

## **Eurex Clearing C7**

### C7 – Advanced Risk Protection Functional Reference Guide

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## Abbreviations

Following table contains the list of abbreviations used in this document.

Term	Description
CM	Clearing Member
NCM	Non-Clearing Member
ARP	Advanced Risk Protection Component of C7
4EP	Four Eye (2 <sup>nd</sup> Level) Review and Approval
GUI	Graphical User interface
CRE	Common Report Engine
FIXML	FIXML is the XML encoding used within FIX. It is widely adopted for derivatives post trade clearing and settlement globally.

## 1 Introduction

This document provides an overview of the functionality made available with C7 release 4.1 onwards. One part of this release is the porting of advanced risk protection functions from Eurex Classic to C7, which will be introduced in December 2018.

Please note that since the advanced risk protection functionalities are largely distinct from other C7 functionalities, this functional reference has been created as a stand-alone document dedicated to advanced risk protection functionalities only.

For detailed information on the C7 Clearing GUI, please refer to the C7 Clearing GUI - User Manual, which is available for download on the Eurex Clearing website:

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**Caution: The Advanced Risk Protection defines 3 action levels. While level 1 and level 2 limits represent early lines of defense, a level 3 limit is designed as a measure of last resort in order to prevent or limit damage to Clearing Member's liquidity. Consequently, resulting measures are severe. With a level 3 limit breach the respective member will be set to HALT in Trading and Clearing and all open orders and quotes will be deleted. No new orders or quotes can be entered as long as the HALT state persists. Deleted orders and quotes cannot be restored; therefore, any order book priority will be lost.**

### 1.1 Audience

This document is intended for all the members and vendors intending to use the C7 advanced risk protection services. It also serves as an overview of how to use the service. It assumes that the reader has a basic understanding of the clearing and risk management functionalities and the systems offered by Eurex Clearing.

### 1.2 Conventions Used in This Document

**Cross-references** to other chapters within this document are always clickable, but not marked separately.

**Hyperlinks** to websites are underlined.

## 2 Interfaces

This Chapter explains the system overview from the Advanced Risk Protection functionality point of view.

### 2.1 System Overview

The main responsibility of ARP application is to maintain the Member Risks Limits and manage Member Status. The risk limits that are maintained in ARP are sent to Risk Management system (Prisma). Prisma detects and sends the risk limit breaches to the ARP. C7 GUI users can update the risk limits, change the member status and see these limit breaches. The messages corresponding to these breaches and change in member status are sent to T7 Trading platform and Members using FIXML interface as explained in chapter 3.

