

DFS170 - Risk Management

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Abstract

This document contains the functional description of the risk management processes in the M7 Trading Module.

1 Introduction

In the M7 Trading platform, the trading and matching of orders is performed in an anonymous manner. The sides involved in a trade have no information on each other's credibility, and each transaction brings along a certain amount of risk that the counterparty will not fulfil its commitment. For example, the buyer may have insufficient funds to pay for his order after it was matched against a sell order, or the seller may not be able to deliver the agreed quantity of the product. These and other situations represent a potential financial loss for the counterparty.

In order to mitigate the risks connected to trading activities, the M7 Trading platform allows the Market Operators of the exchange and its Clearing House to define cash limits for each member in the system.

While risk management is based on the model of the Clearing House, Market Operators have the possibility to adjust the limits at any time. The cash limit functionality is available for all products and members that are trading in the spot markets.

Chapter **Basic Terms** explains the basic terms used in connection with risk management.

In Chapter **Cash Limit Setup**, the setup of cash limit entities for the M7 Trading platform is described.

Chapters **Cash Limit** and **Cash Limit Check** deal with the cash limit related terms and processes in more detail.

Chapters **Housekeeping**, **ComTrader** and **API** give a small overview of the cash limit functionality available in ComTrader, API interface and the Reporting Engine.

2 Basic Terms

Term	Description
Cash Value	A financial equivalent of a transaction, e.g. of an order or trade
Consumption	An aggregated Cash Value of all member's active orders and trades for products for which the cash limit check has been turned on.
Current Limit	A financial amount up to which a member can trade at any time during the trading day. Its value equals the Initial Limit minus the current member's Consumption.
Immediate Activation box/ activation attribute	An indicator whether a change in the member's Initial Limit shall be executed immediately and thus the member's Current Limit shall be adjusted accordingly; or the change shall come into effect only with the next Limit Reset.
Initial Limit	A financial amount up to which a member would be able to trade immediately after Limit Reset, providing that the member does not have any active orders.
Limit Reset	A process during which for each member the Current Limit is reset to the Initial Limit valid for the current trading day, lowered by the aggregated Cash Value of all member's active orders that were submitted for products with cash limit check turned on.
Risk Parameter	A risk factor for a transaction, its value may depend on side and execution state of transaction, product & delivery area combination and price
Risk Set	A set of risk parameters that are used to calculate Cash Value of a transaction.
Trading Limit	See Current Limit

3 Cash Limit Setup

For the cash limits to be checked, several reference data entities must be configured.

Members' cash limits can be introduced via the WebGUI, API interface, or using the cash limit file upload functionality. Risk Sets are configurable in the WebGUI as well as via the API interface, whilst products can only be set up via the WebGUI. The Settlement Calendar can only be configured in the WebGUI. For more information, refer to the *DFS120* and *MFG130*.

For the basic configuration of the API interface see *Section API*. Further details can be found in the *DFS180a*.

3.1 Product

The cash limit check for a product can be turned on/off by checking/unchecking the "Cash Limit Enabled" flag in the Attributes panel of the product. (Reference Data Management > Product Setup > Product Management > New/Modify Product > Attributes panel > Risk Management section).

Note: Members' Current Limits (see *Section Current Limit*) are only calculated from, and may only be impacted by orders and trades related to products for which the Cash Limit Enabled flag is turned on. Transactions in products with the flag turned off do not influence the value of members' Current Limits.

3.2 Member

Cash limits are set up and applicable at the member level. Each initial cash limit record is defined for a time interval by submitting a start and end point of validity (e.g. "Validity From" and "(Valid) To" fields in the WebGUI).

In the WebGUI, the cash limits for a member can be configured in the Modify Member screen (Reference Data Management > User Setup > Members Management > Modify Member > Limit Maintenance/Limit Overview section).

M7 Trading supports two types of cash limits:

- External limits, which are fed into the system by a Clearing House via an automated cash limit file upload;
- Internal limits, which can be entered and managed by Market Operators via the WebGUI or API interface.

Note: All cash limits set up by Market Operators or a Clearing House are initial limits (see *Section Initial Limit*).

3.2.1 External Limits

External limits are cash limits which are exported from an external limit system of the Clearing House into an XML file. Afterwards they are uploaded by a Clearing user using an AS2 connection to the M7 Trading platform. The upload cannot be performed via the WebGUI.

The platform supports multiple external limits for a member for one trading day.

When adding new limits via the AS2 connection, all limits that are related to members present in the M7 WebGUI will be processed. M7 will respond with the respective "PROCESSED" or "ERROR" status, which is in line with the agreement in place with the Clearing House.

3.2.2 Internal Limits

Internal limits are cash limits created and maintained by Market Operators, either in the M7 Trading WebGUI in the Members Management screen (see *MFG130*), or via the respective API messages (see *DFS180a*).

