented sell/buy-back	A documented sell/buy-back is regarded as a single contract from a legal viewpoint. It provides the legal basis for active management of collateral during the term of the contract, for example, to cover risks related to changes in the market value of the collateral by means of a variation margin.
DVP	Delivery-versus-payment: the simultaneous exchange of cash and securities; intended to avoid delivery risk.
End proceeds	Cash payment due at the maturity of a repo which includes the repayment of the start proceeds. *(from PSA/ISMA terminology for Repo)*
Equivalent Securities	The normal arrangement in a repo, whereby the securities to be returned to the seller at maturity of a repo are required to be exactly the same issue as the securities delivered at the beginning, but not necessarily exactly the same numbered holding.
Flat basis	When a repo is transacted with no margin.
Flat pricing	Flat pricing is the valuation of collateral using its clean price, in other words, *excluding* accrued interest: this method undervalues collateral.
Forward price	The forward price of a bond is the clean price with value date further in the future than the normal spot value date. Such prices are used in the forward transaction in a sell/buy-back.
Full accrual pricing	In a repo contract, full accrual pricing means that the cash valuation of the collateral uses its dirty price, in other words, *including* accrued interest.
General Collateral (GC)	In a General Collateral repo contract, the seller's financing or refinancing needs predominate. The Buyer of a General Collateral repo contract is prepared to accept any of a defined set of securities as collateral in exchange for his cash. In the ERM, the set of securities is defined via a Basket.
Haircut	Another term for Initial Margin.
Hold In Custody Repo	Repo contract in which the seller holds, administers and monitors the collateral on behalf of the buyer.
Indication of Interest (IOI)	A non-binding proposal from one trading participant to one or more other participants to enter into a repo contract.
Initial Margin	Initial margin (or "haircut") is the extra collateral or cash required to allow for a potential subsequent change in the collateral's market value. Usually required by the buyer to protect against a fall in the collateral's market value, but sometimes required by the seller to protect against a rise in the collateral's market value.

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Manufactured dividend	When a coupon is paid on collateral during the term of a classic repo, it is received by the buyer but repaid to the seller. The repayment is called a manufactured dividend.
Margin	An asset (margin security or cash margin) received by one party from its counterparty to secure its risk commitment towards the party resulting from changes in the market value in mutual obligations.
Margin Ratio	The all-in market value of the securities divided by the cash loan, so that if the haircut is 2 percent, the margin ratio is 1.02.
Market	A market within ERM is a set of trading participants which trade together in a specified list of repo contract types. In order to ensure that the automated settlement processing is possible, constraints on market participation must be imposed. Thus, for a market in Tripartite repo instruments, the trading participants must all be able to settle and clear via the corresponding Tripartite Service Provider. If a market supports automated transmission of settlement instructions from the ERM, then all the repo contract types in that market can be settled via one Settlement Organisation.
Master Agreement	A Master Agreement is an umbrella legal contract which is used to govern an indefinite series of subsequent transactions.
Non-standardised GC Repo	A non-standardised GC repo is a contract type in ERM in which the collateral is specified via a basket (General Collateral), and the traders can agree and specify the contract conditions bilaterally. Such contract types can only be traded off-market (due to the bilateral nature of the specification of the repo conditions).
Offer	A binding proposal from one trading participant to another to enter into a repo contract.
Offer Price	The repo rate at which the seller of the collateral in a repo is prepared to borrow cash - it is the offered rate for the collateral, not the offered rate for cash.
Open Repo	An open repo is a repo contract in which the repurchase date is agreed to be left unspecified. Both parties to the contract have the right to unilaterally close the contract. When an open repo is closed the repurchase date is set according to the settlement conventions which apply to that market (e.g., T+2, where in this case T is the date of closure of the contract).
Order	In ERM an order is a binding proposal to act as a buyer or seller in a standardised repo contract type. The ERM centralised trading is an order-driven market, in which incoming buy & sell orders are automatically matched against sell & buy orders in the centralised order book. The automatic matching to determine the trade price is rule-based.
Price Differential	The interest accrued on the cash lent in a repo
Price Differential Payable Periodicity	This defines the periodicity of the payment of repo interest from the cash taker to the cash provider in an Open Repo (i.e., one without a fixed repurchase date). In repo contracts with a defined repurchase date, the repo interest is paid on the repurchase date.
Price Differential Payable First Date	Defines the date upon which the first payment is made of the repo interest on an Open Repo. Combined with the Price Differential Payable Periodicity this defines the interest payment schedule for open repos.
Pricing Rate	Repo Rate.
Pricing Rate Index	Reference to the benchmark index for a floating Pricing Rate (Repo Rate).
Pricing Rate Type	The Pricing Rate (Repo Rate) can be specified as fixed or floating. A fixed price rating means that the interest rate paid by the cash taker to the cash provider during the term of the repo remains fixed throughout the term. A floating price rate means that the interest rate is specified relative to an identified index (Price Rating Index), and that therefore the interest rate changes as this index changes during the term of the repo contract.
PSA/ISMA Global Master Repurchase Agreement	This is a standardised repo documentation provided by the Public Securities Association (PSA - now renamed to Bond Market Association) in the US and ISMA (International Securities Market Association) for the international market. The agreement is in the form of a Master Agreement, and covers repos and sell/buy-backs.
Purchase Date	The purchase date is the date for settlement of the opening transaction in a repo contract, the sale of the collateral securities to the cash provider.
Purchase Price	