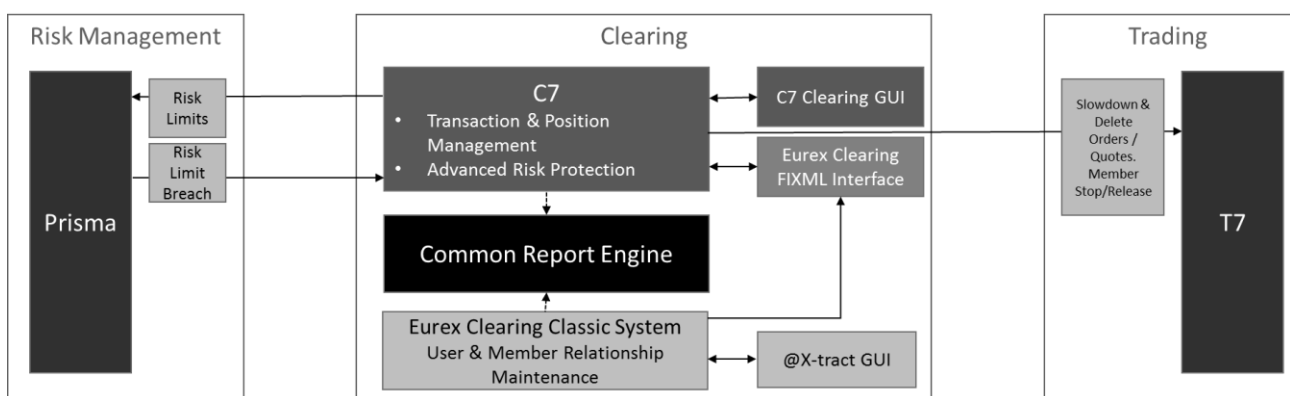


Figure 1 : ARP Context Diagram

### 2.2 C7 Clearing GUI for Advanced Risk Protection Services

There is a designated section of the C7 Clearing GUI for advanced risk protection services. Throughout this document, 'C7 Clearing GUI' stands for this functionality. Members can use the C7 Clearing GUI for all advanced risk protection services such as maintaining member risk limits and member Stop/Release.

For detailed information on the C7 Clearing GUI, please refer to the C7 ARP GUI - User Manual, which is available for download on the Eurex Clearing website:

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### 2.3 Reports

Reports are solely distributed by the Common Report Engine. Reports newly introduced since C7 release 3.0 are available in the XML and CSV file formats. Full details on report structures and XSD schema files are available on the Eurex Clearing website in the Eurex XML Reports - Reference Manual. For further information on the Common Report Engine, please refer to the Common Report Engine (CRE), User Guide. All the documents are available at:

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### 3 Member Risk Limit Maintenance

#### 3.1 Different Types of Risk and Action Levels

**Risk Types:** Following are the predefined risk limit types in C7 ARP

Risk type	Abbreviation	Description
1	TMR	Total Margin Requirement
2	CULI	Premium Margin + Current Liquidating Margin + Variation Margin + Option Premium
3	CASH	Variation Margin + Option Premium
4	NDM	Initial Margin + Future Spread Margin

**Action Levels:** Action Levels specifies measure to be taken once the limit breach is recognized

**Level 1:** Broadcasting an Alert Message. Additionally all open orders/quotes can be deleted if flag is set to Y.

**Level 2:** Applying a slowdown for Add and Modify orders/quotes. Additionally all open orders/ quotes can be deleted if flag is set to Y.

**Level 3:** Setting the member to state “HALT” and halt him from all trading & Clearing activities and all open orders/quotes will be deleted.

**Risk Limit:** Threshold amount to trigger associated risk type and action level limit breach.

#### 3.2 Maintenance of Risk Limits

The risk limit amount will be defined in multiples of 1,000 in the Clearing member currency. CM cannot set limit for themselves. Only Clearing House operator is allowed to set limit for CM. NCMs can set limit for themselves. CM of NCM or Clearing House Operator (when acting on behalf of CM) can also set limits for NCMs. Level 1 and Level 3 limits are applicable for CM. Level 1, 2 and 3 limits are applicable for NCM.

##### 3.2.1 Key Terms Used in C7 ARP

**Maintenance Participant:** Participant who sets the risk limit. Only the Maintenance Participant can change the risk limit. The Maintenance Participant can be CM for NCM or NCM for itself. When the Operator (Clearing House) sets limit for CM/NCM, the Maintenance Member is displayed as the CM/NCM.

**Affected Participant:** Participant ID for whom the risk limits apply (CM or NCM).

**Delay/Time Lag:** This value specifies minimum time between two add/modify Orders and Quotes for the Participant in all the products. This parameter is disabled for action levels 1 and 3 and for level 2 it can be either 0 or value in range 250-5000 milliseconds.

**Delete Orders/Quotes flag:** If this flag is set as 'Y', then T7/T7-FX will delete all orders/quotes for the given participant. It is optional for action levels 1 and 2 and is always set to 'Y' for action level 3.



**Limit breached:** It indicates if the given risk limit is currently breached.

### 3.3 Risk Limit Breach and Release

The risk limits set up at C7 ARP for will be evaluated at Prisma against different risk types. In case of breach following action will be performed by ARP, depending on breach level.