The platform supports multiple internal limits for a member for one trading day.

3.2.3 Maximum Number of Limits per Member

Together, the external and internal limits create a set of limits which is taken into consideration every time a new trading limit is being entered. When entering new limits to the system, either internal (set by Market operators) or external ones (uploaded via MTT application), the M7 Trading validates the maximum number of 50 cash limits per member.

The maximum number applies to all cash limits defined in the M7 Trading system for the member, independently of their characteristics, such as currency, type (internal/external) or validity date. The allowed distribution between the cash limit type (internal/external) is given by a configurable ratio, which is by default set to 20 internal and 30 external limits.

3.2.4 Minimal Rule

A member can have zero, one or several cash limit records in place for overlapping time intervals. For each currency, a separate set of initial limits needs to be defined.

If a member has multiple cash limits for one currency, which are in place for a trading day, the M7 Trading platform will select the value to apply based firstly on the type of the cash limit (internal limits have priority over external limits) and secondly on the value (the limit with the lowest value has priority over the limits with higher values). The applied limit(s) is/are highlighted in a bold font in WebGUI.

In case that there is no cash limit in place for a member in a currency for a trading day, a zero cash limit will be assumed by the M7 Trading platform for trading in products in this currency. This means that the members' users can only perform such trading activities which would increase the member's Current Limit in that currency.

3.2.5 Limit Activation

Market Operators can create new internal limits or modify existing internal limits with an immediate or deferred effect. A Clearing House can create new external limits or modify existing external limits only with an immediate effect. Cash limits (internal and external) are always deleted with an immediate effect¹. External limits cannot be deleted via the WebGUI.

Creation/modification of an Initial Limit with immediate effect will lead to an immediate adjustment of a member's Initial Limit and Current Limit in the Cash Limit section in WebGUI². With a deferred effect, the creation/modification will be considered during the next limit reset, being the closest run of the cash limit reset process. Therefore, if Market Operators execute the creation/modification of a limit:

- before the reset time (see [Section Settlement Calendar](#)), the creation/modification will be taken into account on the very same business day.
- after the reset time, the creation/modification will become active on the business day following the day when the creation/modification has been executed.

The following figure summarises the effects on a member's Initial and Current Limit in different scenarios. These effects would occur under the assumption described in the footnote 2.

Limit Type	Action	WebGUI	API	Result	
		"Immediate Activation" box	"activation" attribute	Initial Limit is..	Current Limit is..
Internal	Create	Ticked	IMDT	Immediately active	Immediately adjusted
		Unticked	DLYD	Active after next limit reset	Adjusted after next limit reset
Internal	Modify	Ticked	IMDT	Immediately active	Immediately adjusted
		Unticked	DLYD	Active after next limit reset	Adjusted after next limit reset
Internal	Delete	Ticked	IMDT	Immediately deleted	Immediately adjusted
		Unticked	DLYD		
External	Create	N/A	IMDT	Immediately active	Immediately adjusted
External	Modify	N/A	IMDT	Immediately active	Immediately adjusted
External	Delete	N/A	IMDT	Immediately deleted	Immediately adjusted

Figure 1 – Immediate and Deferred Limit Activation

3.2.6 Example

Let us assume that a member has the following set of initial cash limits in place from 1/1/2018 to 19/4/2018.