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	The purchase price is the cash value of the opening transaction in a repo contract, the sale of the collateral securities to the cash provider. The purchase price is the same as the Start Proceeds.
Repo	A Repo is a short-term, non-negotiable, cash instrument, paying a fixed amount of income, which involves a sale of securities and simultaneous agreement to repurchase equivalent securities at a future date or on demand. *(from PSA/ISMA terminology for Repo)*
Repo interest	Income due on the cash proceeds of a repo which represents the return to the cash provider (lender). Repo interest is accrued from the purchase date. Interest accrual ceases on the repurchase date. The accrual day-count convention is market-specific and is not tied to the convention used in the calculation of accrued interest for the collateral.
Repo rate	Annualised percentage rate of return on the cash proceeds of a repo. *(from PSA/ISMA terminology for Repo)*
Repurchase Date	The repurchase date is the date for settlement of the closing transaction in a repo contract, the repurchase of the collateral securities by the cash provider.
Repurchase Price	The repurchase price is the sum of the Purchase Price and the Repo Interest accrued to the date of calculation.
Reverse repo	Buyer's side of a repo; i.e. a repo viewed from the buyer's side. *(from PSA/ISMA terminology for Repo)*
Sell/buy-back	A sell/buyback resembles closely a repo. It consists of two transactions, the immediate sale of collateral and a forward repurchase. Whether or not the transactions are linked in a legal sense depends upon the existence or otherwise of Documentation between the counterparties. A sell/buyback achieves the same economic goals as a repo, but differs from it in that the return is paid as part of the end proceeds at the repurchase; i.e., the forward price (the price of the second transaction) includes the "repo interest".
Seller of repo	The seller of a repo is the seller of collateral in the initial purchase transaction of the repo. Thus, the seller is also the Cash Taker.
Special repo	A special repo is one in which the particular security identified as the collateral is the focus of the contract. This contrasts with GC repo contracts in which the precise collateral involved is not relevant beyond its role as collateral for the lending of cash. For example, the buyer of the special repo requires that particular security for some purpose; this can mean that the repo rate offered is below that for GC repos.
Start proceeds	Amount of cash paid for collateral at the start of a repo. *(from PSA/ISMA terminology for Repo)*
Substitution	Substitution is the exchange of the securities used as collateral during the term of the repo contract. Granting a right to substitution is one of the conditions agreed by the parties in the repo contract.
Term of a repo	The term is the period between the purchase and repurchase dates.
Terminable on Demand	Option agreed between the parties when concluding a repo contract which gives both parties the right to terminate the repo contract unilaterally (if no repurchase date was agreed - see Open Repo) or to do so prematurely and unilaterally if a repurchase date was agreed.
Trade	A trade in ERM is synonymous with a repo contract, in which two parties enter into a repo with all conditions agreed.
Trade Date	The Trade Date is the date upon which the repo contract is agreed. It is synonymous with the contract date.
Trading Limit	A Trading Limit is specified by a trading participant for each potential counterparty. In ERM, it is the maximum allowed value of the gross volume calculated on the cash side (Purchase Price) of outstanding transactions with the identified counterparty.
Triparty Repo	Repo in which an independent third-party custodian manages the delivery and administration of collateral, and the payment of cash, on behalf of the repo counterparties. *(from PSA/ISMA terminology for Repo)*

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Triparty Repo Service Provider	A custodian which offers the services required to support Triparty Repos.
Undocumented Repo	An undocumented repo consists of two independent transactions (an immediate collateral sale, and a forward collateral purchase). These transactions cannot be adjusted during the term of the repo. Any changes to the repo conditions must be undertaken as new transactions.
Used limit	The used limit for a trading participant with a particular counterparty is a measure of the participant's current credit exposure to that counterparty, resulting from trading activity in the ERM. The used limit is calculated as the gross cash value of all open transactions with the counterparty.
Variation Margin	The amount of cash or collateral which must be transferred when there is a change in the value of the collateral, in order to bring the ratio between the values of cash and collateral back to that required under the repo agreement. This can be achieved in one of two ways: 1. transfer of additional cash or return of some collateral by the buyer to compensate the seller for an increase in the value of the collateral during the term of the repo contract 2. return of some cash or transfer of additional collateral by the seller to compensate the buyer for a decrease in the value of the collateral or an increase in the value of the cash (due to the accrual of interest) during the term of the repo contract *(from PSA/ISMA terminology for Repo)*