#### 3.3.1 Level 1 Breach

- All open orders/quotes will be deleted if the member had set the risk limit to do so.
- C7 ARP informs CM/NCM on C7 ARP GUI.

#### 3.3.2 Level 2 Breach

- All open orders/quotes will be deleted if the member had set the risk limit to do so.
- The new orders/quotes will be delayed by the 'delay time' that was set by the member in the risk limit configuration.
- C7 ARP informs CM/NCM by a message on the C7 ARP GUI.

Also, NCM can be manually slowed down by a CM using the C7 ARP GUI. In this case, the following actions will be performed.

- All open orders/quotes will not be deleted even if the member had set the risk limit to do so.
- The new orders/quotes will be delayed by the 'delay time' that was set by the member in the risk limit configuration.
- C7 ARP informs CM/NCM by a message on the C7 ARP GUI.

#### 3.3.3 Level 3 Breach

- All open orders/quotes will be deleted.
- The concerned CM/NCM will be set to Halt, that is, the trading and clearing functions of derivative market will be halted for the concerned CM/NCM.
- If a CM level 3 limit is breached, all NCMs of the respective CM will be set to HALT.
- C7 ARP informs CM/NCM by a legal message on the C7 ARP GUI and the Eurex Clearing FIXML interface.



**Caution: While level 1 and level 2 limits represent early lines of defense, a level 3 limit is designed as a measure of last resort in order to prevent or limit damage to Clearing Member's liquidity. Consequently, resulting measures are severe. With a level 3 limit breach the respective member will be set to HALT in Trading and Clearing and all open orders and quotes will be deleted. No new orders or quotes can be entered as long as the HALT state persists. Deleted orders and quotes cannot be restored; therefore, any order book priority will be lost.**

#### 3.3.4 Release Limit

The release of a limit can be performed only by the Maintenance Participant or by the Eurex Clearing Operator from the C7 ARP GUI.

If several action levels of the same risk limit type are breached, then only the most severe action level of the risk limit can be released. When the most severe risk limit is released, it automatically releases all action level risk limits of the same risk type.

### **3.4 Impact of Clearing Currency Change**

The CM/NCM sets the risk limit amount in the Clearing Currency. If the Clearing Currency is changed in Eurex Clearing Classic system, then it is effective on the next business day.

C7 ARP will reset all the risk limits setup using old currency. The CM/NCM will have to setup the new risk limits again with new currency using the C7 ARP GUI.

## 4 Member Stop – Release

Stop button enables Clearing House Operator and Clearing Member users to halt the trading and clearing activities of the participants. The Stop/Release window provides Clearing Members and Operator users with the facility to perform a 'Stop' or 'Release' action. Clearing Members can trigger a 'Stop/Release' action on their Non-Clearing Members. Clearing House Operator can trigger a 'Stop-Release' action on Clearing Members and Non Clearing Members. Clearing House Operator can also trigger a 'Stop-Release' action on Non Clearing Members on behalf of the CM.

Members will be informed immediately about the stop or release action by a legal messages on the C7 ARP GUI and the Eurex Clearing FIXML interface.

Clearing Members and Non Clearing Members are not allowed to take 'Stop/Release' action on themselves.

### 4.1 Impact of Clearing Relationship Change

In case of a change in the Clearing Relationship, the member status of the NCM may change depending on the following scenarios.

Let's assume that a NCM had a Clearing Relationship with CM1. Now, the NCM changes the Clearing Relationship to CM2. Consider that the NCM was on HALT before the Clearing Relationship change was processed. Now, the NCM member status will either switch to Active or remain in Halt, depending on the following scenarios.