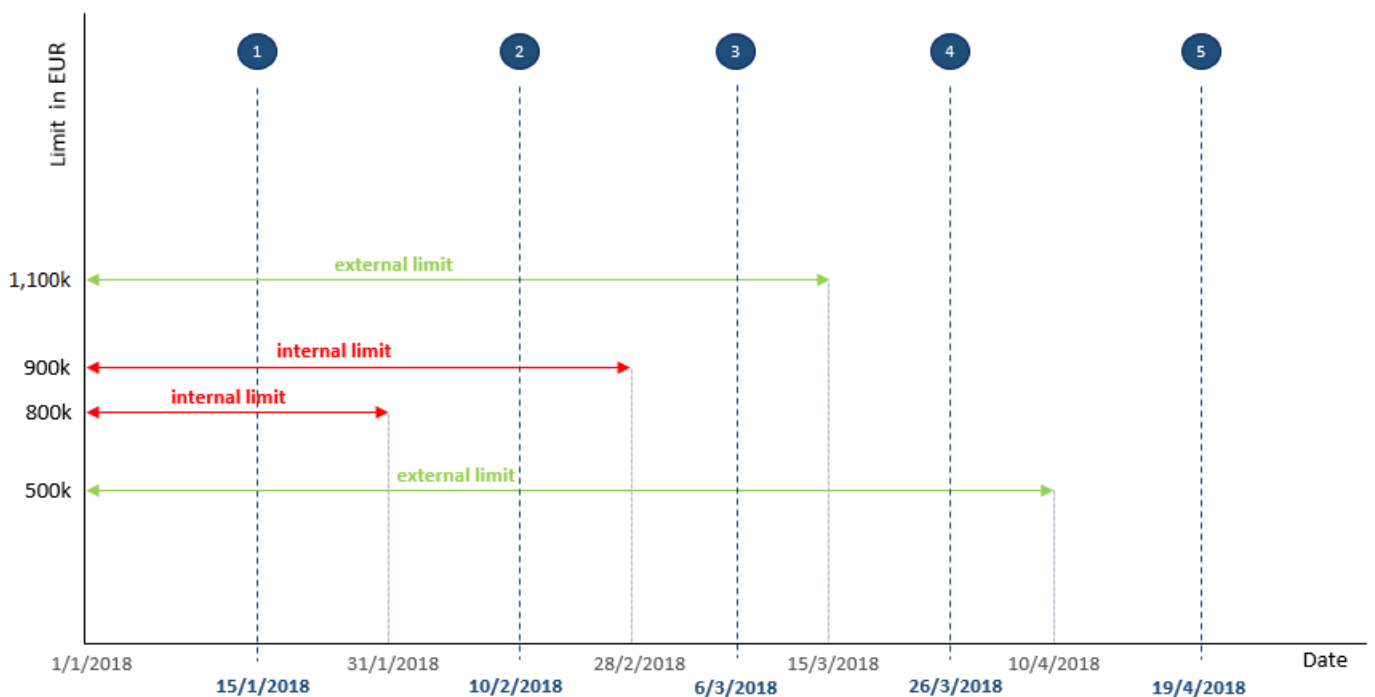


Figure 2 – Selection of Applicable Initial Limit

On the above trading days, the following initial limit would be applicable (see Section [Minimal Rule](#)):

1. Min (internal limits in EUR) = Min (800,000 EUR; 900,000 EUR) = 800,000 EUR
2. Min (internal limits in EUR) = Min (900,000 EUR) = 900,000 EUR
3. Min (external limits in EUR) = Min (500,000 EUR; 1,100,000 EUR) = 500,000 EUR
4. Min (external limits in EUR) = Min (500,000 EUR) = 500,000 EUR
5. No initial limit in EUR => A zero EUR limit is applicable. The member can only trade in such a way that this limit will be increased.

3.3 Risk Set

The riskiness of transactions may differ with each product and may also vary across the delivery areas in which the product is traded.

3.3.1 Risk Parameters

For the aforementioned reasons, the M7 Trading platform enables the definition of so-called risk parameters which are numeric values with up to two decimals.

Risk parameters give weight to each transaction by its absolute value and sign. The higher the absolute value of a risk parameter, the higher the Cash Value (see [Section Cash Value](#)) calculated for the performed transaction, and the higher the impact on the member's Current Limit (see [Section Current Limit](#)). A sign (positive or negative) of a risk parameter defines the direction in which the Current Limit will be adjusted (while taking into account the character of the transaction).

Parameters "a":

- Used for calculating the part of cash value formula that depends on price (see [Section Cash Value](#)).
- Assuming the parameter a for an order is 1, the submission of a buy order for Qty=10 for an hourly product traded in EUR M7 Trading would deduct from the member's Current Limit:
 - 100 EUR in case the order price was 10.
 - 200 EUR in case the order price was 20.

Parameters "α" (alpha):

- Used for calculating the part of cash value formula that is independent of price (see [Section Cash Value](#)).
- Assuming the parameter α for an order is 1, with submission of a buy order for Qty=10 for an hourly product traded in EUR M7 Trading would deduct from the member's Current Limit:
 - 10 EUR in case the order price was 10.
 - 10 EUR in case the order price was 20.

3.3.2 Risk Set

Risk parameters are defined in one entity called "Risk Set", which is then assigned to the whole product or to a product/delivery area combination (Reference Data Management > Market Setup > Risk Sets).

When a Risk Set is assigned to a product/delivery area combination, its risk parameters will be used to calculate the Cash Value of a transaction (see [Section Cash Value](#)); otherwise, the product-specific Risk Set will be used. The product-specific Risk Set is by default set to the Pre-Defined Risk Set, but Market Operators can amend the values of its risk parameters or configure a different Risk Set.

In each Risk Set, the Market Operators can set the desired combination of the parameters a and α , meaning a Risk Set can have non-zero only parameters a , only non-zero parameters α or their combination. However, it is highly recommended that each order parameter has at least the same or a higher value than its respective trade parameter³. E.g. in case of parameters for orders/trades that are submitted with a positive price and buy side (the first column in the first table), the value of the order parameter shall be at least as high as the trade parameter.

For more information on the management and assignment of Risk Sets in the WebGUI see [DFS120](#) and [MFG130](#), or via the

API interface see *DFS180*.

3.3.3 Pre-Defined Risk Set

A Pre-Defined Risk Set is a default instance of the Risk Set entity, which is included in the software delivery. All parameters in this risk set are modifiable and are set by default to the values shown in the following tables:

3.3.3.1 Risk Parameters “a” - Positive Price

Execution State	Buy Side	Sell Side
Order	1.00	0.00
Trade	1.00	-1.00

3.3.3.2 Risk Parameters “a” - Negative Price

Execution State	Buy Side	Sell Side
Order	0.00	-1.00
Trade	1.00	-1.00

3.3.3.3 Risk Parameters α

Execution State	Buy Side	Sell Side
Order	0.00	0.00
Trade	0.00	0.00

3.4 Multi-currency

M7 Trading allows trading of products in different currencies within one delivery area, as long as the respective product assignments are in place (see *DFS120*). The Clearing House and Market Operators must define cash limits separately for each currency.

The defined cash limits in one currency are completely independent from cash limits in another currency. This means that a member may have breached its cash limit in EUR, but not its cash limit in GBP. A member breaching its limit in EUR will result in all member's orders in EUR being automatically deactivated (see [Section Automatic Order Deactivation](#)), whilst the member's orders in GBP will remain active.

3.5 Settlement Calendar

In the Settlement Calendar in the WebGUI (Reference Data Management > Calendar > Settlement Calendar), the Market Operators can configure:

- at what time the limits will be reset – in the Daily Reset section,

- on which week days the limit will be reset – in the Settlement Days section,
- on which specific days the limits will not be reset – in the Holidays section.

4 Cash Limit

In the M7 Trading platform, there are several terms that are used, along with processes that are executed in the context of risk management.

4.1 Initial Limit

From a functional perspective, the value of the Initial Limit represents a financial amount which a member has available for trading on a trading day, for which this Initial Limit is in place, from one Limit Reset to another (see [Section Limit Reset](#)).⁴

From the application point of view, the Initial Limit is each cash limit record, internal or external, which was entered into the M7 Trading platform by Market Operators or Clearing House, be it via WebGUI, API interface or an XML file upload.

Since the platform allows several Initial Limits to be defined for one member for the same trading day, a preference to select the applicable limit is in place (see [Section Minimal Rule](#)).

4.2 Limit Reset

On each trading day, a Limit Reset is performed on the configured trading days and time (see [Settlement Calendar](#)), during which the Current Limits (see [Current Limit](#)) of all members are set to the Initial Limit value that is applicable on the current trading day (see [Minimal Rule](#)), lowered by the aggregated Cash Value of all member's active orders. At the same time, the aggregated Cash Value of trades, as well as trade cancellations and trade recalls from the previous trading period is considered to be zero.

4.3 Cash Value

In order to express the risk of a transaction in financial terms, the M7 Trading platform calculates a so-called "Cash Value" of the transaction.

The formula used for the Cash Value calculation depends on:

- the type of the product for which the transaction is being performed and/or the type of the entered or matched order (single vs. block order).
- the type of transaction.

The calculated Cash Value is then subtracted from (or added) to the Current Limit of a member (see [Current Limit](#)), depending on the character of the performed transaction, the sign of entered/matched price and the sign of the applicable risk parameter.

The formulas that show how to calculate a Cash Value can be found in [Cash Value Appendix](#).

4.4 Current Limit

Each active member in the M7 Trading platform has the ability to perform trading activities which are in line with its Current Limit. The Current Limit is the financial amount which a member may use for trading at any point in time.

The value of member's Current Limit is calculated as its applicable Initial Limit minus the member's Consumption. The applicable Initial Limit is selected and applied according to the Minimal Rule (see [Minimal Rule](#)) during the Limit Reset. The member's Consumption is an aggregated Cash Value of all active orders and trades for which the member has placed or matched since the last Limit Reset (see [Limit Reset](#)). Please see the Appendix for the formulas.

Throughout the trading day, Market Operators and the Clearing House can perform changes to Initial Limits which might have an impact on the member's Current Limit. Therefore, the platform verifies whether the Initial Limit used to calculate the member's Current Limit still complies with the Minimal Rule⁵:

- When a new Initial Limit has been entered which is applicable on the current trading day with an immediate effect.
- When the Initial Limit which was used to calculate the member's Current Limit for today's trading day is modified with an immediate effect in such a way that it is no longer applicable on today's day.
- When an Initial Limit is modified in such a way that this Initial Limit becomes applicable on today's day with an immediate effect.
- When the Initial Limit which was used to calculate the member's Current Limit for today's trading day, is deleted.