Halt Reason	Performed by/ Level Set-up by	Action on	Status of NCM Under Old Clearer CM1	Status of NCM Under New Clearer CM2
Stop Button pressed	Clearing House Operator	CM1	HALT	ACTIVE
Stop Button pressed	CM1	NCM	HALT	ACTIVE
Stop Button pressed	Clearing House Operator on behalf of CM1	NCM	HALT	ACTIVE
Stop Button pressed	Clearing House Operator	NCM	HALT	HALT
Level 3 Limit Breach	CM1-CM1	CM1	HALT	ACTIVE
Level 3 Limit Breach	CM1-NCM	NCM	HALT	ACTIVE
Level 3 Limit Breach	NCM-NCM	NCM	HALT	HALT

## 5 Leal Messages via Eurex Clearing FIXML Interface and C7 GUI

C7 ARP will send Legal Messages to the CM and NCM when there is a change in the member status from Halt to Active or from Active to Halt. Following are the various scenarios in which CM/NCM will receive a legal message on the Eurex Clearing FIXML interface. The same legal message can also be viewed on the C7 ARP GUI.

Action	Legal Message In English	Legal Message in German	TID in Legal Message
CM-CM Level 3 breach Legal Message to CMs to be set to halt	"As agreed conditions (Level 3 of Risk Protection – Pre-Trade Limits) were not adhered to the Executive Board of Eurex Clearing AG has suspended the Clearing with respect to your Transactions."	"Wegen Nicht-Einhaltung vereinbarter Auflagen (Level 3 des Risikoschutzes – Pre-Trade Limits) hat der Vorstand der Eurex Clearing AG das Clearing in Bezug auf Ihre Transaktionen ausgesetzt."	TID = <CM>
CM-CM Level 3 breach Legal Message to NCMs of the respective CM	"As your Clearing Member has not adhered to agreed conditions (Level 3 of Risk Protection – Pre-Trade Limits), Eurex Clearing AG has suspended the Clearing with respect to your Clearing Member."	"Wegen der Nicht-Einhaltung vereinbarten Auflagen (Level 3 des Risikoschutzes – Pre-Trade Limits) durch Ihr Clearing-Mitglied, hat die Eurex Clearing AG das Clearing in Bezug auf Ihr Clearing-Mitglied ausgesetzt."	TID = <NCM>
CM-NCM Level 3 breach Legal Message to NCM	"Agreed conditions (Level 3 of Risk Protection - Pre-Trade Limits) are not adhered to; therefore, exchange admissions criteria are not fulfilled.  The Management Boards of the Eurex Exchanges order herewith that the admission to trading is suspended."	"Wegen Nicht-Einhaltung vereinbarter Auflagen (Level 3 des Risikoschutzes - Pre-Trade Limits) sind Voraussetzungen der Boersenzulassung nicht mehr erfuellt.  Die Geschaeftsfuehrungen der Eurex-Boersen ordnen hiermit das Ruhen der Boersenzulassungen an."	TID = <NCM>
CM-NCM Level 3 breach Legal Message to respective CM	"Agreed conditions (Level 3 of Risk Protection - Pre-Trade Limits) are not adhered to; therefore, exchange admissions criteria are not fulfilled.  The Management Boards of the Eurex Exchanges order herewith that the admission to trading is suspended."	"Wegen Nicht-Einhaltung vereinbarter Auflagen (Level 3 des Risikoschutzes - Pre-Trade Limits) sind Voraussetzungen der Boersenzulassung nicht mehr erfuellt.  Die Geschaeftsfuehrungen der Eurex-Boersen ordnen hiermit das Ruhen der Boersenzulassungen an."	TID = <NCM>