An adjustment of the member's Current Limit is performed using the following formulas ⁶:

$$\text{Initial Limit} = \text{Initial Limit}_{\text{new}}$$

$$\text{Current Limit} = \text{Current Limit}_{\text{old}} + \text{Initial Limit Adjustment, where}$$

$$\text{Initial Limit Adjustment} = \text{Initial Limit}_{\text{new}} - \text{Initial Limit}_{\text{old}}$$

5 Cash Limit Check

5.1 Triggers

If the cash limit check for a product is turned on, the check will be performed, and the member's Current Limit updated when:

- an order is:
 - submitted,
 - modified,
 - deactivated/hibernated,
 - cancelled/deleted,
 - in case an OTC order is:
 - entered, the initiator's Current Limit is updated,
 - accepted or rejected, both initiator's and counterparty's Current Limit is updated. See details in [OTC](#).
- a trade is:
 - executed fully or partially,
 - cancelled,
 - recalled.
- Market Operators modify the member's Initial Limit with an immediate effect. *
- A Clearing House modifies the member's Initial Limit. *
- Market Operators assign a different Risk Set to the product or product-delivery area combination.
- Market Operators modify the value of a risk parameter in the Risk Set assigned to the product or product-delivery area combination.
- A Limit Reset is performed. **

(*) The member's Consumption (i.e. the value of active orders and trades) is subtracted from the new value of the Initial Limit.

(**) The value of the member's active orders is subtracted from the new value of the Initial Limit.

5.2 Impact

Each transaction that is subject to a cash limit check may have an impact on the member's Current Limit.

Let us assume that the risk parameters have the default values from the Pre-Defined Risk Set, i.e.:

5.2.0.1 Risk Parameters "a" - Positive Price

Execution State	Buy Side	Sell Side
Order	1.00	0.00
Trade	1.00	-1.00

5.2.0.2 Risk Parameters "a" - Negative Price

Execution State	Buy Side	Sell Side
Order	0.00	-1.00
Trade	1.00	-1.00

5.2.0.3 Risk Parameters α

Execution State	Buy Side	Sell Side
Order	0.00	0.00
Trade	0.00	0.00

Having the above-mentioned risk parameter values in place, the following actions are relevant for the value of the Current Limit:

Action	Effect
Entering or activating a buy order with a positive price or a sell order with a negative price (i.e. a positive Cash Value)	The Cash Value of the order is immediately subtracted from the Current Limit.
Deleting / Cancelling / Deactivating / Hibernating a buy order with a positive price or a sell order with a negative price (i.e. a positive Cash Value)	The Cash value of the order is immediately added to the Current Limit.
Reducing the quantity or price limit of a buy order with a positive price or of a sell order with a negative price (i.e. a positive Cash Value)	The Cash Value difference between the old and new order is immediately added to the Current Limit.
Increasing the quantity or price limit of a buy order with a positive price or of a sell order with a negative price (i.e. a positive Cash Value)	The Cash Value difference between the old and new order is immediately subtracted from the Current Limit.
Full or partial execution of a buy order with a positive price or of a sell order with a negative price (i.e. a positive Cash Value of the trade and positive Cash Value of the Adjustment order to trade)	The Cash Value of the trade is immediately subtracted from and Adjustment order to trade is immediately added to the Current Limit.
Full or partial execution of a buy order with a negative price or of a sell order with a positive price (i.e. a negative Cash Value of the trade and zero Cash Value of the Adjustment order to trade)	The Cash Value of the trade is immediately subtracted from and zero Adjustment order to trade is immediately added to the Current Limit.
Recall or cancellation of a trade in which the member participated with a buy order with a positive price limit or a sell order with a negative price limit (i.e. a positive Cash Value of the trade)	The (positive) Cash Value of the trade is immediately added to the Current Limit.
Recall or cancellation of a trade in which the member participated with a buy order with a negative price limit or a sell order with a positive price limit (i.e. a negative Cash Value of the trade)	The (negative) Cash Value of the trade is immediately added to the Current Limit.

5.3 Automatic Order Deactivation

In case the member's Current Limit in some currency is violated (i.e. its value falls under zero), all orders of the member for this currency will be automatically deactivated/hibernated. The deactivation will be performed regardless the reason of the limit breach. For the related effects in ComTrader refer to [Section ComTrader](#).

The Current Limit could fall under zero:

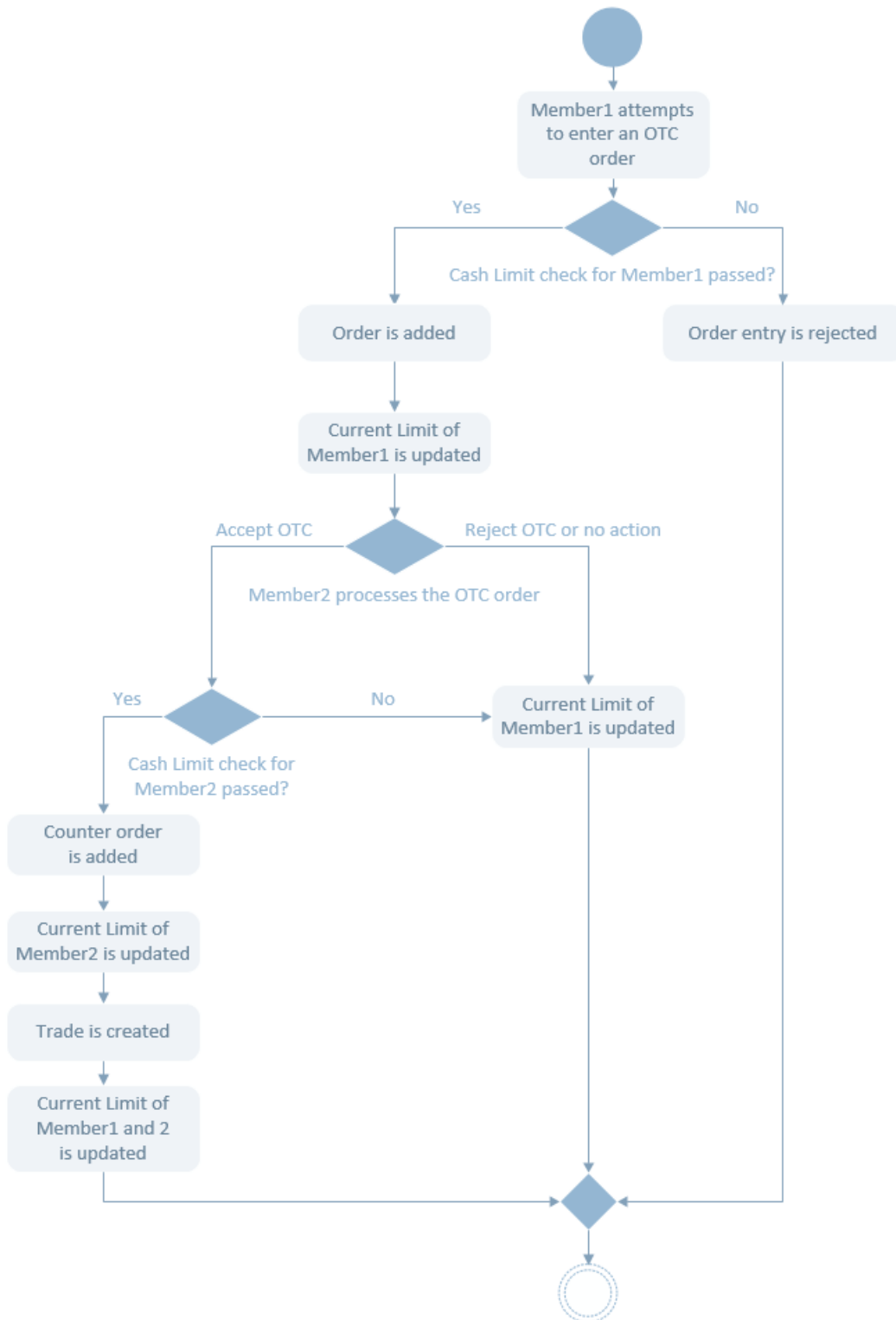
- During a Limit Reset, when the new value of the Initial Limit is lower than the aggregated Cash Value of all member's active orders.
- When Market Operators turn on the cash limit check for an additional product in which a member has some active orders or trades since the Last Reset.
- When Market Operators assign a different Risk Set to a product or product-delivery area combination, which causes the Current Limit of impacted members to be recalculated with the new (higher) values of risk parameters.
- When Market Operators modify the values of risk parameters in the Risk Set assigned to a product or product-delivery area combination, which causes the Current Limits of impacted members to be recalculated using the new (higher) values of risk parameters.
- When Market Operators create/activate a product for which a cash limit check is turned on.
- After a trade recall or a trade cancellation is processed.
- After an automated order transfer (for more details see [DFS160a](#)).

Notes:

- After the order deactivation, the value of the Current Limit may remain negative (trades cannot be deactivated).
- In case the Current Limit becomes positive again, the order re-activation is not automatic.
- Depending on how the values of the risk parameters for orders which have assigned Risk Sets defined, members might or might not be able to increase their negative Current Limit by submitting new orders. In the Pre-Defined Risk Set, all four parameters for orders are set by default to zero. Due to this, the Cash Value of new orders would be equal to zero, thus they would fail the limit check and the Current Limit would not change.

5.4 OTC

The cash limit checks performed for an OTC order and trade are depicted in the diagram below.



6 Housekeeping

As mentioned in [Member](#), initial cash limits can be defined with an arbitrary start and end point of validity. M7 performs a regular housekeeping task to hide the no longer relevant cash limits⁷ from the Limit Overview section of the Modify Member screen in the WebGUI. The job is performed at the time of the Limit Reset, see [Settlement Calendar](#).

7 ComTrader

The information on the member's Current and Initial Limit in each currency is displayed in the Trading Limit panel.

The Current Limit is visible in the status panel at the bottom of the ComTrader screen. Its value is updated in line with the member's trading activities.

When a member's Current Limit is breached, both the member and the Market Operators will receive a critical private message and an informative pop-up message.

For more information, see *MFG110*.

8 API

Internal cash limits for members as well as risk set entities can be created and maintained using the API interface. This functionality is only available to Market Operator users.

External cash limits are entered via a cash limit file upload, and are sent by the MTT module for processing by the M7 Trading backend using the API interface.

Market Operators requests and responses:

- Internal cash limits:
 - Modify Cash Limit Request (ModifyCashLmtReq)
 - Modify Cash Limit Response (ModifyCashLmtResp)
- Risk set entities:
 - Create Risk Set Request (CreateRiskSetReq)
 - Modify Risk Set Request (ModifyRiskSetReq)
 - Delete Risk Set Request (DelRiskSetReq)

Trading participants and Market Operator users can also send inquiry requests to receive information on a member's existing cash limits, on risk sets and/or their assignments to products and delivery areas.

Inquiry requests and reports:

- Internal and external cash limits:
 - Cash Limit Request (CashLmtReq)
 - Cash Limit Report (CashLmtRprt)
- Risk set entities and assignments:
 - Risk Set Information Request (RiskSetInfoReq)
 - Risk Set Information Report (RiskSetInfoRprt)
 - Product Information Request (ProdInfoReq)
 - Product Information Report (ProdInfoRprt)

Trading participants and Market Operator users can also receive broadcasts of changes in their member's cash limits, risk sets and/or their assignments to products and delivery areas.

Broadcasts:

- Internal and external cash limits:
 - Cash Limit Report (CashLmtRprt)
 - Cash Limit Delta Report (CashLmtDeltaRprt)
- Risk set entities and assignments:

- Risk Set Information Report (RiskSetInfoRprt)
- Product Information Report (ProdInfoRprt)
- Full Product Information Report (FullProdInfoRprt) - only available to Market Operators

For further information, please, consult *DFS180* and *DFS180a*.

9 Reporting Engine

The Reporting users can subscribe to a TC840 Reference Data report which contains the list of applicable internal and external cash limits per member.

10 Appendix - Formulas

10.1 Current Limit

At the time of limit reset:

$$\text{Current Limit}_{\text{new}} = \text{Initial Limit}_{\text{new}} - \sum \text{Cash Value}_{\text{active orders}} = \text{Current Limit}_{\text{old}} + \sum \text{Cash Value}_{\text{trades since last reset}} - \sum \text{Cash Value}_{\text{cancelled and recalled trades since last reset}}$$

At any time of the day:

$$\text{Current Limit} = \text{Initial Limit} - \sum \text{Cash Value}_{\text{active orders}} - \sum \text{Cash Value}_{\text{trades since last reset}} + \sum \text{Cash Value}_{\text{cancelled and recalled trades since last reset}}$$

When an order is entered/activated:

$$\text{Current Limit}_{\text{after order}} = \text{Current Limit}_{\text{before order}} - \text{Cash Value}_{\text{order}}$$

When an order is hibernated:

$$\text{Current Limit}_{\text{after hibernation}} = \text{Current Limit}_{\text{before hibernation}} + \text{Cash Value}_{\text{order}}$$

When a trade is executed:

$$\text{Current Limit}_{\text{after trade}} = \text{Current Limit}_{\text{before trade}} - \text{Cash Value}_{\text{trade}} + \text{Adjustment}_{\text{order to trade}}$$

When a trade cancellation or trade recall is requested and not processed, or rejected:

$$\text{Current Limit}_{\text{after request}} = \text{Current Limit}_{\text{before request}}$$

When a trade cancellation or trade recall is approved:

$$\text{Current Limit}_{\text{after cancellation or recall}} = \text{Current Limit}_{\text{before cancellation or recall}} + \text{Cash Value}_{\text{trade}}$$

10.2 Cash Value Appendix

10.2.1 Energy/Commodities Product

When an order is entered/ activated/ hibernated/ cancelled/ deleted:

$$\text{Cash Value}_{\text{order}} = a_{\text{order}} * \text{Qty}_{\text{order}} * \text{Prc}_{\text{order}} * \text{DelUnits} + \alpha_{\text{order}} * \text{Qty}_{\text{order}} * \text{DelUnits}$$

When a trade is executed:

$$\text{Cash Value}_{\text{trade}} = a_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{trade}} * \text{DelUnits} + \alpha_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{DelUnits}$$

$$\text{Adjustment}_{\text{order to trade}} = a_{\text{order}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{order}} * \text{DelUnits} + \alpha_{\text{order}} * \text{Qty}_{\text{trade}} * \text{DelUnits}$$