Release-CM- CM Level 3 breach Legal Message to CM	"As agreed conditions (Level 3 of Risk Protection – Pre-Trade Limits) are fulfilled again, the Executive Board of Eurex Clearing AG has revoked the suspension from Clearing.	"Da die Einhaltung der vereinbarten Auflagen (Level 3 des Risikoschutzes – Pre-Trade Limits) wieder erfuehlt werden, hebt der Vorstand der Eurex Clearing AG die Aussetzung des Clearings auf."	TID = <CM>
Release-CM- CM Level 3 breach Legal Message to respective NCMs	"As agreed conditions (Level 3 of Risk Protection – Pre-Trade Limits) are fulfilled again, the Executive Board of Eurex Clearing AG has revoked the suspension from Clearing.	"Da die Einhaltung der vereinbarten Auflagen (Level 3 des Risikoschutzes – Pre-Trade Limits) wieder erfuehlt werden, hebt der Vorstand der Eurex Clearing AG die Aussetzung des Clearings auf."	TID = <NCM>
Release-CM- NCM Level 3 breach Legal Message to NCM	"As agreed conditions (Level 3 of Risk Protection – Pre-Trade Limits) are fulfilled again, the Executive Board of Eurex Clearing AG has revoked the suspension from Clearing.	"Da die Einhaltung der vereinbarten Auflagen (Level 3 des Risikoschutzes – Pre-Trade Limits) wieder erfuehlt werden, hebt der Vorstand der Eurex Clearing AG die Aussetzung des Clearings auf."	TID = <NCM>
Release-CM- NCM Level 3 breach Legal Message to respective CM	"As agreed conditions (Level 3 of Risk Protection – Pre-Trade Limits) are fulfilled again, the Executive Board of Eurex Clearing AG has revoked the suspension from Clearing.	"Da die Einhaltung der vereinbarten Auflagen (Level 3 des Risikoschutzes – Pre-Trade Limits) wieder erfuehlt werden, hebt der Vorstand der Eurex Clearing AG die Aussetzung des Clearings auf."	TID = <NCM>
Stop CM Legal Message to CM	"The Eurex Management Boards order the suspension of your admission to trading, as the orderly settlement of your transactions is no longer ensured or a probable cause exists that it is no longer ensured."	"Die Geschaeftsfuehrungen der Eurex Boersen ordnen das Ruhen Ihrer Boersenzulassung an, da die ordnungsgemaesse Abwicklung Ihrer Geschaefte nicht mehr sichergestellt ist bzw. diesbezieglich ein begruendeter Verdacht besteht."	TID = <CM>
Stop CM Legal Message to respective NCMs	"The Eurex Management Boards order the suspension of your admission to trading, as the orderly settlement of your transactions is no longer ensured or a probable cause exists that it is no longer ensured."	"Die Geschaeftsfuehrungen der Eurex Boersen ordnen das Ruhen Ihrer Boersenzulassung an, da die ordnungsgemaesse Abwicklung Ihrer Geschaefte nicht mehr sichergestellt ist bzw. diesbezieglich ein begruendeter Verdacht besteht."	TID = <NCM>

Stop NCM Legal Message to NCM	"The Eurex Management Boards order the suspension of your admission to trading, as the orderly settlement of your transactions is no longer ensured or a probable cause exists that it is no longer ensured."	"Die Geschaeftsfuehrungen der Eurex Boersen ordnen das Ruhem Ihrer Boersenzulassung an, da die ordnungsgemaesse Abwicklung Ihrer Geschaefte nicht mehr sichergestellt ist bzw. diesbezuglich ein begruendeter Verdacht besteht."	TID = <NCM>
Stop NCM Legal Message to respective CM.	"The Eurex Management Boards order the suspension of your admission to trading, as the orderly settlement of your transactions is no longer ensured or a probable cause exists that it is no longer ensured."	"Die Geschaeftsfuehrungen der Eurex Boersen ordnen das Ruhem Ihrer Boersenzulassung an, da die ordnungsgemaesse Abwicklung Ihrer Geschaefte nicht mehr sichergestellt ist bzw. diesbezuglich ein begruendeter Verdacht besteht."	TID = <NCM>
Release CM Legal Message to CM	"The exchange admission criteria are fulfilled again. Therefore, the Management Boards of the Eurex-Exchanges herewith revoke the suspension of the admission to trading."	"Die Voraussetzungen der Boersenzulassung sind wieder erfuellt. Deshalb heben die Geschaeftsfuehrungen der Eurex-Boersen hiermit ihre Anordnung des Ruhens der Boersenzulassung auf."	TID = <CM>
Release CM Legal Message to respective NCMs	"The exchange admission criteria are fulfilled again. Therefore, the Management Boards of the Eurex-Exchanges herewith revoke the suspension of the admission to trading."	"Die Voraussetzungen der Boersenzulassung sind wieder erfuellt. Deshalb heben die Geschaeftsfuehrungen der Eurex-Boersen hiermit ihre Anordnung des Ruhens der Boersenzulassung auf."	TID = <NCM>
Release NCM Legal Message to NCM	"The exchange admission criteria are fulfilled again. Therefore, the Management Boards of the Eurex-Exchanges herewith revoke the suspension of the admission to trading."	"Die Voraussetzungen der Boersenzulassung sind wieder erfuellt. Deshalb heben die Geschaeftsfuehrungen der Eurex-Boersen hiermit ihre Anordnung des Ruhens der Boersenzulassung auf."	TID = <NCM>

## 6 Entitlement

### 6.1 Overview

The entitlement mechanism used in C7 to grant members and users access to functionality also applies to advanced risk protection. This chapter gives an overview of the main principles of the entitlement model for C7 advanced risk protection and describes the set-up and configuration options.

### 6.2 Roles and privileges

The C7 entitlement model uses roles as a basis. The roles are assigned to a member and the member's service administrator can assign the roles to the other users.

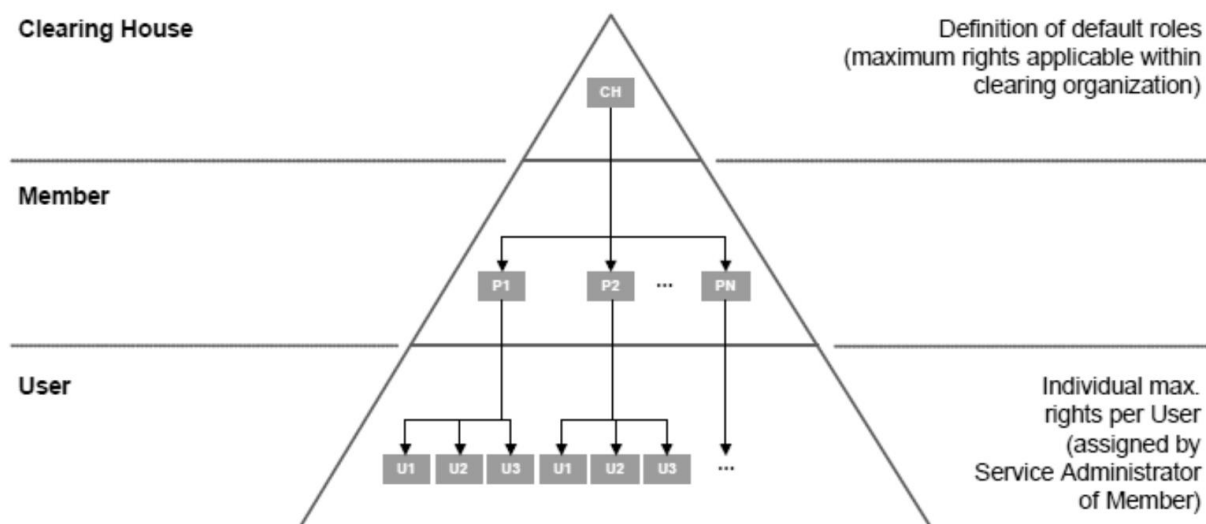
The roles themselves contain privileges. Every privilege defines access to a specific activity. For example, a member could have the privilege to "Maintain Risk Limits". A request entered by a user can only be processed, if the corresponding privilege is assigned to the user/member.