When a trade is cancelled/recalled:

$$\text{Cash Value}_{\text{trade}} = a_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{trade}} * \text{DelUnits} + \alpha_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{DelUnits}$$

For all the above used variables:

DelUnits: Delivery Units of the Energy/Commodity Product

Prc_{order}: order price; Prc_{trade}: trade price

Qty_{order}: order quantity; Qty_{trade}: trade quantity

a_{order}: a risk parameter for the order side for positive or negative price

a_{trade}: a risk parameter for the trade side for positive or negative price

α_{order}: a risk parameter for the order side (price independent)

α_{trade}: a risk parameter for the trade side (price independent)

10.2.2 User-Defined-Delivery Period Blocks (UDDP / Energy Products)

When an order is entered/ activated/ hibernated/ cancelled/ deleted:

$$\text{Cash Value}_{\text{order}} = a_{\text{order}} * \text{Qty}_{\text{order}} * \text{Prc}_{\text{order}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{order}} * \text{Qty}_{\text{order}} * \text{DelUnits} * \text{NumberOfContracts}$$

When a trade is executed:

$$\text{Cash Value}_{\text{trade}} = a_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts}$$

$$\text{Adjustment}_{\text{order to trade}} = a_{\text{order}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{order}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{order}} * \text{Qty}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts}$$

When a trade is cancelled/recalled:

$$\text{Cash Value}_{\text{trade}} = a_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts}$$

For all the above used variables:

DelUnits: Delivery Units of the Base Energy Product

NumberOfContracts: Number of contracts fitting into the block

Prc_{order}: order price; Prc_{trade}: trade price

Qty_{order}: order quantity; Qty_{trade}: trade quantity

a_{order}: a risk parameter for the order side for positive or negative price

a_{trade}: a risk parameter for the trade side for positive or negative price

α_{order}: a risk parameter for the order side (price independent)

α_{trade}: a risk parameter for the trade side (price independent)

10.2.3 User-Defined Blocks (UDB / Commodities Products)

When an order is entered/ activated/ hibernated/ cancelled/ deleted:

$$\text{Cash Value}_{\text{order}} = a_{\text{order}} * \text{Qty}_{\text{order}} * \text{Prc}_{\text{order}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{order}} * \text{Qty}_{\text{order}} * \text{DelUnits} * \text{NumberOfContracts}$$

When a trade is executed:

$$\text{Cash Value}_{\text{trade}} = a_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts}$$

$$\text{Adjustment}_{\text{order to trade}} = a_{\text{order}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{order}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{order}} * \text{Qty}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts}$$

When a trade is cancelled/recalled:

$$\text{Cash Value}_{\text{trade}} = a_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{Prc}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts} + \alpha_{\text{trade}} * \text{Qty}_{\text{trade}} * \text{DelUnits} * \text{NumberOfContracts}$$

For all the above used variables:

DelUnits: Delivery Units of the Commodity Product

NumberOfContracts: Number of contracts fitting into the block

Prc_{order}: order price; Prc_{trade}: trade price

Qty_{order}: order quantity; Qty_{trade}: trade quantity
a_{order}: a risk parameter for the order side for positive or negative price
a_{trade}: a risk parameter for the trade side for positive or negative price
α_{order}: a risk parameter for the order side (price independent)
α_{trade}: a risk parameter for the trade side (price independent)

10.3 Limit Reset

Before the limit reset:

$$\text{CurrentLimit}_{\text{before reset}} = \text{Initial Limit}_{\text{before reset}} - \sum \text{CashValue}_{\text{active orders}} - \sum \text{CashValue}_{\text{trades since last reset}} + \sum \text{CashValue}_{\text{cancelled and recalled trades since last reset}}$$

After the limit reset:

$$\text{CurrentLimit}_{\text{after reset}} = \text{Initial Limit}_{\text{before reset}} - \sum \text{CashValue}_{\text{active orders}} = \text{CurrentLimit}_{\text{before reset}} + \sum \text{CashValue}_{\text{trades since last reset}} - \sum \text{CashValue}_{\text{cancelled and recalled trades since last reset}}$$

1. In case of limit deletion, the value of the Immediate Activation box and activation attribute is ignored. ↩
2. Only if the just created/modified Initial Limit is/was the limit applicable today to the member according to the Minimal Rule (see Section [Minimal Rule](#)).↩
3. This will ensure that an order, which has passed the limit check successfully, can be also matched without a limit breach. ↩
4. This definition is valid under the assumption that the member has no open orders. ↩
5. The listed changes to the Initial Limits will have an immediate effect if they were executed with the Immediate Activation flag ticked in the WebGUI, or with the "activation" attribute set to "IMDT" in the API.↩
6. During this adjustment, the aggregated Cash Value of the member's active orders and trades is not nulled but is still considered as a spent amount.↩
7. The cash limits with the end point of validity in the past. ↩