The following roles are supported:

- Risk Manager – This role represents the rights to use stop/release button and to perform maintenance of risk limits. The role is meant to be assigned to Clearing Members.
- Risk Limit Manager - This role represents the rights to perform maintenance of risk limits. The role is meant to be assigned to both Non Clearing Members and Clearing Members.
- Risk Manager View - This role represents the rights to view risk limits. The role is meant to be assigned to both Clearing Members and Non Clearing Members.

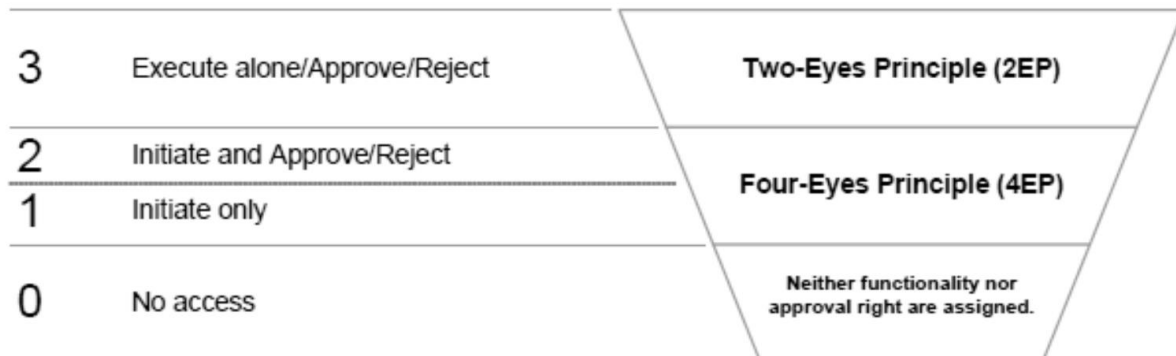
### 6.3 General set-up and maintenance

The C7 entitlement model follows a hierarchical approach. This approach uses a top-down logic for the allocation of access rights.



To provide a user with a right, this right must be initially assigned to the member to which the user belongs. Eurex Clearing defines the maximum entitlements of a member (e.g. based on the member type) and assigns the roles to the members accordingly. The member (service administrator) can define and maintain the entitlements for the other users. While assigning roles to users, the member can modify the entitlement levels for privileges contained in the roles.

The following four entitlement levels are available in the system:



- **Entitlement Level 3** indicates that the user is allowed to initiate an action alone and no second user is required for approval. The user can additionally approve or reject actions entered by another user.
- **Entitlement Level 2** indicates that the user is allowed to initiate an action while requesting a four-eyes approval and approve or reject actions entered by another user.
- **Entitlement Level 1** indicates that the user is allowed to initiate an action requesting a four-eyes approval.
- **Entitlement Level 0** indicates that the user has no access to any privilege at all. This means that the user can neither initiate nor approve or reject.

As the entitlement concept follows a hierarchical approach, the entitlement of a user can never exceed the maximum entitlements of the member. Consequently, reductions in these maximum entitlements of a member are automatically applied to the entitlement settings of the affected users.

For detailed information on the entitlement mechanism, please refer to the C7 – User Entitlement Guide, available for download on the Eurex Clearing website:

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## 6.4 Four-eyes principle processing

Entitlement levels define how a certain activity can be performed by a user and to which extent. If the four-eyes principle is required for a certain activity, a user cannot perform the action on his own, but needs a second user to approve the action. The user initiating the action for which the four-eyes principle is required needs to have at least the entitlement level 1. For the approval of any four-eyes principle request, the user requires an entitlement level of at least 2. Four-eyes principles can be applied to a range of activities as listed in the C7 – User Entitlement Guide available for download on the Eurex Clearing website under the following path:

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For further detail on particular four-eyes logic per functionality, please refer to the respective chapters below.

### 6.4.1 Four-eyes principle processing for C7 Advanced Risk Protection features

Members may optionally specify that activities related to advanced risk protection are subject to the four eyes principle process.